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Part 1: Conformance Tests

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Methods for Testing and Specification (MTS).

The present document is part 1 of a multi-part deliverable covering the Constrained Application Protocol (CoAP), as identified below:

Part 1: "Conformance Tests";

Part 2: "Security Tests";

Part 3: "Performance Tests".

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 (Verbal forms for the expression of provisions).

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Introduction

While the Internet of Things (IoT) is on the rise, the quality assurance of interconnected systems becomes an ever-increasing challenge. Within the last years, many different IoT protocols came to the fore.

The present document provides a test specification, i.e. an overall test suite structure and catalogue of test purposes for the Constrained Application Protocol (CoAP). It will be a reference base for both client-side test campaigns and server-side test campaigns addressing the conformance issues.

In the present document the conformance testing is presented. It provides a basis for interoperability testing and performance testing. The latter is presented in ETSI TS 103 536-3 [i.3].

1 Scope

The present document provides a test specification, i.e. an overall test suite structure and catalogue of test purposes for the Constrained Application Protocol (CoAP). It will be a reference base for both client-side test campaigns and server-side test campaigns addressing the conformance issues.

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.

[1] IETF RFC 7252: "The Constrained Application Protocol (CoAP)".

[2] ETSI ES 203 119-4: "Methods for Testing and Specification (MTS); The Test Description Language (TDL); Part 4: Structured Test Objective Specification (Extension)".

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.

[i.1] ISO/IEC 9646-1: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 1: General concepts".

[i.2] ETSI ES 202 951: "Methods for Testing and Specification (MTS); Model-Based Testing (MBT); Requirements for Modelling Notations".

[i.3] ETSI TS 103 596-3: "Methods for Testing and Specification (MTS); Test Specification for CoAP; Part 3: Performance Tests".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the following terms apply:

conformance: extent to which an implementation of a standard satisfies the requirements expressed in that standard

conformance testing: process to verify to what extent the IUT conforms to the standard

content format: encoded format for converting a specific type of data to displayable information

NOTE: See IETF RFC 7252 [1].

implementation under test: implementation of one or more Open Systems Interconnection (OSI) protocols in an adjacent user/provider relationship, being the part of a real open system, which is to be studied by testing

NOTE: See ISO/IEC 9646-1 [i.1].

proxy: server that acts as an intermediary for requests from clients seeking resources from other servers

system under test: real open system in which the implementation under test resides

NOTE: See ETSI ES 202 951 [i.2].

test purpose: non-formal high-level description of a test, mainly using text

test suite structure: document defining (hierarchical) grouping of test cases according to some rules

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CoAP	Constrained Application Protocol
ETAG	Entity Tag
HTTP	Hypertext Transfer Protocol
IUT	Implementation Under Test
RST	Reset
SD	Service Discover
SUT	System Under Test
TDL	Test Description Language
TDL-TO	Test Description Language - Test Objectives
TP	Test Purpose
TSS	Test Suite Structure
URI	Uniform Resource Identifier

4 Test Suite Structure

4.0 Introduction

The following two clauses describe the TSS. In the first one a CoAP server as SUT is considered and in the latter, a CoAP client as SUT is considered.

As the base CoAP IETF RFC 7252 [1] contain no explicit requirements for testing, neither provide concrete conformance statements, the TPs were generated because of analysis of the mentioned RFC. The structure itself is partly derived from the CoAP spec [1] but changed due to overlapping functions that cannot be tested separately.

4.1 Server as SUT

1) Message format:
   a) Support all defined method codes and understand regular and illegal or corrupted data along with them
2) Protocol features:
   a) Separate/Piggybacked
   b) Options
   c) Content format
   d) Error handling
3) Optional:
   a) Proxying

4.2 Client as SUT

1) Message format:
   a) Support all defined method codes and understand regular and illegal or corrupted data along with them
2) Protocol features:
   a) Separate/Piggybacked
   b) Options
   c) Content format
   d) Error handling

4.3 TP naming convention

TPs are numbered, starting at 001, within each main scope. The main scopes are organized according to the TSS. Some TPs may not have a second level scope.

Table 1: TP identifier naming convention scheme

Identifier: **TP_<protocol>_<iut>_<scope>_<2nd_lvl_scope>*_<field>_<value>_<number>**				
TP	=	Test Purpose	Fixed to TP	
<protocol>	=	Protocol name	Fixed to CoAP	
<iut>	=	Type of IUT	Client or Server	
<scope>	=	Main scope	Scope of the protocol (feature)	
			MessageFormat	Mandatory Message Format
			Separate	Separate Messages
			Options	CoAP Messages with Options
			Payload	CoAP Message with Payload
			Proxy	Communication with a proxy
			ServiceDiscovery	CoAP Message concerning SD
<2nd_lvl_scope	=	Second level scope	Header	CoAP Header fields
>*			Response	CoAP response
<field>*	=	Field of the scope	Field of the given scope to be tested	
<value>*	=	Value of the field	Value of the given field to be tested	
<number>	=	Sequential number	Optional, from 001 to 999	
*optional				

4.4 TP structure

Each TP has been written in TDL-TO and thus in a structured manner which is consistent with all other TPs. The intention of this is to make the TPs more formal. In addition, a more readable format is provided by generating tables out of the TDL-TO format. The defined structure, that has been used, is illustrated in table 2. This table should be read in conjunction with any TP, i.e. please use a TP as an example to facilitate the full comprehension of table 2. All structures are defined formally in the TDL specification ETSI ES 203 119-4 [2].

