ETSI TS 1DD DDD Vm.t.e (yyyy-mm)

Cyber Security for Consumer Internet of Things;

Conformance Assessment of Requirements for
 [vertical domain]

<

**TECHNICAL SPECIFICATION**

The present template describes in a structured way how to map the modifications and additions made in a vertical standard [1] extending ETSI EN 303 645 [i.1] onto a corresponding assessment specification for the vertical standard extending ETSI TS 103 701 [2]. This can require additional test groups to be conceived, adapting existing test groups from ETSI TS 103 701 [2] and adapting the Implementation eXtra Information for Testing (IXIT) entries based on the operations applied to the provisions in the vertical standard. However, for all assessment specifications for vertical standards the methodology for the assessment is similar to the methodology in ETSI TS 103 701 [2].

Throughout the present document, the wording is chosen such that "vertical standard" [1] in the green text or "[vertical standard]" [1] in the black text refer to the extension of the ETSI TS 103 645 / ETSI EN 303 645 [i.1]. Thereby, "[vertical standard]" is to be replaced by the corresponding vertical standard name such as "ETSI TS [number]" or "ETSI EN [number]". [number] is to be replaced by the real number when writing the present document. If necessary, the present document can be designated as "vertical assessment specification".

The present template can also be used for non-IoT devices such as the Home Gateway to extend ETSI TS 103 701 [2].

The current versions of ETSI TS 103 701 [2] and of the vertical standard [1] are to be referenced.

Text in green (such as this note) is guidance text produced by TC CYBER and can be removed before publication. Text in black is normative text to be copied by editors into the vertical domain specification. It is recommended to keep boilerplate text as provided in the present template. Placeholder text such as [AAA] is to be filled in by editors on integrating the text into the vertical domain specification. Optional normative text, that can be copied by editors if applicable, is denoted with << >>.

Each vertical domain is covered in one such document.

A recording of a CYBER online session to explain the use of the template is available [here](https://docbox.etsi.org/CYBER/CYBER/30-Inbox/Vertical%20IoT%20template%20use%20tutorial%20720p.mov). Note that it is not a formal training.

Reference

<Workitem>

Keywords

<keywords>

***ETSI***

650 Route des Lucioles

F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B

Association à but non lucratif enregistrée à la

Sous-Préfecture de Grasse (06) N° w061004871

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# Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee {ETSI Technical Committee|ETSI Project|<other>} <long techbody> (<short techbody>).

For TC CYBER this can be: "This Technical Specification (TS) has been produced by ETSI Technical Committee Cyber Security (CYBER)."

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](https://portal.etsi.org/Services/editHelp%21/Howtostart/ETSIDraftingRules.aspx) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Executive summary

To keep with the approach taken in ETSI TS 103 701 [2], no executive summary is provided, and this clause can be removed.

# Introduction

The introduction clause can refer to that of ETSI TS 103 701 [2], but can additionally describe the relationship to the vertical standard [1]. The following boilerplate text can be used based on the introduction in ETSI TS 103 701 [2]:

<< The [vertical standard] [1] specifies provisions for [vertical domain], which extends those of ETSI EN 303 645 [i.1] in a vertical specific manner.

The present document seeks to contribute to a harmonised approach to assessing the conformance of [vertical domain] products against the [vertical standard] [1] using the methodology of the assessment specification ETSI TS 103 701 [2] for ETSI EN 303 645 [i.1]. >>

# 1 Scope

The scope of the assessment specification for the vertical standard [1] is much related to the scope of ETSI TS 103 701 [2]. Both documents use the same methodology for a conformance assessment of a device, its relation to associated services and corresponding relevant processes against a standard. In case of ETSI TS 103 701 [2] the corresponding standard is ETSI EN 303 645 [i.1] and those devices are consumer IoT devices. In case of the assessment specification for the vertical standard [1] the corresponding standard is the vertical standard [1] and the involved devices are those in the vertical domain.

The main difference between both documents is, that the present document additionally covers new or modified test groups based on modifications on and/or additional provisions to those in the ETSI EN 303 645 [i.1], which are not covered by ETSI TS 103 701 [2].

Therefore, it is recommended to structure the scope of the present document similarly to that in ETSI TS 103 701 [2]. It is reminded that the scope clause is usually aligned with the "New Work Item (NWI)" description.

The following boilerplate text can be used to describe the document scope:

<< The present document specifies a conformance assessment methodology for [vertical domain] devices, their relation to associated services and corresponding relevant processes against the [vertical standard] [1], addressing the mandatory and recommended provisions as well as conditions and complements of the standard by defining test cases and assessment criteria for each provision. The methodology is fully adapted from ETSI TS 103 701 [2] and the present document additionally covers the modifications and additions on provisions made in the [vertical standard] [1].

The present document intends to support suppliers or implementers of [vertical domain] products in first-party assessment (self-assessment), user organizations in second party assessment, independent testing organizations in third party assessment and certification and conformance declaration scheme owners in operating harmonized schemes. Defining a certification or conformance declaration scheme is out of scope of the present document. >>

If the vertical standard [1] addresses a baseline security level (as in ETSI EN 303 645 [i.1]), the following text can be used similarly to those in the scope of ETSI TS 103 701 [2] to cover the security level:

<< The present document intends to contribute to the protection of [vertical domain] products against the most common cybersecurity threats. Multi-medium or highly targeted/sophisticated attacks and thus the invasive analysis of hard- and software modules is out of scope of the present document. The Test Scenarios (TSOs) are targeting basic effort regarding test depth and test circumference in accordance with the [vertical standard] [1] which addresses a baseline security level. >>

If the heterogeneity of the vertical domain requires a generic vertical standard and assessment specification, this can be explained by the following boilerplate text, as used in ETSI TS 103 701 [2] in a similar way:

<< Due to the heterogeneity of [vertical domain] devices, the [vertical standard] [1] and therefore the associated test groups in the present document are formulated in a generic manner. Thus, the present document does not describe specific tools or detailed step-by-step instructions. The test cases are intended to be performed by competent bodies that have the expertise to derive a suitable test plan. >>

# 2 References

## 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

All normative references should be publicly available. A normative reference to the vertical standard with an appropriate version is to be the first normative reference, since e.g. provisions are required normatively in the present document. It is to be ensured that the referenced version number of the vertical standard is up to date.

