Test protocol for receiving a

DK MedCom Acknowledgement

2024-12-05

The test protocol relates to the following standard:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Navn DK** | **Version** | **Type** |
| Standard: DK MedCom Acknowledgement | DK MedCom Kvittering | 2.0.0 | HL7 FHIR |

|  |  |  |  |
| --- | --- | --- | --- |
| **Versioning** | | | |
| **Version** | **Initials** | **Date** | **Description** |
| 2.0.0 | MBU | 24-05-23 | First publication in English |
| 2.0.1 | MBU | 27-11-23 | A test step regarding acknowledgement of type [ACK AR] followed by a new acknowledgement has been added. |
| 2.0.2 | MBU | 14-12-23 | Test step abut receiving duplicate Acknowledgement added. Touchstone testscripts are made optional. |
| 2.0.3 | SKS | 29-11-24 | Added test steps to ensure clearance between the test steps and the expected results. |
| 2.0.4 | SKS | 05-12-24 | Added test examples to the test steps |

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# Introduction

This is a test protocol for receiving a DK MedCom Acknowledgement, hereafter referred to as Acknowledgement.

All documentation concerning MedCom Acknowledegment and Governance (see [Background material](#_Background_material)) will be the subject of testing, and the test protocol will be continuously updated to reflect the requirements in the best way possible.

Versioning of the test protocol will follow the major and minor versions of the standard but may have a patch version that is different from the standard’s patch version.

The system under test (SUT) must be able to receive a MedCom Acknowledgement, (DK: MedCom Kvittering), when a MedCom FHIR message is sent.

## Purpose

The test protocol forms the basis for the tests, which must ensure that SUT complies with the established rules and requirements for the standard. The test protocol also forms the basis for the self-test that vendors carry out prior to a live test.

## Prerequisites for live test

The following prerequisites must be met prior to the live test:

1. The vendor has read the following standard documentation:
   * [Use cases](#_Baggrundsmaterialer_1)
   * [Implementation Guide](#_Baggrundsmaterialer_1)
   * [Governance](#_Baggrundsmaterialer_1)
   * And other relevant materials, cf. the [background material](#_Baggrundsmaterialer_1).
2. The vendor has performed self-test, approved by MedCom.
3. The vendor is using the same version of SUT during self-test and live test.
4. Approval requires that the SUT is approved for sending an Acknowledgement.

## Documentation of self-test

**Self-test**

**Prior to the test, the vendor must have performed self-test, including successfully completed TouchStone self-tests, which are approved by MedCom.**

The self-test is documented by the vendor completing this test protocol.

For self-tests, only the following column must be completed by the vendor:

* [Current result]: is filled in with the results of the self-test and relevant descriptions.

Other columns are reserved for MedCom.

**During the self-test the vendor must document the test results by saving relevant files and screen dumps, and subsequently send these in a combined ZIP file (together with the completed test protocol) to** [**fhir@medcom.dk**](mailto:fhir@medcom.dk)**.**

All files and screen dumps must be named with

* Standard name
* The number of the relevant test step
* Consecutive letter
* File type

Example: Acknowledgement\_3.4\_A.xml

## Background material

| **Navn** | **Version[[1]](#footnote-2)** | **Link/reference** | **Beskrivelse** |
| --- | --- | --- | --- |
| Acknowledgement documentation site | 2.0.X | <https://medcomdk.github.io/dk-medcom-acknowledgement/> | Documentation site with references to all relevant documentation, including:   * Use cases (and matching test scripts) to be used in TouchStone * Technical specifications |
| Acknowledgement Implementation Guide | 2.0.X | <https://medcomfhir.dk/ig/acknowledgement/> | The FHIR technical guidelines for the standard. |
| Governance for MedCom FHIR | 1.0.X | <https://medcomdk.github.io/MedCom-FHIR-Communication/> | Governance for MedCom’s FHIR standards, which describes general rules for all MedCom standards and specific rules for this standard, as well as for sending. |
| SOP 7.2 for MedCom’s test and certification | 2.X | <http://svn.medcom.dk/svn/qms/Offentlig/SOPer/SOP-7.2-MedComs%20test%20og%20certificering_godkendelse.docx> | Description of test and certification of MedCom standards and other tests courses. |