Table 2: Structure of a single TP

TP part	Text	Example
Header	<Identifier> <Test objective> <Reference> <PICS reference>	*see table 1* *"The IUT is responding on a correctly set …"* *IETF RFC 7252* *PIC_Server*
Initial condition (optional)	Free text description of the condition that the IUT has reached before the test purpose applies.	*… the IUT is in the initial state …*
Start point	Describes the full logic of the test purpose. Includes trigger and expected behaviour of the IUT.	*Expected behaviour* *ensure that { … }*
Trigger	One or more actions that trigger an expected response of the IUT. Mostly a set of different messages the IUT receives.	*when {* *the IUT entity receives a request message containing version indicating value 1 …* *}*
Expected behaviour	Describes the response that the IUT sends after receiving a certain (set of) messages. This response describes the pass criteria	*then {* *the IUT entity sends a response message containing version indicating value 1 …* *}*

5 Test Purposes for CoAP Server

TP Id	TP_CoAP_MessageFormat_Header_Version_001
Test Objective	The IUT is responding on a correctly set version number.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
}
then {
the IUT sends a response message containing
version indicating value 1,
msg_type indicating value 3, //Reset
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
or the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Version_002
Test Objective	The IUT silently ignores an incorrectly set version number.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 3, //reserved
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_CON_001
Test Objective	The IUT is acknowledging on a Confirmable message correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1;
}
then {
the IUT sends a response message containing
version indicating value 1,
msg_type indicating value 2, //Acknowledge, from IETF RFC 7252 section 4.2 (a)
token_length indicating value 0,
code indicating value 2.05, //Success (Content)
msg_id corresponding to MSG_ID1;
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_CON_002
Test Objective	The IUT is rejecting a Confirmable message that is carrying a response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT receives a request message containing
  version indicating value 1,
  msg_type indicating value 0, //Confirmable
  token_length indicating value 0,
  code indicating value 2.03, //Valid, response code
  msg_id corresponding to MSG_ID1;
  }
  then {
  the IUT sends a response message containing
  version indicating value 1,
  msg_type indicating value 3, //Reset
  token_length indicating value 0,
  code indicating value 0.00, //Empty Message
  msg_id corresponding to MSG_ID1;
  or the client times_out
  }
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_CON_003
Test Objective	The IUT is rejecting a Confirmable message that lacks context to process the message properly. The message carries a reserved class.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT receives a request message containing
  version indicating value 1,
  msg_type indicating value 0, //Confirmable
  token_length indicating value 0,
  code indicating value 1.00, //reserved
  msg_id corresponding to MSG_ID1;
  }
  then {
  the IUT sends a response message containing
  version indicating value 1,
  msg_type indicating value 3, //Reset
  token_length indicating value 0,
  code indicating value 0.00, //Empty Message
  msg_id corresponding to MSG_ID1;
  or the client times_out
  }
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_NON_001
Test Objective	The IUT is acknowledging on a Non-confirmable message correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1;
}
then {
the IUT sends a response message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 2.05, //Success (Content)
msg_id corresponding to MSG_ID2;
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_NON_002
Test Objective	The IUT is rejecting a Non-confirmable message that is Empty.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_NON_003
Test Objective	The IUT is rejecting a Non-confirmable message that is carrying a response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 2.03, //Success (Valid)
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_NON_004
Test Objective	The IUT is rejecting a NON-confirmable message that lacks context to process the message properly. The message carries a reserved class.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 6.00, //reserved
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_ACK_001
Test Objective	The IUT is rejecting an Acknowledgement message that is carrying a request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 2, //Acknowledgement
token_length indicating value 0,
code indicating value 0.02, //POST request
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_ACK_002
Test Objective	The IUT is rejecting an Acknowledgement message that carries a reserved class.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 2, //Acknowledgement
token_length indicating value 0,
code indicating value 7.00, //reserved
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Type_RST_001
Test Objective	The IUT is rejecting a Reset message that is not Empty.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 3, //Reset
token_length indicating value 0,
code indicating value 0.02, //PUT request
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_TokenLength_001
Test Objective	The IUT is responding on a valid token length correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1,
token corresponding to TOKEN;
}
then {
the IUT sends a response message containing
version indicating value 1,
msg_type indicating value 3, //Reset
token_length indicating value LENGTH_TOKEN,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1,
token corresponding to TOKEN;
or the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_TokenLength_002
Test Objective	The IUT is not responding on a set token length that is not corresponding to the length of the actual token.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value LENGTH_TOKEN_INVALID,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_TokenLength_003
Test Objective	The IUT is processing a message format error when receiving a reserved token length.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value LENGTH_TOKEN_RESERVED,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Code_Content_001
Test Objective	The IUT is responding with code 2.05 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
event provideResource occurs
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1,
uri_path corresponding to DEFAULT_RESOURCE;
}
then {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 1, //Acknowledgement
token_length indicating value 0,
code indicating value 2.05, //Success (Content)
msg_id corresponding to MSG_ID1,
option corresponding to any or omitted,
payload corresponding to DEFAULT_RESOURCE_CONTENT;
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Code_MethodNotAllowed_001
Test Objective	The IUT is responding with code 4.05 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
event provideResource occurs with {
argument replaced by the resource containing
name indicating value METHOD_NOT_ALLOWED_RESOURCE;
}
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
code indicating value METHOD_NOT_ALLOWED,
msg_id corresponding to MSG_ID1,
uri_path corresponding to METHOD_NOT_ALLOWED_RESOURCE;
}
then {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 1, //Acknowledgement
token_length indicating value 0,
code indicating value 4.05, //Client Error (Method Not Allowed)
msg_id corresponding to MSG_ID1,
option corresponding to any or omitted,
payload corresponding to any or omitted;
}
}	

Final Conditions

TP Id	TP_CoAP_MessageFormat_Header_Code_NotFound_001.
Test Objective	The IUT is responding with code 4.04 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
event provideResource occurs with {
argument replaced by the resource containing
name indicating value ANY_RESOURCE;
}
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1,
uri_path corresponding to ANY_RESOURCE;
}
then {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 1, //Acknowledgement
token_length indicating value 0,
code indicating value 4.04, //Client Error (Not found)
msg_id corresponding to MSG_ID1,
option corresponding to any or omitted,
payload corresponding to any or omitted;
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_Header_Code_Created_001
Test Objective	The IUT is responding with code 2.01 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
event provideResource occurs with {
argument replaced by the resource containing
name indicating value STORAGE_RESOURCE;
}
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
code indicating value PUT_OR_POST, //request
msg_id corresponding to MSG_ID1,
uri_path corresponding to STORAGE_RESOURCE,
payload corresponding to any PAYLOAD;
}
then {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 1, //Acknowledgement
token_length indicating value 0,	

```
            code indicating value 2.01, //Success (Created)
            msg_id corresponding to MSG_ID1,
            option corresponding to any or omitted,
            payload corresponding to any or omitted;
    }
}
```