[1] Vertical standard, e.g. ETSI TS xxx xxx (Vn.n.n): "Title".

A normative reference to ETSI TS 103 701 with an appropriate version is to be the second normative reference, since the methodology is required normatively in the present document. It is to be ensured that the referenced version number of the ETSI TS 103 701 is up to date.

[2] ETSI TS 103 701 (Vn.n.n): "Title".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

ETSI TS 103 645 / ETSI EN 303 645 can be an informative reference. It is to be ensured that the referenced version number of the ETSI TS 103 645 / ETSI EN 303 645 is up to date.

[i.1] ETSI TS 103 645 (Vn.n.n): "Ttitle"… or ETSI EN 303 645 (Vn.n.n): "Title".

If ETSI EN 303 645 is referenced as [i.1], then all "ETSI TS 103 645 / ETSI EN 303 645 [i.1]" throughout the present document are to be replaced by "ETSI EN 303 645 [i.1]".
The same applies vice versa, i.e. if ETSI TS 103 645 is referenced as [i.1], then all "ETSI TS 103 645 / ETSI EN 303 645 [i.1]" throughout the present document are to be replaced by "ETSI TS 103 645 [i.1]".

# 3 Definition of terms, symbols and abbreviations

## 3.1 Terms

Since the test groups in the present document may also use terms from the provisions in the vertical standard [1], the terms from the vertical standard [1] should also be imported here. It is recommended to carefully consider the definitions provided by the vertical standard [1] and to give them preference, when possible, to minimise overlapping of terms and maximise reusability across verticals. In the event that no terms are defined in the present clause, replace the following text by "Void".

For the purposes of the present document, the terms given in the [vertical standard] [1] << , ... [further references if needed] >> and the following apply:

Term format**<term>:** <definition of term>

## 3.2 Symbols

Since the test groups in the present document may also use symbols from the provisions in the vertical standard [1], the symbols from the vertical standard [1] should also be imported here. In the event that no symbols are defined in the present clause, replace the following text by "Void".

For the purposes of the present document, the symbols given in the [vertical standard] [1] << , ... [further references if needed] >> and the following apply:

Symbol format<symbol> <Definition of symbol>

## 3.3 Abbreviations

Since the present document may also use abbreviations from the vertical standard [1], the abbreviations from the vertical standard [1] should also be imported here. It is recommended to carefully consider the abbreviations provided by the vertical standard [1] and to ensure that there is no overlapping of abbreviations with different meanings. In the event that no abbreviations are defined in the present clause, replace the following text by "Void".

For the purposes of the present document, the abbreviations given in the [vertical standard] [1], ETSI TS 103 701 [2] << , ... [further references if needed] >> and the following apply:

<ABBREVIATION> <Definition of abbreviation>

# 4 Conformance assessment methodology

According to ETSI TS 103 701 [2], clause 4 describes the structure of the document and methodology aspects. Since the methodology is fully adapted from ETSI TS 103 701 [2], the present document should use references to ETSI TS 103 701 [2] for methodology aspects.

## 4.1 Overview and document structure

### 4.1.0 General overview of the document

The structure of clause 4 should be described in the present clause. The structure of ETSI TS 103 701 [2] should be adapted, so the following boilerplate text can be used:

<< Clause 4.2 describes the relevant roles and objects for the conformance assessment procedure.

Clause 4.3 describes the assessment procedure.

Clause 4.4 describes how to declare the conformity of the [vertical domain] device to the provisions of the [vertical standard] in the Implementation Conformance Statement (ICS).

Clause 4.5 describes how to declare the corresponding security measures in the Implementation eXtra Information for Testing (IXIT) using IXIT pro forma.

Clause 4.6 describes the details for how to assign verdicts for test cases, test groups and finally, how to assign an overall verdict.

Clause 4.7 describes how to use external evidences instead of performing test groups to determine the conformance to a provision.

Clause 4.8 highlights different aspects that assessment schemes typically address in addition of the content provided in the present document. >>

The structure of a test scenario (TSO), test group and test case is described in the editor notes in clause 5 in more detail. For the reader of the present document, the following boilerplate text provides a short description to understand the structure used in clause 5:

<< Clause 5 contains the TSOs for [vertical domain], where each TSO addresses a set of provisions from the [vertical standard] and is composed of a set of test groups that describe the assessment for a single provision. Each test group is composed of a description of its objective and a set of test cases, where each test case describes how to assess a specific aspect of the corresponding provision. The number of the test case is appended to the test group number (e.g. Test case 5.1-3-2 for the second test case in Test group 5.1-3). Typically, the test cases distinguish two aspects:

* Conceptual: Assessing conformity of the IXIT against the requirements of the provision (conformity of design); and
* Functional: Assessing conformity of the DUT functionality, their relation to associated services or development/management processes against the requirements of the provision (conformity of implementation).

Each test case is composed of a description of its purpose, a set of indivisible test units and criteria for generating a test case verdict. The TSOs and test groups mirror the structure and naming of the provisions. >>

Figure 1 illustrates the relation between the [vertical standard] [1] and the present document with respect to a conformance assessment process and the relation to ETSI EN 303 645 [i.1] and ETSI TS 103 701 [2]. The [vertical standard] [1] contains provisions concerning cyber security for [vertical domain].