## Test examples and test persons

|  |  |  |
| --- | --- | --- |
| **Name** | **Link/reference** | **Description** |
| Test examples | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> |  |

## Test tools

|  |  |  |
| --- | --- | --- |
| **Navn** | **Link/reference** | **Description** |
| FHIR server with MedCom profiles | <https://fhir.medcom.dk/> | Public server that validates against MedCom's FHIR profiles. It is permitted to use the server for testing the upload/download of FHIR resources. |
| TouchStone | <https://touchstone.aegis.net/touchstone/> | Test tool for testing the FHIR standard.  The vendor can get access to TouchStone as an organisation - either through a license that MedCom supplies (inquiry at [fhir@medcom.dk](mailto:fhir@medcom.dk)), or a license that the supplier has acquired itself.  Find [instructions for TouchStone](https://medcomdk.github.io/MedComLandingPage/assets/documents/TouchStoneGettingStarted.html) here. |
| TouchStone test scripts | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> | Test scripts relevant for the standard.  Find [instructions for TouchStone here](https://medcomdk.github.io/MedComLandingPage/assets/documents/TouchStoneGettingStarted.html). |

## Test result

The result for each test step is categorised based on the table below:

| **Marking** | **F1** | **F2** | **F3** | **F4** | **Ok** | **Not relevant** |
| --- | --- | --- | --- | --- | --- | --- |
| **Evaluation** | **Critical** | **Serious** | **Significant** | **Less significant** | **Approved** | **Not an error** |

To get the test and certification approved, the test protocol must consist exclusively of [F4] as well as [OK] results. All [F1], [F2] and [F3] must, therefore, be fixed prior to final approval.

Approval requires that SUT is approved for sending a FHIR acknowledgement (DK: Kvittering)

For further information, please read: [MedCom’s test and](#TestCertificering) certification.

# Vendor, system under test (SUT) and test result information

## Information about the vendor

This table must be completed by **the vendor** prior to the test.

|  |  |
| --- | --- |
| Company | Completed by vendor |
| Address | Completed by vendor |
| Contact person | Completed by vendor |
| Telephone | Completed by vendor |
| E-mail | Completed by vendor |

## Information about system under test (SUT)

This table must be completed by **the vendor** prior to the test.

|  |  |
| --- | --- |
| System | Completed by vendor |
| Version | Completed by vendor |
| Description | Completed by vendor |
| Test type | Self-test  Final test/certification |

## Information about the test result

Note: This table must be completed by MedCom when the test has been completed.

|  |  |
| --- | --- |
| Test date | 2023-01-01 |
| Test location |  |
| Approved | Yes  No |
| Remarks | Completed by MedCom |
| Carried out by | The name of the MedCom responsible (initials) for this test |

# The test

This section describes the requirements which SUT must meet before final approval.

The test is divided into three sections:

1. Test of TouchStone testscripts
2. Test of requirements for content and flow/workflows
3. Test of technical requirements

Test participants will be asked to complete tests as described in the tables.

## Documentation of the test

**Documentation of the test**

As valid documentation, the test participant or test manager must document completion by continuous screen dumps (.png/.jpeg) and/or files/log files (.xml/.json). **Before the test, it is agreed who is responsible for this.**

The following applies:

* The files must be viewable in a standard tool and must not require further processing by MedCom
* All files and screen dumps must be named with:
  + The name of the standard
  + Whether SUT is the sender (S) or receiver (R) of the standard
  + The number of the relevant test setup
  + Consecutive letter
  + File type

*Examples: HospitalNotfication\_R\_3.4\_A.xml, HospitalNotification\_R\_3.4\_B.xml*

If the vendor has documented the test themselves, the files must be sent in a ZIP file to [fhir@medcom.dk](mailto:fhir@medcom.dk).