Final Conditions

TP Id	TP_CoAP_MessageFormat_Header_Code_Changed_001
Test Objective	The IUT is responding with code 2.04 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        event provideResource occurs with {
         argument replaced by the resource containing
            name indicating value STORAGE_RESOURCE;
      }
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
          version indicating value 1,
          msg_type indicating value 0, //Confirmable
          code indicating value PUT_OR_POST, //request
          msg_id corresponding to MSG_ID1,
          uri_path corresponding to STORAGE_RESOURCE,
          payload corresponding to any PAYLOAD;
   }
   then {
        the IUT sends the message containing
          version indicating value 1,
          msg_type indicating value 1, //Acknowledgement
          token_length indicating value 0,
          code indicating value 2.04, //Success (Changed)
          msg_id corresponding to MSG_ID1,
          option corresponding to any or omitted,
          payload corresponding to any or omitted;
   }
}
```

Final Conditions

TP Id	TP_CoAP_MessageFormat_Header_Code_Deleted_001
Test Objective	The IUT is responding with code 2.02 correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
event provideResource occurs with {
argument replaced by the resource containing
name indicating value DELETE_RESOURCE;
}
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
code indicating value 0.04, //request
msg_id corresponding to MSG_ID1,
uri_path corresponding to DELETE_RESOURCE;
}
then {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 1, //Acknowledgement
token_length indicating value 0,
code indicating value 2.02, //Success (Deleted)
msg_id corresponding to MSG_ID1,
option corresponding to any or omitted,
payload corresponding to any or omitted;
}
}	

Final Conditions	

TP Id	TP_CoAP_MessageFormat_PayloadMarker_ZeroLengt_001
Test Objective	A zero-length payload that follows the payload marker (0xFF) shall be processed as message format error.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1,
payload_marker corresponding to PAYLOAD_MARKER,
payload corresponding to EMPTY_PAYLOAD;
}
then {
the client times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Separate_Response_GET_001
Test Objective	The IUT is responding with code 2.05 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named separate
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
uri_path corresponding to SEPARATE_RESOURCE;
}
then {
the IUT first sends an empty message and
the IUT sends the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.01;
and
the client sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Separate_Response_POST_001
Test Objective	The IUT is responding with Confirmable and code 2.01 on a POST request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named separate
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT first sends an empty message and
the IUT sends the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.01;
and
the client sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Separate_Response_POST_002
Test Objective	The IUT is responding with code 2.04 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named separate/new1/new2
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE,
uri_path corresponding to THIRD_LVL_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT first sends an empty message and
the IUT sends the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.04,
Location_Path corresponding to SECOND_LVL_RESOURCE,
Location_Path corresponding to THIRD_LVL_RESOURCE; /*Try to add two new resources named New1 and New2 which already exist.*/
and
the client sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Separate_Response_POST_003
Test Objective	The IUT is responding with code 2.04 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named separate/new1/new2
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE,
uri_path corresponding to NEW_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT first sends an empty message and
the IUT sends the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.04,
Location_Path corresponding to SECOND_LVL_RESOURCE,
Location_Path corresponding to NEW_RESOURCE; /*Change resource separate/New1/New2 to separate/New1/New1a.*/
and
the client sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;	