NOTE: Terms, examples, notes, definitions and explanations from the [vertical standard] [1] are also valid and therefore not redundantly specified in the present document.

The present document is the basis for conformance assessment against the [vertical standard] [1] and defines the IXIT pro forma. ICS and IXIT are provided by the SO based on the ICS and IXIT pro forma to the TL. The TL uses these documents to derive a test plan.



**Vertical Standard Name**

**Technical Specification "Cyber Security for Consumer IoT: Requirements for [vertical domain]”**

**Technical Specification "Conformance Assessment of Requirements for [vertical domain]”**

**Vertical Test Spec. Name**

Figure 1: Relations of the present document with respect to a conformance assessment process

The text boxes on the top left in Figure 1 are editable, which enables an easy adaption for the purposes of the present document.

NOTE 1: The blue boxes "Vertical Standard name" and "Vertical Test Spec. name" on the left can be edited by replacing the boilerplate text with the name of the vertical standard (first blue box) and the name of the present document (second blue box). Both names are to be formatted using the font Arial in 10pt bold, font colour white and text-align center.

NOTE 2: The light gray boxes below those two blue boxes can be edited by replacing the boilerplate text with the title of both documents. They are to be formatted using the font Arial in 9pt bold, font colour gray and text-align left.

### 4.1.1 Handling of test groups

Each provision in ETSI TS 103 645 / ETSI EN 303 645 [i.1] corresponds to a test group in ETSI TS 103 701 [2]. The [vertical standard] [1] contains modified and/or added provisions based on ETSI TS 103 645 / ETSI EN 303 645 [i.1], which correspond respectively to a test group in the present document.

Some modifications in the [vertical standard] [1] do not imply a replacement of the original provision from ETSI TS 103 645 / ETSI EN 303 645 [i.1] so that the corresponding test group from ETSI TS 103 701 [2] is still applicable. The present document lists the corresponding test groups that are applicable for each provision of the [vertical standard] [1] in clause B.2. Clause B.2 contains all provisions of the ICS.

The vertical standard [1] is based on the template for TS 103 645 / EN 303 645 verticals a.k.a. template for x03 645 verticals (see [Template for Consumer IoT Derivative work](https://portal.etsi.org/Portals/0/TBpages/CYBER/Template-for-x03645-Verticals.docx)), which describes seven operations to modify existing provisions or define new provisions: **Refinement**, **Extension**, **Substitution**, **Addition**, **Promotion**, **Exclusion**, **Information** (see clause 4.2 in the [Template for Consumer IoT Derivative work](https://portal.etsi.org/Portals/0/TBpages/CYBER/Template-for-x03645-Verticals.docx) for detailed operation descriptions).

Not all of those operations require a new test group to be defined in the present document, since not all operations replace a provision in ETSI TS 103 645 / ETSI EN 303 645 [i.1] or add a new one. Therefore, the corresponding test group from ETSI TS 103 701 [2] is still applicable as such. In this case test groups from ETSI TS 103 701 [2] are to be referred to and not to be redesigned or copied in the present document. The test group from ETSI TS 103 701 [2] is to be referenced in table B.2 for such provisions.

For operations replacing an original provision from ETSI TS 103 645 / ETSI EN 303 645 [i.1] or new provisions not covered in ETSI TS 103 645 / ETSI EN 303 645 [i.1], a corresponding test group shall be defined in the present document. Those are the following operations:

* Extension: For the extended provision a new test group is to be defined in clause 5 of the present document following the "General structure of test scenarios" guide at the beginning of clause 5.
* Substitution: For the substituted provision a new test group is to be defined in clause 5 of the present document following the "General structure of test scenarios" guide at the beginning of clause 5.
* Addition: For the added provision a new test group is to be defined in clause 6 of the present document following the "General structure of test scenarios" guide at the beginning of clause 5.

For a **Promotion** there is no need for a new test group in the present document, since the wording of the provision remains as in the original provision, but the promoted modal verb is replaced by the new modal verb according to the vertical template. The methodology in ETSI TS 103 701 [2] handles the different types of modal verbs ("shall", "should") by using the Implementation Conformance Statement (ICS), where a Supplier Organization (SO) can claim provisions according to their status ("mandatory", "recommendation"). The modal verbs do not affect the test groups themselves. Therefore, the test group from ETSI TS 103 701 [2] is applicable for a promoted provision and is to be referenced in table B.2.

For an **Exclusion** there is also no need for a new test group in the present document, since the provision is not applicable in the vertical domain. In this case the provision shall be listed in table B.2, but no test group is to be referenced.

An **Information** is a special case of operation. Usually, informative text added to a provision does not have impact on the test group of the provision. Hence, there is no need for a new test group (see case "Y" in matching table below) in the present document and the corresponding test group from ETSI TS 103 701 [2] is still applicable, which is to be referenced in table B.2. But there can also be reasons for an author of the present document to add or modify existing informational text in a corresponding test group in ETSI TS 103 701 [2] due to an Information in the vertical standard [1]. In this case, a new test group is to be defined (see case "N + NT" in matching table below) in clause 5 of the present document following the "General structure of test scenarios" guide at the beginning of clause 5. All the text from the test group in ETSI TS 103 701 [2] that is not addressed by the modification and/or extension of informational text is to be copied into the corresponding test group in the present document. The copied text from ETSI TS 103 701 [2] is to be made italic so that the new text referring to the modification and/or extension of informational text is directly visible as it is then non-italic.

