OCPP Certification Program

Document 1

Certification Procedure

2023-11-10

v2.0.2

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1. Introduction

This document defines the OCPP certification program, which is managed by the Open Charge Alliance.

The objective of OCPP certification is to ensure that OCPP implementations are conforming to the OCPP specifications.

The OCPP specification is authoritative for certification over existing implementations[1].

Certification is based on the Test Procedure and Test Plans developed by the Open Charge Alliance.

Vendors can implement OCPP without taking part in the Certification Program. However, Vendors cannot claim to be OCPP compliant without being OCPP certified.

The Open Charge Alliance has selected independent testing laboratories to execute the OCPP certification tests. Information on the OCPP certification program, including the list of certification documents, laboratories and certified devices, can be found on the OCA web pages, see www.openchargealliance.org.

The roles of the Vendor, the Test Laboratory and OCA are visualized in the figure below:

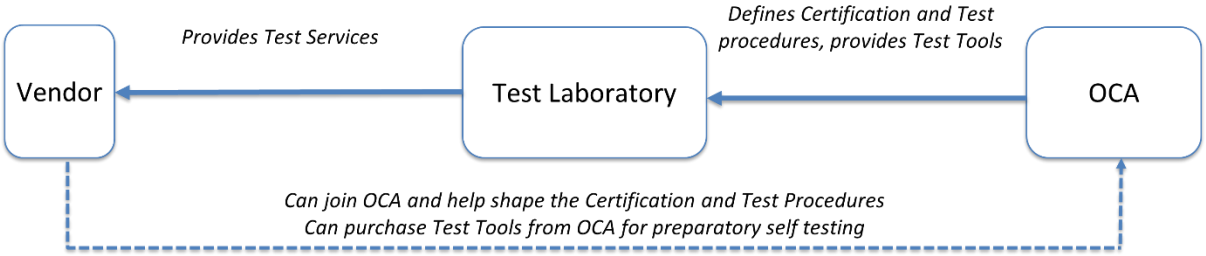


Figure 1: High level certification process

The purpose of this document is to describe the OCPP certification rules and outline the steps to achieve OCPP certification.

2. OCPP versions eligible for certification

Over the past years several versions of OCPP have been released and all versions are used in the field today. The OCPP certification program does *not* cover OCPP versions older than OCPP 1.6, such as 0.7 (released 2010), 1.2 (released 2011) and 1.5 (released 2012).

This version of the OCPP Certification Procedure (version 2.0) describes the certification of OCPP1.6 and OCPP2.0.1.

[1] Please refer to the test plan for the exact OCPP specification version and optionally the exact errata version that will be used as the test basis for testing.

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3. Certification Program Documentation Structure

The documentation for the OCPP Certification Program is structured as follows:

- Document 1. Certification Procedure (this document) gives an overview of the certification program for OCPP and answers the question: “How does the certification program work?”.
- Document 2 (for each OCPP version eligible for certification). Certification Test Procedure & Plans describes what types of tests are part of OCPP certification for that version of OCPP. Furthermore, it gives an overview on how these tests are executed.

4. Terms and definitions

Term / abbreviation	Definition / description
Certification Profile	A set of OCPP functionalities developed by the OCA to target the needs of a specific business driver accredited by the Alliance.
Charging Station	Refers to a Charge Point (OCPP 1.6 terminology) or Charging Station (OCPP 2.0.1 terminology)
Charging Station Software Stack	A Charging Station software stack in this document is defined as software that: - supports OCPP communication - is run and tested separately, without being in a physical Charging Station - can show all required behaviour of a Charging Station supporting OCPP as specified in the OCPP specification (for example: executing (virtual) charging transactions, combining Charging Profiles in a composite schedule, not allowing charging on unavailable connectors etc.).
CSMS	Central System (OCPP1.6 terminology) or Charging Station Management System (OCPP2.0.1 terminology)
CWG	OCA Compliance Working Group
Device	An OCPP based device eligible for OCPP certification. In this document, this refers to a Central System or a Charge Point for OCPP 1.6 and a CSMS, Charging Station or Charging Station Stack for OCPP 2.0.1.
DUT	Device Under Test: The device submitted by the vendor for OCPP certification.
OCA	Open Charge Alliance
OCTT	OCPP Compliance Testing Tool
Participants	Any company involved in the OCPP certification program.
PICS	Protocol Implementation Conformance Statement. The completed PICS document is provided by the vendor to the Test Laboratory, asserting which OCPP specific requirements are met by its device.
Test Laboratory	An independent test laboratory authorized by the Open Charge Alliance to administer the approved OCPP tests and to assess eligibility of devices for OCPP certification.
TWG	OCA Technology Working Group

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Vendor	A manufacturer / developer submitting devices for certification.