```
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Separate_Response_POST_004
Test Objective	The IUT is responding with code 4.05 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named separate and shall not implement the POST operation
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
        msg_type indicating value 0, /* CONfirmable */
        code indicating value 0.02,
        uri_path corresponding to SEPARATE_RESOURCE;
   }
   then {
        the IUT first sends an empty message and
        the IUT sends the second message containing
        msg_type indicating value 0.00, /* Confirmable */
        code indicating value 4.05;
        and
        the client sends an empty message containing
        msg_type indicating value 2.00, /* Acknowledgement */
        code indicating value 0.00;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Separate_Response_PUT_001
Test Objective	The IUT is responding with code 2.01 on a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named separate
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
        msg_type indicating value 0, /* CONfirmable */
        code indicating value 0.03,
        uri_path corresponding to SEPARATE_RESOURCE,
        payload indicating value 116 145 167 061 057;
   }
   then {
        the IUT first sends an empty message and
        the IUT sends the second message containing
        msg_type indicating value 0.00, /* Confirmable */
        code indicating value 2.01,
        Location_Path corresponding to SECOND_LVL_RESOURCE;
        and
        the client sends an empty message containing
        msg_type indicating value 2.00, /* Acknowledgement */
        code indicating value 0.00;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Separate_Response_PUT_002
Test Objective	The IUT is responding with code 2.04 on a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named separate/new1
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
        msg_type indicating value 0, /* CONfirmable */
        code indicating value 0.03,
        uri_path corresponding to SEPARATE_RESOURCE,
        uri_path corresponding to SECOND_LVL_RESOURCE;
   }
   then {
        the IUT first sends an empty message and
        the IUT sends the second message containing
        msg_type indicating value 0.00, /* Confirmable */
        code indicating value 2.04; /*Try to add resource New1 although it already exists */
        and
        the client sends an empty message containing
        msg_type indicating value 2.00, /* Acknowledgement */
        code indicating value 0.00;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Separate_Response_DELETE_001
Test Objective	The IUT is responding with code 2.02 on a DELETE request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named separate
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
        msg_type indicating value 0, /* CONfirmable */
        code indicating value 0.04,
        uri_path corresponding to SEPARATE_RESOURCE;
   }
   then {
        the IUT first sends an empty message and
        the IUT sends the second message containing
        msg_type indicating value 0.00, /* Confirmable */
        code indicating value 2.02,
        Location_Path corresponding to SECOND_LVL_RESOURCE; /*Delete resource Separate */
        and
        the client sends an empty message containing
        msg_type indicating value 2.00, /* Acknowledgement */
        code indicating value 0.00;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Separate_Response_DELETE_002
Test Objective	The IUT is responding with code 2.02 on a DELETE request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall not provide a resource named separate
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.04,
uri_path corresponding to SEPARATE_RESOURCE;
}
then {
the IUT first sends an empty message and
the IUT sends the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.02,
Location_Path corresponding to SECOND_LVL_RESOURCE; /*Get Response code 2.02 although the requested resource does not exist*/
and
the client sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriHost_001
Test Objective	The Uri-Host Option specifies the Internet host of the resource being requested.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05,
content indicating value coap_URI;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriHost_002
Test Objective	The Uri-Host Option specifies the Internet host of the resource being requested.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named coap_URI
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
           msg_type indicating value 0, /* CONfirmable */
           code indicating value 0.01,
           host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
           port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
           option_delta indicating value 3, /*URI-Host */
           option_value indicating value "example.net";
   }
   then {
        the IUT sends the message containing
           msg_type indicating value 2, /* ACknowledgement */
           code indicating value 2.05,
           content indicating value coap_URI;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Options_UriPath_001
Test Objective	The Uri-Path Option specifies one segment of the absolute path to the resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named coap_URI
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
           msg_type indicating value 0, /* CONfirmable */
           code indicating value 0.01,
           host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
           port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
           option_delta indicating value 3, /*URI-Host */
           option_value indicating value "example.net",
           option_delta indicating value 8, /*URI-Path */
           option_value indicating value ".well-known",
           option_delta indicating value 3, /*URI-Path */
           option_value indicating value "core";
   }
   then {
        the IUT sends the message containing
           msg_type indicating value 2, /* ACknowledgement */
           code indicating value 2.05,
           content indicating value coap_URI;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Options_UriPath_002
Test Objective	The IUT is responding with code 2.05 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named Simple_Resource/New_Resource
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
uri_path corresponding to DEFAULT_RESOURCE,
uri_path corresponding to NEW_RESOURCE;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriPath_003
Test Objective	The IUT is responding with code 2.04 on a POST request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named Storage_Resource/New1/New2
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to STORAGE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE,
uri_path corresponding to NEW_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
LocationPath corresponding to SECOND_LVL_RESOURCE,
LocationPath corresponding to NEW_RESOURCE;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriPath_004
Test Objective	The IUT is responding with code 2.04 on a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named Storage_Resource/New1
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
uri_path corresponding to STORAGE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
LocationPath corresponding to SECOND_LVL_RESOURCE;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriQuery_001
Test Objective	The Uri-Query Option specifies one argument parameterizing the resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
option_delta indicating value 11, /*URI-Path */
option_value indicating value "",
option_delta indicating value 0, /*URI-Path */
option_value indicating value "/",
option_delta indicating value 11, /*URI-Path */
option_value indicating value "",
option_delta indicating value 0, /*URI-Path */
option_value indicating value "",
option_delta indicating value 15, /*URI-Query */
option_value indicating value "//",
option_delta indicating value 0, /*URI-Query */
option_value indicating value "?&";
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05,
content indicating value coap_URI;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ProxyUri_001
Test Objective	The Proxy-Uri Option is used to make a request to a forward-proxy.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
proxy_uri corresponding to PROXY_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ProxyUri_002
Test Objective	The Proxy-Uri Option SHALL take precedence over any of the Uri-Host, Uri-Port, Uri-Path or Uri-Query options.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
proxy_uri corresponding to PROXY_URI,
uri_host corresponding to URI_HOST;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_Options_ContentFormat_001
Test Objective	The Content-Format Option indicates the representation format of the message payload.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
content_format_options indicating value content_formats_id,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_Options_ContentFormat_002
Test Objective	The Content-Format Option indicates the representation format of the message payload, in the absence of the option, no default value is assumed, i.e. the representation format of any representation message payload is indeterminate.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.06;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriHost_001
Test Objective	The Uri-Host Option specifies the Internet host of the resource being requested.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05,
content indicating value coap_URI;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriHost_002
Test Objective	The Uri-Host Option specifies the Internet host of the resource being requested.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
option_delta indicating value 3, /*URI-Host */
option_value indicating value "example.net";
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05,
content indicating value coap_URI;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriPath_001
Test Objective	The Uri-Path Option specifies one segment of the absolute path to the resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named coap_URI
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
           msg_type indicating value 0, /* CONfirmable */
           code indicating value 0.01,content_format indicating value content_formats_id,
           host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
           port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
           option_delta indicating value 3, /*URI-Host */
           option_value indicating value "example.net",
           option_delta indicating value 8, /*URI-Path */
           option_value indicating value ".well-known",
           option_delta indicating value 3, /*URI-Path */
           option_value indicating value "core";
   }
   then {
        the IUT sends the message containing
           msg_type indicating value 2, /* ACknowledgement */
           code indicating value 2.05,
           content indicating value coap_URI;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Options_UriPath_002
Test Objective	The IUT is responding with code 2.05 on a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server

Initial Conditions

```
with {
        the IUT shall provide a resource named Simple_Resource/New_Resource
}
```

Expected Behaviour

```
ensure that {
   when {
        the IUT receives a message containing
        msg_type indicating value 0, /* CONfirmable */
        code indicating value 0.01,
        uri_path corresponding to DEFAULT_RESOURCE,
        uri_path corresponding to NEW_RESOURCE;
   }
   then {
        the IUT sends the message containing
        msg_type indicating value 2, /* ACknowledgement */
        code indicating value 2.05;
   }
}
```