For a **Refinement** also both options are possible: either there is no need for a new test group (see case "Y" in matching table below) or a new test group is to be defined in clause 5 of the present document following the "General structure of test scenarios" guide at the beginning of clause 5 (see case "N+NT"). In the former case "Y", the corresponding test group from ETSI TS 103 701 [2] is still applicable, which is to be referenced in table B.2. In the case "N+NT", all test units and verdicts from the test group in ETSI TS 103 701 [2] that do not address the refined parts of the provision in the vertical standard [1] are to be copied into the corresponding test group in the present document. Along with this, new test units and verdicts that do address refined parts of the provision in the vertical standard [1] are to be written in the new test group in the present document. The copied text from ETSI TS 103 701 [2] is to be made italic so that the new text referring to the refinement is directly visible as the refined text is then non-italic.

The following matching table summarizes the impact of the operations used in the vertical standard [1] on the corresponding test groups in the present document:

| **Type of operationin the vertical standard [1]** | **Validity of original test groupin ETSI TS 103 701 [2]** |  |
| --- | --- | --- |
| Refinement |  Y or (N + NT) |
| Extension | Y + NT |
| Substitution | N + NT |
| Addition | NT |  |
| Promotion | Y |  |
| Exclusion | N |  |
| Information | Y or (N + NT) |  |
| NOTE: Y := Yes. N := No. NT := New Test group is to be defined in the present document. |

New test groups in the present document can require modified or new IXIT entries. For the handling of IXIT entries please refer to clause 4.1.2.

### 4.1.2 Handling of IXIT entries

IXIT information is used in ETSI TS 103 701 [2] inside test groups for the assessment. Efforts should be made to re-use existing IXIT information where possible. However, for new test groups in the present document, further information may be required to perform a test group. Therefore, the present clause describes how to modify or to extend the existing IXIT.

Since IXIT entries can be referenced by various test groups in the present document and in ETSI TS 103 701 [2], modifications on existing IXIT entries could have a serious impact. Table B.1 describes for each provision which IXIT entries are required to perform the corresponding test group. Therefore, modifications on existing IXIT entries can only be realised by defining a new IXIT entry (duplicating the content of the entry in ETSI TS 103 701 [2] and incorporating the desired modifications) and changing the reference for the specific test group inside table B.1 into the new IXIT entry together with the use of the new IXIT entry within the test groups in the present document where needed. Adding new IXIT entries can be realised by creating new entries and adding a reference for the corresponding test group inside table B.1.

It is recommended that the new IXITs are used as concisely as possible and only in those places where something has been changed in a provision.

These new IXITs are intended to be created to adequately fill table B.1. It is possible that some of the IXITs defined in ETSI TS 103 701 [2] also apply in the present document. These IXIT entries are to be referenced here.

The following three bullet points explain how IXIT entries are handled in the present document based on the modified or added provisions in the [vertical standard] [1]:

* An existing IXIT entry (as defined in ETSI TS 103 701 [2]) is modified and added to an existing IXIT table or list from ETSI TS 103 701 [2].

EXAMPLE 1 shows how this modified IXIT entry may appear in clause A.3 of the present document.

EXAMPLE 1: IXIT 1-AuthMech: Authentication Mechanisms
The following IXIT entry incorporates modifications of an existing IXIT entry and is added to the original IXIT table IXIT 1-AuthMech from ETSI TS 103 701 [2]:

* Authentication Factor (added): [text from ETSI TS 103 701 [2] with modifications]
* A new IXIT entry is created and added toan existing table or list from ETSI TS 103 701 [2].

EXAMPLE 2: IXIT 1-AuthMech: Authentication Mechanisms
The following IXIT entry is new and is added to the original IXIT table IXIT 1-AuthMech from ETSI TS 103 701 [2]:

* Computing Constraints (added): [new text]

NOTE: In both cases (see the aforementioned two bullet points), modifying and adding an existing IXIT entry to an existing IXIT table or list from ETSI TS 103 701 [2] or adding a new IXIT entry to an existing IXIT table or list from ETSI TS 103 701 [2], the corresponding IXIT table or list from ETSI TS 103 701 [2] is still valid. More precisely, this means that there is no IXIT entry and/or IXIT table or list from ETSI TS 103 701 [2] that is replaced as in both cases the new IXIT entries are simply added. For test groups and table B.1 in the present document referring to added IXIT entries, all references are adapted accordingly to cover the new entries.

* A new table or list is added including the corresponding IXIT entries.

EXAMPLE 3: IXIT 30-DataLog (added): Data Logging Mechanisms:

* ID: [new text]
* Description: [new text]
* Log4j Exploitation Prevention: [new text]
* …

NOTE: Since EXAMPLE 3 contains only new IXIT entries, it is not necessary to add the designation (added) as in EXAMPLE 1 or EXAMPLE 2 for every entry.

### 4.1.3 Naming conventions

The test group names within the TSOs in the present document are aligned with the provision names in the [vertical standard] [1].

New IXIT entries defined in the present document are labelled with "(added)".

## 4.2 Roles and objects

### 4.2.1 Device Under Test (DUT)

Clause 4.2.1 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2].

The text in clause 4.2.1 of ETSI TS 103 701 [2] applies in the present document.

### 4.2.2 Supplier Organization (SO)

Clause 4.2.2 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.

The text in clause 4.2.2 of ETSI TS 103 701 [2] applies in the present document except for the fact that the SO requests a specific DUT to be tested against the provisions of the [vertical standard] [1].

### 4.2.3 Test Laboratory (TL)

Clause 4.2.3 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.

The text in clause 4.2.3 of ETSI TS 103 701 [2] applies in the present document except for the fact that the reference to ETSI TS 103 645 / ETSI EN 303 645 [i.1] is to be replaced by the reference to the [vertical standard] [1].

## 4.3 Assessment procedure

Clause 4.3 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.The text in clause 4.3 of ETSI TS 103 701 [2] applies in the present document except for the fact that the reference to ETSI TS 103 645 / ETSI EN 303 645 [i.1] is replaced by the reference to the [vertical standard] [1].