**Documentation of the test**

As valid documentation, the test participant or the test manager must document completion by continuous screen dumps (.png/.jpeg) and/or files/log files (.xml/.json). **Before the test, it is agreed on who is responsible for this.**

The following applies:

* The files must be viewable in a standard tool and must not require further processing by MedCom
* All files and screen dumps must be named with:
  + The name of the standard
  + The number of the relevant test setup
  + Consecutive letter
  + File type

*Examples: Acknowledgement\_3.4\_A.xml, Acknowledgement\_3.4\_B.xml*

If the vendor has documented the test themselves, the files must be sent in a ZIP file to [fhir@medcom.dk](mailto:fhir@medcom.dk).

## Test of TouchStone testscripts

The purpose of these tests is to ensure that SUT generates HospitalNotification technically correct and complies with the rules in the [Implementation Guide](#_Baggrundsmaterialer_1).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test step #** | **Action** | **Test data/test person** | **Expected result** | **Actual result** | **MedCom assessment** |
|  | **Optional test step:**  Run all test scripts for use cases and user flows in TouchStone. |  | All test scripts completed without errors. |  | Choose |

## Test of requirements for content and flow/workflows

The purpose of these tests is to ensure that the standard is implemented with satisfactory quality, i.e. that implementation meets the business requirements for flow and content as described in the [use case material](#_Baggrundsmaterialer_1).

The table below lists the use cases which are tested in relation to content and flow/workflows. The table also describes which example files must be used in each test step.

|  |  |  |  |
| --- | --- | --- | --- |
| [**Use case**](#_Baggrundsmaterialer_1) | **Description** | **Section** | **Example file** |
| S.TC3 | Receive an Acknowledgement of the type [ACK AA] | 3.2.1 | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> |
| S.TC3.A1 | Receive an Acknowledgement of the type [ACK AE] due to invalid content | 3.2.2 | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> |
| S.TC3.A2 | Receive an Acknowledgement of the type [ACK AR] due to technical error | 3.2.3 | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> |
| S.TC4 | Expected Acknowledgement not received | 3.2.4 | <https://medcomfhir.dk/ig/acknowledgementtestscripts/> |

### S.TC3 Receive an Acknowledgement of the type [ACK AA]

| **Test step #** | **Action** | **Test data** | **Expected result** | **Actual result** | **MedCom assessment** |
| --- | --- | --- | --- | --- | --- |
| 3.3.1.1 | Send a valid MedCom FHIR message (i.e., a HospitalNotification or CareCommunication) and receive a positive Acknowledgement of the type [ACK AA]. | Use an example from a MedCom FHIR messaging standard for the following test steps. Note that MessageHeader --> Response --> Identifier must be updated so that the message and the Acknowledgement are correctly linked.  (This applies to each test step where an Acknowledgement must be loaded and linked to a message.)  Test example: Acknowledgement\_3.3.1.1\_A-AA | A random message has been sent and an Acknowledgement of type [ACK AA] has been received. |  | Choose |
| 3.3.1.2 | Demonstrate or explain that the SUT can validate and load an Acknowledgement of the type [ACK AA] for the MedCom FHIR message which was sent. |  | The Acknowledgement message is validated and correctly loaded into the SUT. |  | Choose |
| 3.3.1.3 | Demonstrate that the SUT can link an Acknowledgement of the type [ACK AA] to the message originally sent. |  | An Acknowledgement of the type [ACK AA] is linked to the original MedCom FHIR message. |  | Choose |

### S.TC3.A1 Receive an Acknowledgement of the type [ACK AE] due to invalid content

| **Test step #** | **Action** | **Test data** | **Expected result** | **Actual result** | **MedCom assessment** |
| --- | --- | --- | --- | --- | --- |
| 3.3.2.1 | Sends an invalid MedCom FHIR message (i.e., a HospitalNotification or CareCommunication) and receives a negative Acknowledgement of the type [ACK AE]. | Test example: Acknowledgement\_3.3.2.1\_A-AE | A random message has been sent and a negative Acknowledgement of type [ACK AE] has been received. |  | Choose |
| 3.3.2.2 | Demonstrates that the SUT can validate and load an Acknowledgement of the type [ACK AE]. |  | The Acknowledgement is validated as negative and loaded. |  | Choose |
| 3.3.2.3 | Demonstrate how the SUT notify the user that the sent MedCom FHIR message contains invalid content. |  | The user is notified that the sent MedCom FHIR message contains invalid content. |  | Choose |
| 3.3.2.4 | Demonstrates that the SUT can link an Acknowledgement of the type [ACK AE] to the original message. |  | Acknowledgement of the type [ACK AE] is linked to the original MedCom FHIR message. |  | Choose |