Final Conditions

TP Id	TP_CoAP_Server_Options_UriPath_003
Test Objective	The IUT is responding with code 2.04 on a POST request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named Storage_Resource/New1/New2
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to STORAGE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE,
uri_path corresponding to NEW_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
LocationPath corresponding to SECOND_LVL_RESOURCE,
LocationPath corresponding to NEW_RESOURCE;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriPath_004
Test Objective	The IUT is responding with code 2.04 on a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named Storage_Resource/New1
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
uri_path corresponding to STORAGE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
LocationPath corresponding to SECOND_LVL_RESOURCE;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_UriQuery_001
Test Objective	The Uri-Query Option specifies one argument parameterizing the resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
option_delta indicating value 11, /*URI-Path */
option_value indicating value "",
option_delta indicating value 0, /*URI-Path */
option_value indicating value "/",
option_delta indicating value 11, /*URI-Path */
option_value indicating value "",
option_delta indicating value 0, /*URI-Path */
option_value indicating value "",
option_delta indicating value 15, /*URI-Query */
option_value indicating value "//",
option_delta indicating value 0, /*URI-Query */
option_value indicating value "?&";
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05,
content indicating value coap_URI;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ProxyUri_001
Test Objective	The Proxy-Uri Option is used to make a request to a forward-proxy.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
proxy_uri corresponding to PROXY_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ProxyUri_002
Test Objective	The Proxy-Uri Option SHALL take precedence over any of the Uri-Host, Uri-Port, Uri-Path or Uri-Query options.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
proxy_uri corresponding to PROXY_URI,
uri_host corresponding to URI_HOST;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentAccept_001
Test Objective	The CoAP Accept option can be used to indicate which Content-Format is acceptable to the client.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
content_format_options indicating value content_formats_id,
accept_options indicating value content_formats_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentAccept_002
Test Objective	The CoAP Accept option can be used to indicate which Content-Format is acceptable to the client, If the preferred Content- Format cannot be returned, then a 4.06 SHALL be sent as a response, unless another error code takes precedence for this response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
content_format_options indicating value content_formats_id,
accept_options indicating value content_formats_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.06;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_MaxAgeFresh_001
Test Objective	The Max-Age Option indicates the maximum time a response may be cached before it is considered not fresh.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ETagResponse_001
Test Objective	The ETag Option in a response provides the current value (i.e. after the request was processed) of the entity-tag for the 'tagged representation'.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
etag indicating value integer;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_EtagRequest_001
Test Objective	In a GET request, an endpoint that has one or more representations previously obtained from the resource, and has obtained ETag response options with these, can specify an instance of the ETag Option for one or more of these stored responses.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
etag indicating value integer;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_LocationPathLocationQuery_001
Test Objective	The Location-Path and Location-Query Options together indicate a relative URI that consists either of an absolute path, a query string, or both.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.01,
location_path indicating value string,
location_query indicating value string;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_LocationPathLocationQuery_002
Test Objective	The Location-Path and Location-Query Options together indicate a relative URI that consists either of an absolute path, a query string, or both.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
options indicating value 128;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_IfMatch_001
Test Objective	The If-Match Option MAY be used to make a request conditional on the current existence or value of an ETag for one or more representations of the target resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
ifMatch indicating value ETAG;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_IfMatch_002
Test Objective	The If-Match Option MAY be used to make a request conditional on the current existence or value of an ETag for one or more representations of the target resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
ifMatch indicating value integer representing etag;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_IfNoneMatch_001
Test Objective	The If-None-Match Option MAY be used to make a request conditional on the nonexistence of the target resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
ifNoneMatch indicating value integer;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_IfNoneMatch_002
Test Objective	The If-None-Match Option MAY be used to make a request conditional on the nonexistence of the target resource.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
ifNoneMatch indicating value integer;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ETagResponse_001
Test Objective	An ETag response option can be included with any response for which there is a tagged representation.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_ServerPIC_ETag_support
Initial Conditions	

with {
the IUT shall provide an options named ETag
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
accept_options indicating value accept_options _id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
etag indicating value integer;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ETagResponse_002
Test Objective	The ETag Option SHALL NOT occur more than once in a response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an options named ETag
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04,
etag1 indicating value integer;
and another etag2 shall not be present
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ETagRequest_001
Test Objective	The IUT is responding with 2.03 valid response to the multiple ETag request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an option named ETag
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
etag_options_1 indicating value etag_options_id_1,
etag_options_2 indicating value etag_options_id_2;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03,
etag indicating value integer;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ProxyUri_001
Test Objective	An endpoint receiving a request with a Proxy-Uri Option that is unable or unwilling to act as a forward-proxy for the request SHALL cause the return of a 5.05 (Proxying Not Supported) response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an option named proxy_uri_options and the IUT fails to respond
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
proxy_uri_options indicating value proxy_uri_options_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 5.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_LocationPath_LocationQuery_001
Test Objective	The IUT is responding with Bad Option for a location_path_option.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT receives the message containing
  msg_type indicating value 0, /* CONfirmable */
  code indicating value 0.01,
  location_path_options indicating value "..";
  }
  then {
  the IUT sends the message containing
  msg_type indicating value 2, /* ACknowledgement */
  code indicating value 4.02;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_LocationPath_LocationQuery_002
Test Objective	Ensure that any reserved option numbers occurs in addition to Location-Path and/or Location-Query and are not supported, then a 4.02 (Bad Option) error SHALL be returned.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT receives the message containing
  msg_type indicating value 0, /* CONfirmable */
  code indicating value 0.01,
  location_path_options indicating value location_path_options_id,
  location_reserved_options indicating value location_reserved_options_id;
  }
  then {
  the IUT sends the message containing
  msg_type indicating value 2, /* ACknowledgement */
  code indicating value 4.02;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ConditionalRequest_001
Test Objective	If the if-match condition given is not fulfilled, then the server SHALL NOT perform the requested method. Instead, the server SHALL respond with the 4.12 (Precondition Failed) Response Code.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT specify if_Match conditions
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
if_match_options indicating value if_match_options_id,
accept_options indicating value accept_options_id;
and the client fails to fulfil conditions
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.12;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ConditionalRequest_002
Test Objective	If the if-match condition given is fulfilled, then the server SHALL perform the requested method.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT specify if_Match conditions
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
if_match_options indicating value if_match_options_id,
accept_options indicating value accept_options_id;
and the client fulfil conditions
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ConditionalRequest_003
Test Objective	The IUT responds with a 2.03 code when an If-Match condition on the ETag option is fulfilled.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT specify if_Match conditions
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
if_match_options indicating value if_match_options_id,
etag_options indicating value etag_options_id;
and the client fulfil if_match conditions
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_Size1_001
Test Objective	The Size1 option provides size information about the resource representation in a request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an options named Size1
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
size1_options indicating value size1_options_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.13,
size_option indicating value size_max_value;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_IfMatch_001
Test Objective	The IUT is responding with 2.03 response when treating multiple IfMatch_options request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an ifMatch_options
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, // Get
ifMatch_options indicating value ifMatch_options_id_1,
ifMatch_options indicating value ifMatch_options_id_2;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_NonRepeatable_001
Test Objective	An option that is not repeatable SHALL NOT be included more than once in a message.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an ifNoneMatch_options
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, // Get
ifNoneMatch_options indicating value ifNoneMatch_options_id1,
ifNoneMatch_options indicating value ifNoneMatch_options_id2;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_001
Test Objective	A Request with unrecognized options of class critical that occur in a Confirmable request shall cause the return of 4.02.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide an option named if_match
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01, /* Unrecognized options */
if_match_options indicating value if_match_options_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_002
Test Objective	A Request with unrecognized options of class critical that occur in a Confirmable request shall cause the return of 4.02.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.03,
msg_id corresponding to MSG_ID1,
accept_option indicating value content_format;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_003
Test Objective	A Request with unrecognized options of class critical that occur in a Confirmable request shall cause the return of 4.02.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT receives a message containing
  version indicating value 1,
  msg_type indicating value 0, /* CONfirmable */
  token_length indicating value 0,
  code indicating value 0.04,
  msg_id corresponding to MSG_ID1,
  host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
  port corresponding to DEFAULT_PORT;
  }
  then {
  the IUT sends the message containing
  msg_type indicating value 2, /* ACknowledgement */
  code indicating value 4.02;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_004
Test Objective	A Request with unrecognized options of class critical that occur in a Confirmable request shall cause the return of 4.02.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
  the IUT shall provide a UriHost
}	