In addition, the ICS form is in Annex [X] of the [vertical standard] [1] and the matching table listing required IXIT entries for each provision (see table B.1) is in clause B.1 of the present document.

NOTE: In the course of still ongoing error corrections, the ICS of the EN 303 645 V2.1.1 is currently not defined in the TS 103 645 / EN 303 645 [i.1], but in the TS 103 701 [2].

## 4.4 Implementation Conformance Statement (ICS)

Clause 4.4 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.

The text in clause 4.4 of ETSI TS 103 701 [2] applies in the present document except for the fact that the reference to ETSI TS 103 645 / ETSI EN 303 645 [i.1] is replaced by the reference to the [vertical standard] [1].

In addition, the ICS form is in Annex [X] of the [vertical standard] [1].

## 4.5 Implementation eXtra Information for Testing (IXIT)

Clause 4.5 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.

The text in clause 4.5 of ETSI TS 103 701 [2] applies in the present document.

The matching table listing required IXIT entries for each provision (see table B.1) is in clause B.1 of the present document.

## 4.6 Assignment of verdicts

Clause 4.6 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in ETSI TS 103 701 [2].

The text in clause 4.6 of ETSI TS 103 701 [2] applies in the present document.

## 4.7 Usage of external evidence

Clause 4.7 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in TS 103 701 [2].

The text in clause 4.7 of ETSI TS 103 701 [2] applies in the present document.

## 4.8 Assessment scheme amendments

Clause 4.8 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in ETSI TS 103 701 [2] and names the small changes due to the adaption to the vertical domain.

The text in clause 4.8 of ETSI TS 103 701 [2] applies in the present document except for the fact that the reference to ETSI TS 103 645 / ETSI EN 303 645 [i.1] is replaced by the reference to the [vertical standard] [1] and the reference to the ETSI TS 103 701 [2] is replaced by the present document, respectively.

# 5 Test groups for adapted cyber security and data protection provisions for [vertical domain]

**General structure of test scenarios:**
The present document is a template for creating verticals to the ETSI TS 103 701 [2], that may involve a modification of the existing TSOs from ETSI TS 103 701 [2]. To understand how TSOs are structured, a general structure of a TSO with its test groups is provided in the present clause to give better guidance to the author of the vertical.

An exemplary TSO is structured as follows. This structure is used in ETSI TS 103 701 [2].

For the sake of simplicity and clarity, the numbering is done with 1.1. The use of n.n. for numbering would be more generic on the one hand, but on the other hand would also lead to a more difficult readability.

1.1 TSO 1.1: name of chapter according to the standard

* one TSO for each chapter in the vertical standard [1] which contains provisions

1.1.1 Test group 1.1-1 (operation)

* a named set of related test cases
* one test group for each provision in the vertical standard [1] with concurrent numbering
* recommendation for the test group structure (after clause "Test group objective"):
* 1st test case: evaluation of the IXIT against the requirements of the provision (conformity of design)
* 2nd test case: functional evaluation of the implementation (conformity of the implementation)
* "(operation)" may be replaced by "(extended)", "(refined)", "(promoted)", or both "(promoted) (refined)", "(substituted)", "(added)", "(excluded)" or "(information)" or in case of several extensions "(extended)-a" etc.

1.1.1.0 Test group objective

* a prose description of the common objective to be achieved by the test purposes within a specific test group
* once per test group with numbering "n.n.n.0"

The test group addresses the provision 1.1-1.

Further information that specifies what is actually part of the assessment can be given here.

Further notes can be added here.

1.1.1.1 Test case [AAA] 1.1-1 (operation)-1 (type)

* more than one test case per test group are possible
* test cases close with a verdict
* subclause with ascending numbering (x.x-x-1, x.x-x-2, x.x-x-3, …)
* types may be "conceptual" or "functional" or both ("conceptual/functional")

In case of several extended provisions the designation is not trivial. For instance, test groups could be designated as "Test group [AAA] 5.1-1 (extended)-a", "Test group [AAA] 5.1-1 (extended)-b", … so that the corresponding test cases would then be "Test case [AAA] 5.1-1 (extended)-a-1 (conceptual)", "Test case [AAA] 5.1-1 (extended)-a-2 (functional)", "Test case [AAA] 5.1-1 (extended)-b-1 (conceptual)", "Test case [AAA] 5.1-1 (extended)-b-2 (functional)", etc.

**Test purpose**

A prose description of a well-defined objective of testing for this test case describing whether the test case is conceptual or functional. Grouping test units is possible using the reference numbers and describing the grouping in this clause.

EXAMPLE: The purpose of this test case is the conceptual assessment of mechanism xy. The test units a-c address the first aspect, while test units d-f address the second aspect.

**Test units**

* test units contain modal verbs (e.g. shall)
* test units are actions performed by the TL to assess the DUT and reach a verdict
* test units usually use the verbs "check" and "assess" to support indicating the test depth
* a reference to the IXIT pro forma is to be as specific as necessary (at least TableIdentifier of IXIT)
* test units can refer to other test units

a) Test units to assess the intended test action.

NOTE 1: Potentially additional notes, e.g. wherever an aspect is too prescriptive to be formulated as test unit, but it is worth mentioning to support the TL for answering the question how the assessment can be performed in order to motivate comparable assessments.

b) Test units to assess the additional test action.

NOTE 2: Potentially additional notes.

NOTE 3: The above shown number of test units with a) and b) is just an example as another example would be only a) or a), b) and c) or similar as visible in ETSI TS 103 701 [2].

**Assignment of verdict**

* once per test case
* describes how the findings from the test units above result in the final verdict of the test case
* criteria can be logical combined with "and"/"or" as it is necessary for the specific test case

The verdict PASS is assigned if:

* criterion 1 for passing the test case is fulfilled; and
* criterion 2 for passing the test case is fulfilled.