### S.TC3.A2 Receive Acknowledgement of the type [ACK AR] due to technical error

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test step #** | **Action** | **Test data** | **Expected result** | **Actual result** | **MedCom assessment** |
| 3.3.3.1 | Loads a test data file with an Acknowledgement of the type [ACK AR] and demonstrates how the SUT handles this. | Test example: Acknowledgement\_3.3.3.1\_A\_AR | The SUT loads an Acknowledgement of the type [ACK AR] successfully and sends the original message again. |  | Choose |
| 3.3.3.2 | Demonstrates or explains how the SUT informs the user that a technical error has occurred during sending of the original message. |  | The SUT informs the user that a technical error has occurred during sending of the original message. |  | Choose |
| 3.3.3.3 | Demonstrate or explain how the SUT reacts if it has received an Acknowledgement of type [ACK AA] shortly after it has received the Acknowledgement of type [ACK AR] | Test example: Acknowledgement\_3.3.3.3\_A-AA | The SUT shows the lates received Acknowledgement. |  | Choose |
| 3.3.3.4 | Loads a test data file with an Acknowledgement of the type [ACK AR] and demonstrates how the SUT handles this. | Test example: Acknowledgement\_3.3.3.4\_A-AR | The SUT loads an Acknowledgement of the type [ACK AR] successfully and sends the original message again. |  | Choose |
| 3.3.3.5 | Demonstrates or explains how the SUT informs the user that a technical error has occurred during sending of the original message. |  | The SUT informs the user that a technical error has occurred during sending of the original message. |  | Choose |
| 3.3.3.6 | Demonstrate or explain how the SUT react if it has received an Acknowledgement of type [ACK AE] shortly after it has received the Acknowledgement of type [ACK AR] | Test example: Acknowledgement\_3.3.3.6\_A-AE | The SUT shows the lates received Acknowledgement. |  | Choose |

### S.TC4 Expected Acknowledgement not received

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test step #** | **Action** | **Test data** | **Expected result** | **Actual result** | **MedCom assessment** |
| 3.3.4.1 | Demonstrate or explain how the SUT reacts if it has not received an Acknowledgement for the sent MedCom FHIR message within 30 minutes. |  | The original FHIR message is resent maximum of 3 times. |  | Choose |

## Test of general technical requirements

The purpose of these test steps is to ensure that the technical reception of a DK MedCom Acknowledgement is implemented with satisfactory quality, i.e., meets the governance for message communication on a general level as well as governance for DK MedCom Acknowledgement as described in section 1.4 Background material.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test step #** | **Action** | **Test data** | **Expected result** | **Actual result** | **MedCom assessment** |
| 3.4.1 | Sends a random FHIR message and receives a positive Acknowledgement.  Demonstrate that the SUT does not send an Acknowledgement as a response to the Acknowledgement received. | Test example: Acknowledgement\_3.4.1\_A-AA | The SUT DOES NOT acknowledge the Acknowledgement. |  | Choose |
| 3.4.2 | Sends a random FHIR message and receives a positive Acknowledgement [AA].  Explain or demonstrate how the SUT handles the situation when it receives a duplicate acknowledgment. | Test example: Acknowledgement\_3.4.2\_A-AA | The SUT reacts on the first received Acknowledgement. |  | Choose |
| 3.4.3 | **Format of the Acknowledgement Message**  Demonstrate that SUT can handle an Acknowledge message as an XML  Load the test file with Acknowledgement message in XML format. |  | The SUT loads correctly test files with an Acknowledgement in XML. |  | Choose |
| 3.4.4 | Demonstrate that SUT can handle an Acknowledge message as a JSON format.  Load the test file with Acknowledgement message in JSON format. | Test example: Acknowledgement\_3.4.4\_A-AE | The SUT loads correctly test files with an Acknowledgement in JSON. |  | Choose |

1. X expresses patch level versioning, which includes minor corrections that are backward compatible. [↑](#footnote-ref-2)