Expected Behaviour	

ensure that {
  when {
  the IUT receives a message containing
  version indicating value 1,
  msg_type indicating value 0, /* CONfirmable */
  token_length indicating value 0,
  code indicating value 0.003,
  msg_id corresponding to MSG_ID1,
  host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
  port corresponding to DEFAULT_PORT;
  }
  then {
  the IUT sends the message containing
  msg_type indicating value 2, /* ACknowledgement */
  code indicating value 4.02;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_005
Test Objective	An option that is not repeatable SHALL NOT be included more than once in a message.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_option indicating value content_formats_id,
link_format_option indicating value link_format,
content_format_option indicating value content_formats_options_id,
octet_stream_content_format indicating value octet_stream_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_006
Test Objective	The IUT responds with Bad_Option for messages containing options that are repeated more than once.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a UriHost
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_007
Test Objective	A request with multiple IfNoNeMatchOptions responds with Bad_Options code.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a IfNoNeMatchOptions
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
ifNoneMatch_options indicating value integer,
ifNoneMatch_options indicating value integer;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_CriticalOptions_008
Test Objective	A request with multiple AcceptOptions responds with Bad_Options code.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
accept_options indicating value accept_options_id,
accept_options indicating value accept_options_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Text_001
Test Objective	The IUT is responding with 2.05 code on receiving message containing text/plain of content_format_options.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named text_plain_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
text_plain_content_format indicating value text_plain_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACKnowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_001
Test Objective	The IUT is responding to a message containing link-format of content_format_options correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named link_format_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
link_format_content_format indicating value link_format_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACKnowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_002
Test Objective	The IUT is processing to a xml_content_format message correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named xml_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
xml_content_format indicating value xml_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_003
Test Objective	The IUT is responding with 2.05 code on receiving message containing content_format_options named octetstream.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named octetstream_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
octetstream_content_format indicating value octetstream_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_004
Test Objective	The IUT is processing to a message containing content_format_options named xml_content_format correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named exi_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
exi_content_format indicating value exi_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_005
Test Objective	The IUT is processing to a content_format_options correctly.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options named json_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
json_content_format indicating value json_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_006
Test Objective	The IUT is responding with 4.15 code to a message containing content_format_options.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT does not provide a content_format_options named json_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
json_content_format indicating value json_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.15;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_007
Test Objective	The IUT is responding to content_format_options with 4.02 response code.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_options
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_format_options_id,
json_content_format indicating value json_content_format_id,
text_plain_content_format indicating value text_plain_content_format_id;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_008
Test Objective	The IUT is responding with Bad_Options to the message containing content_format_options.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a content_format_optionscontent
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_formats_id,
json indicating value json,
content_format_options indicating value content_formats_id,
xml indicating value xml;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Options_ContentFormat_Application_010
Test Objective	The IUT is processing to a content_format_options with a 4.02 code.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_formats_id,
link_format_options indicating value link_format,
content_format_options indicating value content_formats_id,
octet_stream indicating value octet_stream;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Payload_001
Test Objective	If a Method or Response Code is not defined to have a payload, then a sender SHALL NOT include one, and a recipient SHALL ignore it.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, // Get
ifNoneMatch_options indicating value ifNoneMatch_options_id1,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT rejects the message
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Payload_002
Test Objective	The Content-Format Option indicates the representation format of the message payload.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
content_format_options indicating value content_formats_id,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Payload_003
Test Objective	The Content-Format Option indicates the representation format of the message payload, in the absence of the option, no default value is assumed, i.e. the representation format of any representation message payload is indeterminate.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.06;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_001
Test Objective	If the proxy is unable to service a request with an HTTP URI, a 5.05 (Proxying Not Supported) response is returned.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 5.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_002
Test Objective	If the proxy is unable to service a request within a reasonable time frame, a 5.04 (Gateway Timeout) response is returned.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
and the client times_out
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 5.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_003
Test Objective	If the result can be obtained but is not understood, a 5.02 (Bad Gateway) response is returned.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 5.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_004
Test Objective	The GET method requests the proxy to return a representation of the HTTP resource identified by the request URI. Upon success, 2.05 should be returned.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
content_format_options indicating value content_formats_id,
proxy_uri_options corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_005
Test Objective	A client can influence the processing of a GET request to the proxy by including Accept and ETAG.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1,
accept_options indicating value content_formats_id,
etag_options indicating value content_formats_id,
proxy_uri_options corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_006
Test Objective	The PUT method requests the proxy to create the HTTP resource identified by the request URI
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.03,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.01;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_007
Test Objective	The PUT method requests the proxy to update the HTTP resource identified by the request URI.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.03,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_008
Test Objective	The DELETE method requests the proxy to delete the HTTP resource identified by the request URI.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.04,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_009
Test Objective	The POST method requests the proxy to create a resource on the origin server.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.02,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.01;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_Proxy_HTTPUri_010
Test Objective	The POST method requests the proxy to change a resource on the origin server.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.02,
msg_id corresponding to MSG_ID1,
proxy_uri corresponding to HTTP_URI;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Server_ServiceDiscovery_001
Test Objective	The IUT is able to provide all endpoints to the client.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Server
Initial Conditions	

with {
the IUT shall provide a response
}	

Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
msg_id corresponding to MSG_ID1;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.05;
}
}	