5. References

No	Title	Location
1	OCPP Test Procedure & Plans for OCPP 1.6	OCA Website
2	OCA white paper: Improved security for OCPP 1.6-J	OCA Website
3	OCPP Test Procedure & Plans for OCPP 2.0.1	OCA Website

6. Purpose and general principles

6.1 Purpose

The main purpose of OCPP certification is to validate OCPP compliance.

The OCPP certificate can be used by a Charging Station / CSMS *vendor* to show to buyers that its Charging Station / CSMS is OCPP compliant and thus can work together with other OCPP compliant implementations (for the supported functionalities).

The OCPP certificate can be used by a Charging Station / CSMS *buyer* to ensure that the Charging Station / CSMS is able to work together with the existing OCPP compliant infrastructure and/or can prevent a future vendor lock-in.

6.2 Certification Profiles

The certification procedure applies to the Certification profiles published by the OCA.

Certification profiles are different for Charging Stations, Charging Station Management Systems and Charging Station Software Stacks.

6.2.1 Charging Station Management Systems (CSMS)

For OCPP 1.6, a CSMS can only be certified for OCPP when it covers the entire published OCPP specification. For OCPP 2.0.1 a CSMS can also apply for different profiles (with one mandatory profile: the Core profile).

A CSMS can apply for certification of the following CSMS Certification Profiles:

OCPP1.6

1 'OCPP1.6 edition 2' full certificate (the full OCPP1.6 specification)

2 'OCPP1.6 security' certificate (conform the OCPP1.6 security whitepaper [2], for TLS 1.2 or higher). This certificate profile can only be applied for as an addition to a full certificate for the same OCPP software version (see chapter 9 for details on versioning).

The coverage of the certification profiles for OCPP 1.6 is described in appendix A.

OCPP2.0.1

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1 OCPP2.0.1 full certificate (the full OCPP2.0.1 specification)
2 OCPP2.0.1 subset certificate (supported features are stated in the PICS, see Test Procedure Document)

The coverage of the certification profiles for OCPP 2.0.1 is described in appendix B

6.2.2 Charging Station

A Charging Station can apply for certification for different profiles. The reason for this is the diversity of Charging Stations (home chargers, fast chargers). The number of different profiles however is kept to a minimum, to provide clarity to the industry. The Core profile is mandatory for all implementations.

A Charging Station can apply for certification of the following Charging Station Certification Profiles:

OCPP1.6

1 OCPP1.6 full certificate (the full OCPP1.6 edition 2 specification)
2 OCPP1.6 subset certificate (supported feature profiles are stated in the PICS, see Test Procedure Document).
3 OCPP1.6 security certificate (conform the OCPP1.6 security whitepaper [2], for TLS 1.2 or higher). This certificate profile can only be applied for as an addition to a full certificate or a subset certificate for the same OCPP software version (see chapter 9 for details on versioning).

The coverage of these certification profiles is also described in appendix A.

OCPP2.0.1

1 OCPP2.0.1 full certificate (the mandatory functionality of the full OCPP2.0.1 specification)
2 OCPP2.0.1 subset certificate (supported certification profiles are stated in the PICS, see Test Procedure Document).

The coverage of the certification profiles for OCPP 2.0.1 is described in appendix B

6.2.3 Charging Station product subtype

Some devices might be considered a Charging Station, but are limited in a way that effects part of the OCPP communication. To enable this type of device to become OCPP certified, but at the same time clearly distinguish between devices that are limited or not, the certification allows for specific product subtypes. This paragraph provides the list of the current product subtypes. The specific test cases or profiles that are different for this type of devices can be found in the OCPP Test Procedure & Plans document [1].