NOTE 4: To pass the test case, a different number of criteria is possible such as three instead of two criteria.

The verdict FAIL is assigned otherwise.

## 5.0 TSO 4: Reporting implementation

The vertical template provides a proposal for an extension of provision 4-1. For covering this extension the following test group can be used:

<<

### 5.0.1 Test group [AAA] 4-1 (extended)

#### 5.0.1.0 Test group objective

The present Test group [AAA] 4-1 (extended) has the same content as the Test group 4-1 in ETSI TS 103 701 [2]. The only difference is given by the fact that the present Test group [AAA] 4-1 (extended) addresses the provision 4-1 (extended) of the [vertical standard] [1] instead of the provision 4-1 of the ETSI TS 103 645 / ETSI EN 303 645 [i.1].

#### 5.0.1.1 Test case [AAA] 4-1 (extended)-1 (conceptual)

**Test purpose**

The purpose of this test case is the conceptual assessment of the justifications for recommendations that are considered to be not applicable for or not fulfilled by the DUT.

**Test units**

1. The TL **shall** check whether a justification is given in the ICS for each recommendation that is considered to be not applicable for or not fulfilled by the DUT.

**Assignment of verdict**

The verdict PASS is assigned if:

* a justification is given for every recommendation that is considered to be not applicable for the DUT; and
* a justification is given for every recommendation that is considered to be not fulfilled by the DUT.

The verdict FAIL is assigned otherwise. >>

## 5.1 TSO 5.1: No universal default passwords

Two options are possible:

<< In the present clause, new test groups are defined according to the description in clause 4.1.1 and clause 4.1.3 of the present document.>> "new test groups are" is to be replaced by "a new test group is" if there is only one new test group

or

<< No new test group is defined in the present clause and all the test groups from ETSI TS 103 701 [2] clause 5.1 are applicable. >>

The former option is only possible if there are provisions in the vertical standard [1] that are refinements, extensions, information or substitutions. Otherwise, the latter option is to be chosen.

If test groups from ETSI TS 103 701 [2] are modified in each clause 5.x, these are listed in the order they appear in ETSI TS 103 701 [2]. This way, the reader can quickly skim through the clause, even if there are gaps. If a test group is modified, it appears in the clause according to the rules defined in clauses 4.1.1 and 4.1.2.

## 5.2 TSO 5.2: Implement a means to manage reports of vulnerabilities

Refer to normative and guidance text provided in clause 5.1.

## 5.3 TSO 5.3: Keep software updated

Refer to normative and guidance text provided in clause 5.1.

## 5.4 TSO 5.4: Securely store sensitive security parameters

Refer to normative and guidance text provided in clause 5.1.

## 5.5 TSO 5.5: Communicate securely

Refer to normative and guidance text provided in clause 5.1.

## 5.6 TSO 5.6: Minimize exposed attack surfaces

Refer to normative and guidance text provided in clause 5.1.

## 5.7 TSO 5.7: Ensure software integrity

Refer to normative and guidance text provided in clause 5.1.

## 5.8 TSO 5.8: Ensure that personal data is secure

Refer to normative and guidance text provided in clause 5.1.

## 5.9 TSO 5.9: Make systems resilient to outages

Refer to normative and guidance text provided in clause 5.1.

## 5.10 TSO 5.10: Examine system telemetry data

Refer to normative and guidance text provided in clause 5.1.

## 5.11 TSO 5.11: Make it easy for users to delete user data

Refer to normative and guidance text provided in clause 5.1.

## 5.12 TSO 5.12: Make installation and maintenance of devices easy

Refer to normative and guidance text provided in clause 5.1.

## 5.13 TSO 5.13: Validate input data

Refer to normative and guidance text provided in clause 5.1.

## 5.14 TSO 6: Data protection for consumer IoT

Refer to normative and guidance text provided in clause 5.1.

# 6 Test Groups for additional cyber security and data protection provisions for [vertical domain]

In this clause, new test groups are defined that refer to the added provisions in the vertical standard [1].

In case there are no added provisions in the vertical standard [1], the following sentence can be used:

<< No additional test group is defined in the present clause. >>

In contrast to the vertical standard [1], where additional provisions are handled in clause 7, additional test groups are handled in clause 6 of the present document. The reason is that the test groups referring to data protection are included in clause 5 and the present document follows the structure of the ETSI TS 103 701 [2]. Consequently, clause 6 of the present document includes test groups that refer to provisions from clause 7 and from clause 8 of the vertical standard [1].

The following clauses 6.1, 6.2, … will only appear if there are added provisions in the vertical standard [1] so that new test groups are to be defined in the present document.

## 6.1 New topic #1

New test groups can be added according to the rules defined in clauses 4.1.1, 4.1.2 and according to the "General structure of TSOs" guide at the beginning of clause 5.

The title of clause 6.1 is to be aligned with the title of clause 7.1 in the vertical standard [1]. For example, if the title of clause 7.1 in the vertical standard [1] is "Log data", then the title of clause 6.1 in the present document is "TSO 7.1 Log data".

## 6.2 New topic #2

…

Annex A (normative):
[Vertical domain] pro formas for the SO

In a similar fashion as with ETSI TS 103 701 [2], Annex A.

# A.1 The right to copy

Insert boilerplate text from clause A.1 in ETSI TS 103 701 [2].

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the Identification of the DUT pro forma, ICS pro forma and IXIT pro forma in this annex so that they can be used for their intended purposes and may further publish the completed pro formas.

# A.2 Identification of the DUT pro forma for [vertical domain]

Clause A.2 of ETSI TS 103 701 [2] applies to the vertical domain. Therefore, the following sentence refers to the corresponding clause in ETSI TS 103 701 [2].