Final Conditions	

6 Test Purposes for CoAP Client

TP Id	TP_CoAP_Client_MessageFormat_Header_TokenLength_001
Test Objective	Token Length 9-15 bytes are reserved SHALL NOT be sent, and SHALL be processed as a message format error.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
}
then {
the IUT receives the message containing
status indicating value "message format error";
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_TokenLength_002
Test Objective	A request with Token Length 9-15 bytes SHALL be processed as a message format error.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.00, //Empty Message
msg_id corresponding to MSG_ID1;
}
then {
the IUT receives the message containing
status indicating value "message format error";
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_001
Test Objective	The Client SHALL be able to receive Confirmable response in reply to a Non-confirmable request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 1, /* NON-CONfirmable */
token_length indicating value 0,
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives the message containing
msg_type indicating value 0;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_002
Test Objective	The Client SHALL be able to receive Non-Confirmable response in reply to a confirmable request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT receives a message containing
msg_type indicating value 0,
token_length indicating value 0,
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT sends the message containing
msg_type indicating value 1;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_003
Test Objective	IUT is able to send a Non-Confirmable GET request to a multicast address.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide the multicast
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the messages containing
version indicating value 1,
msg_type indicating value 1, /* Non-CONfirmable */
token_length indicating value 0,
code indicating value 0.01;
}
then {	

```
        the IUT receives the messages containing
            msg_type indicating value 2, /* ACknowledgement */
            code indicating value 2.05;
    }
}
```

Final Conditions

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_004
Test Objective	IUT tries to send a Confirmable GET request to a multicast address.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client

Initial Conditions

```
with {
        the IUT shall provide the multicast
}
```

Expected Behaviour

```
ensure that {
    when {
        the IUT sends a message containing
            version indicating value 1,
            msg_type indicating value 0, /* CONfirmable */
            token_length indicating value 0,
            code indicating value 0.01;
    }
    then {
        the IUT times_out
    }
}
```

Final Conditions

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_005
Test Objective	IUT is able to send a Non-Confirmable request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client

Initial Conditions

Expected Behaviour

```
ensure that {
    when {
        the IUT sends a request message containing
            version indicating value 1,
            msg_type indicating value 1, //Non-confirmable
            token_length indicating value 0,
            code indicating value 0.01, //GET request
            msg_id corresponding to MSG_ID1;
    }
    then {
        the IUT receives a response message containing
            version indicating value 1,
            msg_type indicating value 1, //Non-confirmable
            token_length indicating value 0,
            code indicating value 2.05, //Success (Content)
            msg_id corresponding to MSG_ID2;
    }
}
```

Final Conditions

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_006
Test Objective	IUT shall be able to send a non-confirmable request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a request message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
msg_id corresponding to MSG_ID1;
}
then {
the IUT receives a response message containing
version indicating value 1,
msg_type indicating value 1, //Non-confirmable
token_length indicating value 0,
code indicating value 2.05, //Success (Content)
msg_id corresponding to MSG_ID2;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_NON_007
Test Objective	IUT can receive Reset message (RST) when it is not able to process a Non-confirmable message.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT does not respond
}	

Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 1, //Non-confirmable
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
and the IUT does not provide a suitable acknowledgment response
}
then {
the IUT receives the message containing
msg_type indicating value 3;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_ACK_001
Test Objective	The IUT SHALL be able to retransmits after acknowledgement is not received.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
and after ACK_TIMEOUT
}
then {
the IUT shall retransmit the same message
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_ACK_002
Test Objective	The IUT sends a request only up to MAX_RETRANSMIT if acknowledgement is not received.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
payload indicating value 116 145 167 061 057 116 145 167 062;
and after ACK_TIMEOUT
and the IUT retransmit the same message until reaches MAX_RETRANSMIT
and does not receives the response_message
}
then {
the IUT process a failure
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_ACK_003
Test Objective	IUT tries to send an Ack message as a request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 2, /* Ack */
code indicating value 0.1;
}
then {
the IUT times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_CON_001
Test Objective	IUT receives a 2.05 status code for a Confirmable request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.01;
}
then {
the IUT receives a response message containing
msg_type indicating value 2, //Acknowledge, from IETF RFC 7252 section 4.2 (a)
code indicating value 2.05, //Success (Content)
msg_id corresponding to MSG_ID1;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_CON_002
Test Objective	IUT is able to receive a 4.04 status code for a GET request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT is not able to process the resource
}	

Expected Behaviour	

ensure that {
when {
the IUT sends a request message containing
version indicating value 1,
msg_type indicating value 0, //Confirmable
token_length indicating value 0,
code indicating value 0.01, //GET request
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives a response message containing
msg_type indicating value 2, //Acknowledge, from IETF RFC 7252 section 4.2 (a)
code indicating value 4.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_CON_003
Test Objective	IUT can times_out after sending an empty message as request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 3, /* Ack */
code indicating value 0.1;
}
then {
the IUT times_out
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_CON_004
Test Objective	The IUT is able to send an empty message with a correct set version number.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT sends a request message containing
  version indicating value 1,
  msg_type indicating value 0, //Confirmable
  token_length indicating value 0,
  code indicating value 0.00, //Empty Message
  msg_id corresponding to MSG_ID1;
  }
  then {
  the IUT sends a response message containing
  version indicating value 1,
  msg_type indicating value 3, //Reset
  token_length indicating value 0,
  code indicating value 0.00, //Empty Message
  msg_id corresponding to MSG_ID1;
  or the client times_out
  }
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_Header_Type_CON_005
Test Objective	IUT can send a message containing Option Content-Format.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
  the IUT shall provide a resource named coap_URI
}	