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The definition of a "Mode 1/2-only Charging Station" for OCPP Certification is:

A Charging Station that supports either one or both of the following Modes of connection for EV charging only, and, specifically, does not support any other Modes of vehicle connection / communication (e.g. Mode(s) 3/4) :

- "Mode 1": charging of an EV using a cable connecting (directly or through an offboard non-IEC61851 charging controller) to the electricity supply using a standard electricity plug (e.g. e-scooters, e-bikes)
- "Mode 2": charging where the connection between the Charging Station and EV is using an in-cable control- and protection device, i.e. an IEC 61851 PWM controller, plugged into a normal "domestic" grade socket

6.2.4 Charging Station Software Stack

For OCPP 1.6 it is not possible to apply for certification for a software stack.

For OCPP 2.0.1 it is also possible for a vendor to apply for certification for a Charging Station Software Stack. Similar to Charging Stations, a Charging Station Software Stack can apply for certification for different profiles. The number of different profiles however is kept to a minimum and the same as for Charging Stations, to provide clarity to the industry. The Core profile is mandatory for all implementations.

A Charging Station Software Stack can apply for certification of the following Charging Station Certification Profiles:

OCPP2.0.1

1 OCPP2.0.1 full certificate (the mandatory functionality of the full OCPP2.0.1 specification)
2 OCPP2.0.1 subset certificate (supported certification profiles are stated in the PICS, see Test Procedure Document).

The coverage of the certification profiles for OCPP 2.0.1 is described in appendix B

Please note that certification of a Charging Station Software Stack does NOT imply that a Charging Station using this software stack is automatically certified. If a Charging Station is using a certified software stack, the Charging Station itself needs to pass all certification tests separately to be called certified.

7. Certification Overview

7.1 Test coverage

To be certified, the tested DUT has to successfully pass:

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- **Conformance tests:** the tested DUT is tested against the OCPP Compliance Testing Tool. The tool has built in validations that should not fail during certification tests. With these validations the Tool verifies whether the DUT has implemented the OCPP specification correctly. The optional features of the OCPP protocol are also covered by the certification, if supported by the DUT. The set of optional features are listed in [1] and [3].
- **Performance measurements:** a number of performance values of the tested DUT are measured and give an idea how the device behaves in a lab environment. The performance parameters are stated by the vendor in the Protocol Implementation Conformance Statement (PICS) and are verified by the test lab.

7.2 Vendor Eligibility

Companies submitting devices for OCPP certification must be OCPP device vendors / developers. In the certification documentation these will be referred to as “vendors”.

OCPP Certification is available for OCA members and non-members.

OCA members get a discount on the Certification Fees since they are already contributing to the development of the Certification Program (including certification test tools) through their OCA membership fee.

All Certificates that are issued will be displayed on the OCA website.

7.3 Device Eligibility

Three types of devices are covered by this certification:

- A Charging Station (or Charge Point) for OCPP 1.6 and OCPP 2.0.1;
- A Charging Station Management System (or / Central System) for OCPP 1.6 and OCPP 2.0.1
- A Charging Station Software Stack for OCPP 2.0.1

The device (or their product subtypes) must have all necessary interfaces and configuration capabilities as described in the OCPP test plans.

In case a Vendor wants to certify a device which is not listed above, the Vendor has the possibility to address its request to the OCA CWG which will address the question and decide if and how it can be handled by the current certification program. Requests can be sent to certification@openchargealliance.org.

7.4 Requirements to Submission

The Vendor must supply one (1) individual sample of the Charging Station, Charging Station Software Stack and / or one (1) individual sample of the CSMS that needs to be certified. In case of a CSMS this could be either a running copy of a CSMS on a server / laptop or a running copy of the CSMS on a separate environment that is accessible via the internet

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(e.g. a cloud environment)[2]. For Charging Station Software Stack, the vendor must provide a running copy of the Software Stack, including some additional simulated functionality. This is further described in the Test Procedure & Test Plan document [3].

Additionally the Vendor must provide the Protocol Implementation Conformance Statement (PICS) and other documents necessary for the laboratory to operate the DUT. This should include a user manual in English.

The PICS is provided by the vendor to the Test Laboratory, asserting which OCPP specific requirements are met by its device. This includes the functionality that is supported by the device and the optional features. The PICS for OCPP 1.6 certification can be found in Appendix A of the OCPP Test Procedure & Plans document, for OCPP 2.0.1 this is available as a separate document.

Once the certification process is completed, the device will be returned to the Vendor.