<< Clause A.2 in ETSI TS 103 701 [2], which specifies the DUT pro forma, also applies in the present document. >>

In this clause, it is also possible to add further information specific to the vertical domain.

# A.3 IXIT pro forma for [vertical domain]

The implementation of the eXtra Information for Testing (IXIT) pro forma in the present clause is to be aligned with the existing IXIT pro forma in ETSI TS 103 701 [2]. In addition, the IXIT pro forma for the [vertical domain] is to be adapted according to the modified TSOs and new test groups as depicted in clause 5 and clause 6.

To give the author of the vertical guidance on how to create IXIT entries, the structure of an IXIT pro forma is explained in the following.

General information on IXIT pro formas:

* IXIT entries can be structured as table or list of independent items
* Test groups in the whole document can refer to existing entries in the IXIT pro formas from ETSI TS 103 701 [2] or can refer to new entries of the present document (referring is done using table B.1)
* Where applicable, already existing IXIT pro formas should be reused and, if necessary, complemented by the vertical domain additionally required entries

Structuring IXIT pro formas:

* The order of the IXIT pro formas is oriented on the first use in the document using a sequential numbering
* All elements inside an IXIT are on the same level (no sub-IXIT)

Designations within an IXIT pro forma:

* The name of the IXIT shall be short and precise
* The descriptors inside IXIT shall be short and precise
* The TableIdentifier shall be a short abbreviation of the IXIT name for referencing
* Added IXIT entries that are new or based on modification of an existing IXIT entry and/or new IXIT tables/lists are to be created as described in clause 4.1.2 of the present document

**IXIT 1-TableIdentifier: Name of IXIT text block 1**

Optional: Further information regarding the content of the IXIT, e.g. "The completed IXIT lists xxx. The pro forma contains the following entries and is typically filled out in form of a table" or "The completed IXIT lists xxx. The pro forma contains the following entries, which are independent from each other, and is typically filled out in form of a list".

If an IXIT entry based on modifications of an existing IXIT entry from ETSI TS 103 701 [2] is added, the predefined sentence from example 1 in clause 4.1.2 is to be used: "The following IXIT entry incorporates modifications of an existing IXIT entry and is added to the original IXIT table IXIT 1-AuthMech from ETSI TS 103 701 [2]: …".

If a new IXIT entry is added, the predefined sentence from example 2 in clause 4.1.2 is to be used: "The following IXIT entry is new and is added to the original IXIT table IXIT 1-AuthMech from ETSI TS 103 701 [2]: …".

NOTE 1: As shown in example 1 and example 2 in clause 4.1.2: If the author of the present document adds an IXIT entry based on modifications of an existing IXIT entry from ETSI TS 103 701 [2] and/or the author adds a new IXIT entry in an existing IXIT table or list from ETSI TS 103 701 [2], then the author has to use the same TableIdentifier as in the corresponding IXIT table or list from ETSI TS 103 701 [2]. In addition, the descriptor element of the new IXIT entry based on modifications of an existing IXIT entry from ETSI TS 103 701 [2] is to be the same as the corresponding descriptor element from ETSI TS 103 701 [2]. However, the descriptor element of a new IXIT entry - regardless of whether the new IXIT entry is based on a modification of an existing IXIT entry from TS 103 701 [2] or not - is always labelled with "(added)" as described in clause 4.1.3 and as shown in the examples of clause 4.1.2 of the present document.

* **Descriptor main element IXIT text block 1:** A precise definition/description of the main element of text block 1. (primary key – e.g. being referenced by another IXIT)

Notes and examples can be added here.

* **Descriptor element 2:** A precise definition/description of the content of element 2.
* …
* **Optional foreign element:** for a reference to another IXIT, e.g. "Reference to update mechanisms in IXIT 7‑UpdMech that are used for updating the software component. An empty list of update mechanisms indicates the absence of updates for the software component and in this case a justification is provided."

In the present clause, modified IXIT entries, new IXIT entries and/or new IXIT tables or lists are specified based on the modified and added provisions in the [vertical standard] [1] according to clause 4.1.2 of the present document.

The IXIT pro forma of the present clause shall only list the modified/new IXIT entries and/or new IXIT tables or lists.

 […]

Annex B (informative):
Matching tables for [vertical domain]

# B.1 Overview of required IXIT entries per provision for [vertical domain]

Serves the same purpose as ETSI TS 103 701 [2] Annex B. New IXIT entries may appear due to the changes given in the vertical standard [1]. The associated new or modified provisions are to be considered in this table, i.e. all provisions that have been refined, extended, substituted or added can use new IXIT entries or refer to those entries of ETSI TS 103 701 [2] if applicable. The following boilerplate text can be used to explain the table:

As described in the assessment procedure in clause 4.3 of ETSI TS 103 701 [2], table B.1 describes for each provision in [vertical standard] [1] which IXIT entries are required to perform the corresponding test group.

An exemplary table with some entries is shown below.

Table B.1: Required IXIT entries per provision

|  |  |
| --- | --- |
| Provision | Required IXIT entries |
| [AAA] 4-1 (extended) | (none) |
| [AAA] 5.1-1 (refined) | **IXIT 1-AuthMech:** ID, Authentication Factor (added), Description, Password Generation Mechanism |
| … | … |
| [AAA] 5.3-1 (substituted) | **IXIT 6-SoftComp:** ID, Description, Update Mechanism (added)**IXIT 7-UpdMech:** ID, Description, Security Guarantees, Cryptographic Details |
| [AAA] 5.3-2 (extended) | **IXIT 6-SoftComp:** ID, Description, Update Mechanism, Interfaces (added)**IXIT 7-UpdMech:** ID, Description, Security Guarantees, Cryptographic Details, Initiation and Interaction |
| … | … |
| [AAA] 7.1-1 (added) | **IXIT 30-DataLog (added):** ID, Description, Log4j Exploitation Prevention |
| **…** | **…** |

NOTE: It is not necessary that the IXIT entries in added tables or lists are declared as (added). Therefore, the chosen designation in the last filled row of table B.1 actually stands for "**IXIT 30-DataLog (added):** ID (added), Description (added), Log4j Exploitation Prevention (added)". To avoid redundancy, it is recommended to choose the designation as depicted in table B.1.