Expected Behaviour	

ensure that {
  when {
  the IUT sends a message containing
  msg_type indicating value 0, /* CONfirmable */
  code indicating value 0.02,
  content_format_options indicating value content_formats_id,
  payload indicating value 116 145 167 061 057 116 145 167 062;
  }
  then {
  the IUT receives the message containing
  msg_type indicating value 2, /* ACknowledgement */
  code indicating value 2.03;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Client_MessageFormat_PayloadMarker_001
Test Objective	The presence of a Payload marker followed by a zero-length payload SHALL be processed as a message format error.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
  when {
  the IUT sends the message containing
  header indicating value header,
  msg_type indicating value 0, /* CONfirmable */
  token_length indicating value 0,
  host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
  port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
  option_delta indicating value 15,
  payload indicating value 0;
  }
  then {
  the IUT receives the message containing
  status indicating value "message format error";
  }
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_001
Test Objective	The IUT SHALL be able to send an Acknowledgment in a Separate Response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
  the server shall provide a resource named separate
}	

Expected Behaviour	

ensure that {
  when {
  the IUT sends a message containing
  msg_type indicating value 0, /* CONfirmable */
  code indicating value 0.01,
  uri_path corresponding to SEPARATE_RESOURCE;
  and the server is not able to respond
  }
  then {
  the IUT first receives an empty message and
  the IUT receives the second message containing
  msg_type indicating value 0.00, /* Confirmable */
  code indicating value 2.01;
  and
  the IUT sends an empty message containing
  msg_type indicating value 2.00, /* Acknowledgement */
  code indicating value 0.00;
  }
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_002
Test Objective	The IUT is successfully sending a POST request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.01;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_003
Test Objective	The IUT is able to receive response code 2.04 on a POST request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide a resource named separate/new1/new2
}	

Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_004
Test Objective	IUT sends a message with a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
uri_path corresponding to SEPARATE_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.04;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_005
Test Objective	The IUT is able to send a Get Request with a Separate Response.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide a resource named separate/new1/new2
}	

Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.02,
uri_path corresponding to SEPARATE_RESOURCE,
uri_path corresponding to SECOND_LVL_RESOURCE,
uri_path corresponding to THIRD_LVL_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT first receives an empty message and
the IUT receives the second message containing
msg_type indicating value 0.00, /* Confirmable */
code indicating value 2.04,
Location_Path corresponding to SECOND_LVL_RESOURCE,
Location_Path corresponding to THIRD_LVL_RESOURCE; /*Try to add two new resources named New1 and New2 which already exist.*/
and
the IUT sends an empty message containing
msg_type indicating value 2.00, /* Acknowledgement */
code indicating value 0.00;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Separate_Response_006
Test Objective	IUT can receive 2.01 response code for a PUT request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.03,
uri_path corresponding to SEPARATE_RESOURCE,
payload indicating value 116 145 167 061 057 116 145 167 062;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACKnowledgement */
code indicating value 2.01;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_OptionLength_001
Test Objective	If the Option Length field is set to 15, it SHALL be processed as a message format error.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	
Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
host corresponding to DEFAULT_HOST, /*default e.g. [2 001:db8::2:1] */
port corresponding to DEFAULT_PORT, /*default e.g. 5 683 */
option_delta indicating value 3, /*URI-Host */
option_length indicating value 15;
}
then {
the IUT receives the message containing
status indicating value "message format error";
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_URIHost_001
Test Objective	IUT is able to receive a BAD_OPTION response code for sending an unrecognized critical option.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide an option named uri_host_options
}	

Expected Behaviour	

ensure that {
when {
the IUT sends a message containing
version indicating value 1,
msg_type indicating value 0, /* CONfirmable */
token_length indicating value 0,
code indicating value 0.03, /* Unrecognized options */
host corresponding to DEFAULT_HOST,
port corresponding to DEFAULT_PORT;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.02;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_ContentFormat_001
Test Objective	IUT receives a 4.15 error code for sending an unsupported content-format.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall not provide a text_plain_content_format
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, //Get
content_format_options indicating value content_format_options_id,
text_plain_content_format indicating value text_plain_content_format_id;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.15;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_Accept_001
Test Objective	The IUT receives a 5.01 response code to an unimplemented options request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall not provide a accept_options
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, //Get
accept_options indicating value accept_options_id;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 5.01;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_ConditionalRequest_001
Test Objective	The IUT is able to send multiple IfMatch_options in a message request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide an ifMatch_options
}	

Expected Behaviour	

ensure that {
when {
the IUT receives the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01, // Get
ifMatch_options indicating value ifMatch_options_id_1,
ifMatch_options indicating value ifMatch_options_id_2;
}
then {
the IUT sends the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_ConditionalRequest_002
Test Objective	IUT is able to send a message containing if-match condition in the request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT specify if_Match conditions
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
if_match_options indicating value if_match_options_id,
accept_options indicating value accept_options_id;
and the client fails to fulfil conditions
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 4.12;
}
}	

Final Conditions	

TP Id	TP_CoAP_Client_Options_ETagRequest_001
Test Objective	The IUT is verifying if multiple options can be sent in a request.
Reference	IETF RFC 7252 [1]
PICS Selection	PIC_Client
Initial Conditions	

with {
the IUT shall provide an options named ETag
}	

Expected Behaviour	

ensure that {
when {
the IUT sends the message containing
msg_type indicating value 0, /* CONfirmable */
code indicating value 0.01,
etag_options_1 indicating value etag_options_id_1,
etag_options_2 indicating value etag_options_id_2;
}
then {
the IUT receives the message containing
msg_type indicating value 2, /* ACknowledgement */
code indicating value 2.03,
etag indicating value integer;
}
}	

Final Conditions	

Annex A (normative): CoAP Test Purposes (TPs)

A.1 Introduction

This Test purpose catalogue has been produced using the Test Description Language (TDL-TO) according to ETSI ES 203 119-4 [2]. The TDL-TO library modules corresponding to the Test purpose catalogue are contained in archive ts_10359601v010101p0.zip which accompanies the present document.

History

Document history		
V1.1.1	May 2021	Publication