The roles of the Vendor, Test Laboratory and OCA are visualized in the figure below:

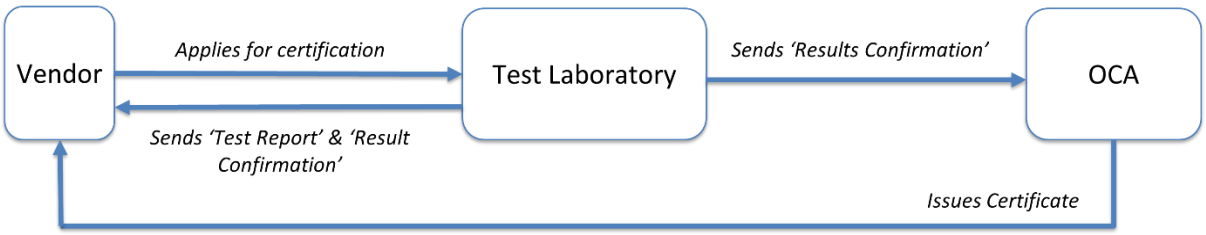


Figure 2: Roles

OCPP Certification testing must be performed at the location of the OCA designated labs. In exceptional cases, after approval of OCA, the OCA designated lab can decide to perform the testing of a Charging Station at the vendor's location. (This is not a right of the customer but a 'courtesy' of the test lab). In this case, the following rules apply:

1. The experienced OCA test lab tester must be on location at the charging station
2. The OCA test lab tester must be the one performing the test
3. The OCA test lab tester must use the test lab test tool (not a vendor provided copy) to perform the tests
4. A picture of the test location & DUT must be provided to OCA
5. It will be clearly stated on the test report where the test was executed
6. All OCA certification rules apply while onsite testing

Exceptional cases maybe:

The Subject of Testing is:

- too large to be transported or installed at the OCA designated Lab
- the test lab cannot support the power demand

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7.5 Registration Process

The registration of a Vendor for certification is a direct arrangement with the Test Laboratory. Please refer to appendix C for the practical issues that have to be taken into account in advance.

The OCA will be informed of the starting of the process by the Test Laboratory, at least to confirm that the vendor is a member in good standing of the Alliance. This is needed for the Lab to determine the correct OCPP Certification Fee. For more details, see the certification checklists in chapter 12.

7.6 Authorized Test Laboratories

The OCA has selected and appointed the following test laboratories to execute the tests:

- DEKRA
- DNV
- Korea Smart Grid Association (KSGA)

At the Open Charge Alliance Website more information can be found regarding the test services that are available at the various Test Laboratories. All Test Laboratories use the same procedures and tools.

7.7 Certification Documents & Support

Test plans, configuration guides and engineering support are made available by the Test Laboratory to vendors in all stages of a vendor's preparation for certification.

7.8 Test Instrumentation

The Test Laboratory uses the latest version of the OCPP Conformance Test Tool (OCTT) for conformance and performance measurements. The OCTT is maintained by the Open Charge Alliance.

Further details regarding the test equipment can be found in the Test Procedure and Plans Document [1] and [3].

7.9 Test Procedures

Test Laboratory engineers will execute all tests and test procedures adhering strictly to the OCPP test procedure and plans [1] and [3]. Engineering staff from vendor companies may be present. The presence may be required to interact with the Test Laboratory engineers to resolve issues that may arise in the course of testing.

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7.10 Lead time

The scheduling of the tests and lead times are agreed between the Vendor and the Test Laboratory.

The Test Laboratory will perform the tests within the prior agreed schedule. If no schedule has been arranged the Test Laboratory will commence testing on a first come first serve basis.

If, during the tests, a failure is detected, it will be immediately, i.e. within one (1) working day, be reported by the Test Laboratory to the Vendor.

The Test Laboratory will submit the “Test Report” and the full test results with all detailed logging to the vendor within five (5) working days after successful completion of the tests.

At reception (i.e. within one (1) working day) of the “Test Report” signed by the Vendor, the Test Laboratory will sign and submit it to the OCA.

The official Certificate will be issued by the OCA within five (5) working days after reception of the “Test Report”, signed by the Vendor and the Test Laboratory, after reception of the signed OCPP Logo Agreement, after payment confirmation by the Lab of the OCA certification fee and after verifying that there are no outstanding amounts due by the vendor to OCA.

7.11 Pass Criteria

To be certified, a vendor / device must successfully pass all the conformance tests as defined in the OCPP tests plan for the type of device submitted for certification.