# B.2 Overview of required test groups per provision for [vertical domain]

Table B.2: Required test groups per provision

|  |  |
| --- | --- |
| Provisions from the vertical standard [1] | Test groups for a conformance assessment of the corresponding provision |
| … | … |
| Provision [AAA] 5.1-5 (refined) | Test group 5.1-5 from ETSI TS 103 701 [2] orTest group [AAA] 5.1-5 (refined) |
| Provision 5.2-1 | Test group 5.2-1 from ETSI TS 103 701 [2] |
| Provision [AAA] 5.2-1 (extended) | Test group [AAA] 5.2-1 (extended) |
| Provision [AAA] 5.2-2 (promoted) | Test group 5.2-2 from ETSI TS 103 701 [2] |
| Provision [AAA] 5.2-3 (excluded) | No test group |
| Provision [AAA] 5.3-1 (substituted) | Test group [AAA] 5.3-1 (substituted) |
| … | … |
| Provision [AAA] 5.3-3 (information) | Test group 5.3-3 from ETSI TS 103 701 [2] orTest group [AAA] 5.3-3 (information) |
| … | … |
| Provision [AAA] 7.1-1 (added) | Test group [AAA] 7.1-1 (added) |

NOTE: If a provision of the vertical standard [1] is promoted, the original test group from ETSI TS 103 701 [2] which refers to the original provision from ETSI TS 103 645 / ETSI EN 303 645 [i.1] that uses the modal verb "should", is still valid. The reason is that the test group does not change when the modal verb is changed since the objective of the test group remains and the change affects only dealing with the ICS (see also clause 4.1.1).
The same could apply for a refined or an information provision as explained in clause 4.1.1 of the present document.

Annex C (informative):
Sample IXIT for [vertical domain]

This annex is to be aligned with Annex C in ETSI TS 103 701 [2].

The present clause contains samples for every added IXIT entry in the present document. The author of the present document is not obliged to find a continuous sample DUT that is to be used for every sample IXIT entry as it has been done with the fictional IP camera in ETSI TS 103 701 [2]. It is also sufficient if sample IXIT entries are presented with different examples, i.e. different sample DUT could be used, too. However, if possible, it is recommended to use the same sample DUT in all sample IXIT entries of the present document.

The sample IXIT tables and lists in the present document do not list the sample IXIT tables and lists from clause C.3 in ETSI TS 103 701 [2] which are still valid. However, the sample IXIT tables and lists in the present document refer to new and/or modified IXIT entries that are not covered by the sample IXIT tables and lists from ETSI TS 103 701 [2].

The following boilerplate text can be used as introduction of the clause:

The sample IXIT in ETSI TS 103 701 [2] provides examples for completing the IXIT pro formas and demonstrates the scope and level of detail of the IXIT entries of ETSI TS 103 701 [2].

For the case the present document introduces additional IXIT entries, the following boilerplate text can be used followed by the sample IXIT entries:

<< In the present clause, sample IXIT entries are provided for all new and/or modified IXIT entries as defined in the present document. >>

For the case the present document does not introduce any additional IXIT entries and the sample IXIT tables and lists from clause C.3 in ETSI TS 103 701 [2] are sufficient, the following boilerplate text can be used, which refers to the sample IXIT in ETSI TS 103 701 [2] only:

<< The present document does not introduce any new IXIT entries. For examples of completing the IXIT entries, please refer to Annex C in ETSI TS 103 701 [2]. >>.

For the case the present document does not introduce any additional IXIT entries, but new sample IXIT tables and lists are defined as they could be more related to the vertical, the following boilerplate text can be used:

<< The present document does not introduce any new IXIT entries. However, in the present clause, sample IXIT entries are provided as they can be even more helpful to demonstrate the vertical specific scope and level of detail on completing the IXIT than the already existing sample IXIT entries of Annex C in ETSI TS 103 701 [2]. >>

The last of the three aforementioned cases is not recommended as redundancy is to be avoided and the present template rather aims to add sample IXITs only to new or changed IXIT entries. However, to give authors the freedom, in case the sample IXITs from ETSI TS 103 701 [2] really do not fit, the last of the above three cases could be used.

Annex D (informative):
Additional assessment information for [vertical domain]

This annex is to be aligned with Annex D in ETSI TS 103 701 [2]. Thus, the present clause describes:

* the threat model;
* the baseline attacker model; and
* the model for a "user with limited technical knowledge"

for the [vertical domain].

# D.1 Threat model

<< Clause D.1 of ETSI TS 103 701 [2] applies also in the present document. >>

Additional content specific to the vertical domain of the present document can be added.

# D.2 Baseline attacker model

Clause D.2 of ETSI TS 103 701 [2] can be aligned to the vertical domain of the present document. If it is not aligned and applicable to the vertical domain as it is given in ETSI TS 103 701, a similar sentence is to be stated as for clause D.1.

<< Clause D.2 of ETSI TS 103 701 [2] applies also in the present document. >>

# D.3 Model for a "user with limited technical knowledge"

The two sentences stated in clause D.2 apply to clause D.3 as well.

<< Clause D.2 of ETSI TS 103 701 [2] applies also in the present document. >>

# History

|  |
| --- |
| **Document history** |
| <Version> | <Date> | <Milestone> |
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