To be certified, the optional features of the vendor device must successfully pass all related tests cases, as listed in the OCPP conformance test plans. The vendor submits the PICS, that includes the supported optional features. If the DUT fails the tests regarding the allegedly supported optional features, the optional features are then excluded from the PICS by the test lab.

8. Certification Deliverables

8.1 Test Laboratory Deliverables

8.1.1 Test Report

After successful testing of an OCPP device / implementation by the Test Laboratory, the Test Laboratory will provide a document, called “Test Report”, to the Vendor. This document contains all necessary information to clearly identify the Test Laboratory, the certified device (reference, including the hardware / software releases, and a photo in case of a Charging Station), the date of the tests, the test tools, and a summary of the test results, and all optional features supported by the device.

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This Test Report is used by the OCA to issue the certificate (as a "confirmation of certification testing"): the Test Report is first signed by the Vendor, and returned to the Test Laboratory; the Test Laboratory then signs the document, and sends it to the OCA.

8.1.2 Detailed Test Results

After successful completion of the tests, a detailed test report will be delivered by the Test Laboratory to provide a more technical description of tests done, a full set of test results and logging. The detailed logging is for the Vendor's information only. It remains the property of the Vendor and is distributed at their sole discretion. The Test Laboratory will not distribute this without express written consent of the Vendor, but will retain a copy for archival purposes only.

8.2 OCA Deliverables

8.2.1 OCPP Certificate

This is the official statement of OCPP certification delivered to a Vendor by the OCA. It can be used as a proof of the OCPP compliancy of the tested device. OCPP Certificates include the company name, device name, hardware feature set, OCPP software versions, statement of certification, test tool reference, Test Laboratory name, test date, a summary of the test results, all optional features supported by the device and associated test report reference numbers. Certificates delivered in soft and hard copies are the property of the Vendor recipient.

Please note: the OCA will only issue a certificate upon reception of a successful Test Report, completed and signed by the Vendor and the Test Laboratory, after payment confirmation by the Lab of the OCA certification fee, after receiving the signed OCPP Logo Agreement by Vendor, verification of the OCTT test run logging and after payment by the vendor of any outstanding amounts to OCA

OCPP certificates are stored by the OCA. An OCPP Certificate cannot be retracted.

8.2.2 OCPP Certification Logo

The official OCPP Certification Logo is delivered in print and publishing formats for use by Certified Vendors and must only be applied to certified devices, as further provided in the OCPP Logo Agreement. The OCPP Certification Logo is to be used without modification or alteration in device and device packaging, website content, trade show displays and so forth, and otherwise in conformance with the trademark use guidelines from time to time made available by the OCA. The OCPP Certification Logo will state the OCPP certification profile:

- For OCPP 1.6: 'OCPP1.6 full certificate' or 'OCPP1.6 subset certificate' and if applicable 'OCPP1.6 security certificate'
- For OCPP 2.0.1: 'OCPP2.0.1 full certificate' or 'OCPP2.0.1 subset certificate'

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8.2.3 OCPP Certification Logo Agreement

The terms and conditions under which the Vendor can use the OCPP certification logo are stated in the OCPP Certification Logo Agreement. Only after signing this OCPP logo agreement will OCA grant the certificate.

8.2.4 OCPP Certification Directory

All certificates issued by OCA will be listed on the OCA website in the 'OCPP Certification Directory'. The OCPP Certificate states the OCPP version for which the device has been certified, the certification profile and the hardware feature set and OCPP software version of the device.

9. Certification vs. new versions of Charging Station / CSMS software

OCA issues OCPP Certificates for a device / implementation based on a specific (hardware) feature set (Charging Station (Stack)) and a specific OCPP software version: The OCPP software version refers to the set of specific versions of all elements of the full software suite that parses and generates OCPP messages and any part of the software that influences the sequence, timing and content of messages.

A change in the Charging Station (hardware) feature set is only considered relevant for OCPP certification if it concerns facets that might affect behavior under test, such as[3]:

- 1 to N(>1) cardinality change of EVSE(s) and/or connector(s)[4]
- Socket vs. fixed cable connectors
- Token readers: none / single /one per EVSE/connector
- Communication technology (WiFi / ethernet / mobile network) (not relevant for Charging Station Stacks)
- Specifically for OCPP 2.0.1, for the ISO 15118 certification profile: AC and / or DC

If a Vendor releases a new OCPP software version or changes the hardware feature set, this new version is no longer certified and can no longer carry the OCPP certified logo. It is up to the Vendor to decide if and when they want to apply for certification of a new version. Once this new version successfully passes certification, the logo can be used again.

When a vendor already has an OCPP (Subset) certificate and applies for a Security Certificate (OCPP 1.6) or an additional Subset certificate (OCPP 1.6 and 2.0.1), this implies that the OCPP software version has changed. This means that a complete new certification run for this new OCPP software version is done by a certification laboratory.

[3] This list is not exhaustive, in case of doubt, the OCA Compliance Working Group decides whether something is a change in Charging Station (hardware) feature set or not.
[4] Re-certification is not required for single EVSE/connector equipment when a Certificate for an otherwise functionally identical multi EVSE/connector version has already been obtained.

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During the certification of both a Charging Station, CSMS or Charging Station software stack, the version is supplied by the vendor and it is assumed that this will not be changed during the certification run. The certification lab tester will compare the OCPP Software version as reported by the vendor with the version number as displayed in /on the DUT.

10.NDA & Confidentiality

Vendors submitting device for OCPP Certification must sign a mutual NDA as part of their test agreement with the Test Laboratory, to cover any confidential information exchanged during the certification tests.

Vendors are required to give written permission to the OCA for their names to be included in any announcements or communications in relation to the OCPP certification program.

11. Dispute Resolution

Participants to the OCPP certification program are encouraged to find resolution by their own on any conformance issue they face within this program. Any dispute related to the OCPP certification program, the test process or the test results, if not solved between the Participants, has to be reported to the OCA which will address the issue, and will decide any corrective action. Please refer to Appendix D: Issue handling and Dispute Procedure for more details on this.

During testing, if questions arise regarding the interpretation of the specification by the Participants, the applicability or conclusiveness of the tests or the test tools, these shall be reported to the OCA and shall be resolved jointly by the Alliance, the Vendor and the Test Laboratory:

- for questions regarding the certification procedure, the Vendor and/or the Test Laboratory shall consult the OCA CWG;
- for questions regarding the specifications, the Vendor and/or the Test Laboratory shall consult the OCA Technology Working Group (TWG);
- for questions regarding the tests, the Vendor and/or the Test Laboratory shall consult the OCA Compliancy Working Group (CWG);
- for questions regarding the tools, the Vendor and/or the Test Laboratory shall consult the OCA Compliancy Working Group (CWG).

12.Certification Procedure Checklist

Vendor	Lab	OCA	
☐			**OCPP Certification request**: Vendor contacts the Test Laboratory for OCPP Certification. The request must include a description of the Device submitted for OCPP certification tests, along with the

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			completed PICS form (can be downloaded from the OCA website), including the intended Certification Profile, any OCPP optional features supported by the Device.
	☐	☐	**Verifications:** Upon reception of a request from a Vendor, the Test Laboratory will, with the support of the OCA administration, verify OCA membership. This is needed for the lab to determine the applicable certification fees.
☐		☐	**OCPP Logo Agreement:** OCA will send the OCPP logo Agreement to the Vendor.
☐	☐		**Test Agreement**: The Test Laboratory and the Vendor will arrange the scheduling of the test campaign by completing all necessary administrative documents (Non-Disclosure Agreement, Purchase Order, …) and all technical and logistical exchanges necessary to prepare the certification tests. The scheduling of the test will be agreed between the Test Laboratory and the Vendor.
☐			DUT, PICS and additional documentation are provided to the Test Laboratory by the Vendor.
☐	☐		**Conformance testing**: Conformance tests are done by the Test Laboratory. A technical representative of the Vendor is allowed to participate to the tests. If not physically present, a remote support from the technical team of the Vendor must be arranged between the Vendor and the Test Laboratory to help solving any issue raised during the certification tests.
☐	☐		**Performance measurements**: Performance measurements are done by the Test Laboratory. A technical representative of the Vendor is allowed to participate to the tests. If not physically present, a remote support from the technical team of the Vendor must be arranged between the Vendor and the Test Laboratory to help solving any issue raised during the certification tests.
	☐		**Test Report delivery**: After successfully passing all necessary Conformance tests, the Test Laboratory will provide a test report and the detailed Test Results to the Vendor.
	☐		**OCA Certification Fee payment confirmation:** The Test Lab will send a confirmation to OCA that the Vendor has paid the OCA Certification Fee.
☐			**Test Report**: Vendor must sign the Test Report, and send it back to the Test Laboratory. The Test Laboratory will then sign the form and provide the form to the OCA for preparation of the OCPP certificate.
☐		☐	**OCPP logo agreement:** The Vendor will return a signed copy of the OCPP logo agreement to OCA**.**
		☐	**OCPP Certificate**: OCA will issue the certificate and the logo: - Upon reception of the Test Report, completed and signed by the Vendor and the Test Laboratory, and; - Upon payment confirmation by the Lab of the OCA certification fee; - Upon reception of the signed OCPP Logo Agreement by Vendor; - Upon verification of the OCTT test run logging by OCA, and; - after payment by the vendor of any outstanding amounts to OCA.

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Appendix A: OCPP1.6 Certification Profiles

There are three types of OCPP1.6 certificates:

- OCPP1.6 Full Certificate
- OCPP1.6 Subset Certificate
- OCPP1.6 Security Certificate

The Tables below state the mandatory, conditional and optional functionalities for certification.

OCPP 1.6 Full Certificate and OCPP 1.6 Subset Certificate

Functionality	OCPP 1.6 Full certificate	OCPP 1.6 Subset certificate	Description
Core	Mandatory	Mandatory	Basic Charging Station functionality for booting, authorization (incl. cache if available), configuration, transactions, remote control.
Firmware Management	Mandatory	Optional	Support for remote firmware update management and diagnostic log file download.
Smart Charging	Mandatory	Optional	Support for Smart Charging (all profile types, including stacking), to control charging. This functionality is not applicable for the product subtype Mode 1/2 Charging Station.
Reservation	Mandatory	Optional	Support for reservation of a connector of a Charging Station.
Local Authorization List Management	Mandatory	Optional	Features to manage a local list in the charging station containing authorization data for whitelisting users.
Remote Trigger	Mandatory	Optional	Support for remotely triggering messages that originate from a Charging Station. This can be used for resending messages or for getting the latest information from the Charging Station.

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OCPP 1.6 Security Certificate

Functionality	OCPP 1.6 Security Certificate	Description
Security General	Mandatory	Functionality concerning security log, security event notifications, secure firmware updates* and certificate management.
Security Profile 1	Optional	Unsecured Transport with Basic Authentication.
Security Profile 2	Conditional*	TLS (1.2 or higher) with Basic Authentication * Security profile 2 or security profile 3 or both must be implemented; profile 1 is optional.
Security Profile 3	Conditional*	TLS (1.2 or higher) with Client Side Certificates * Security profile 2 or security profile 3 or both must be implemented; profile 1 is optional.

* Please note that the OCPP 1.6 messages UpdateFirmware and FirmwareStatusNotification are *not* to be implemented by a Vendor since these are superseded by their secure counterparts.

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Appendix B: OCPP2.0.1 Certification Profiles

There are two types of OCPP2.0.1 certificates:

- OCPP2.0.1 Full Certificate
- OCPP2.0.1 Subset Certificate

Certification profile	OCPP 2.0.1 Full certificate	OCPP 2.0.1 Subset certificate	Description
Core	Mandatory	Mandatory	Basic Charging Station functionality for booting, authorization, configuration, transactions, remote control, including basic security (security profile 1 and 2)
Optional certification profiles			
Advanced Security	Mandatory	Optional	Support for TLS with client authentication (security profile 3).
Local Authorization List Management	Mandatory	Optional	Support for local authorization list management
Smart Charging	Mandatory	Optional	Support for Smart Charging (various profile types, including stacking), to control charging. This functionality is not applicable for the product subtype Mode 1/2 Charging Station.
Advanced Device Management	Mandatory	Optional	Support for the OCPP Device Model and advanced logging and monitoring.
Reservation	Mandatory	Optional	Support for reservation of a connector of a Charging Station
Advanced UI	Mandatory	Optional	Support for tariff & cost and DisplayMessage functionality
ISO 15118 Support	Mandatory	Optional	Support for ISO 15118 Smart Charging and Plug and Charge authorization.

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Appendix C: Practical arrangements with test laboratory

When registering for certification, the following practical aspects should be taken into account:

- For a CSMS, please contact the test laboratory for the details on connecting the CSMS to the test laboratory network.
- For a Charging Station, the following practical aspects are important to discuss in advance:
    - The lab will have activated SIM cards for communication, if applicable. These will be inserted into the Charging Station. This can be done by the test lab with an instruction that has to be supplied by the vendor. Alternatively, if an engineer of the vendor is present, it can be done by this person instead of the test lab (actually this is the preferred way).
    - the size of the Charging Station;
    - the minimum energy required for the Charging Station to allow a charging session;
    - the maximum power that the Charging Station can use (in order to protect the fuse at the testing laboratory);
    - An instruction about working safely with the Charging Station (connecting to power, inserting a SIM card / ethernet cable and if necessary including access keys for the device);
    - The weight of the DUT. The lab should be notified in order to make the necessary arrangements;
    - The lab will provide the IP configuration for the Charging Station that has to be preconfigured by the vendor. This configuration is lab specific and will be provided by the lab;
    - The test laboratory uses RFID cards of the type MIFARE Ultralight EV1. In case these are not supported by the Charging Station, the vendor should deliver 2 cards to the lab, in order to test the station.

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The following schema depicts the requirements that all the labs will support by default. If these requirements do not suffice for the DUT, the test laboratory should be contacted in advance so that it can make the necessary arrangements for the certification tests.

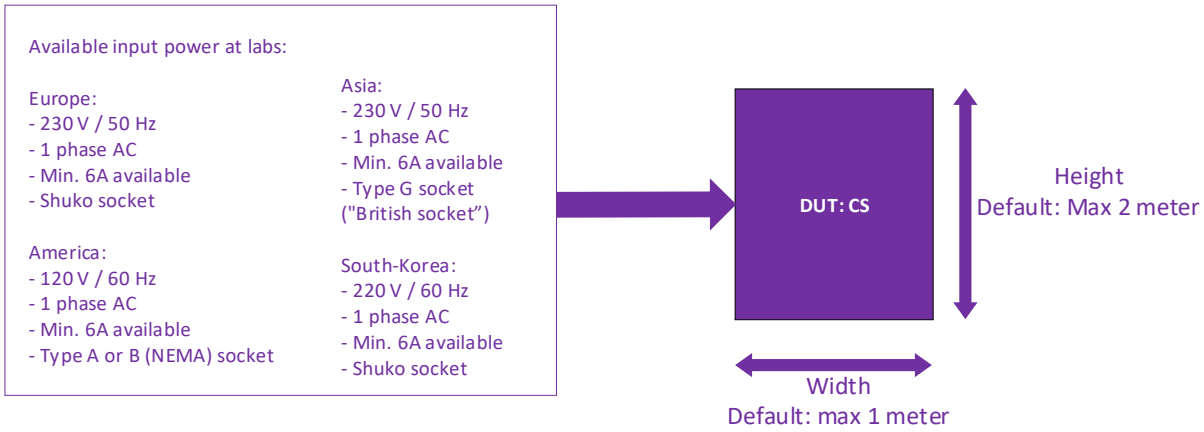


Figure 3: Schematic (minimum) requirements for the testing labs

A Charging Station is to be delivered with a cable with a minimum length of 5 meter, with the appropriate plug for the lab (see schema above).

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Appendix D: Issue handling and Dispute Procedure

1. Introduction

This appendix describes the procedure for handling issues that are found during the OCPP Certification program. This document specifically focusses on the case that an issue is found either in the OCPP specification or the certification documentation or testing tools used by the test laboratories.

2. Issue handling

2.1 Raising an issue

During the certification program, an issue can be found during the actual certification of a vendor, but also by the TWG or OCA (outside of the TWG). This chapter describes the steps in the issue handling process, which is summarized in Figure 4.

During certification an issue can be raised by both the test laboratory or the vendor. An issue in this case means that that the vendor and/or the test laboratory have questions regarding the test results as given by the OCTT or that the vendor does not agree on the outcome of a test as determined by the test laboratory.

Steps in Figure 4: 1a, 1b and 1c.

2.2 Procedure

When an issue is found as described in the previous paragraph, the test laboratory will contact OCA at:

e-mail: certification@openchargealliance.org

using the template from 4. Issue template.

The issue handling procedure as described below is then started. Each of the steps below has a “Maximum time” defined, based on the current frequency of the Working Group calls within OCA (and might therefore be subject to change). In case of issues in the OCTT, these numbers might not be applicable, since this has a dependency on the contract with the provider of OCTT.

To prevent companies from waiting too long for a decision by OCA, the following actions can be taken in the meantime (only on the initiative of OCA, not by the test labs):

- In case of an (obvious) issue in the OCTT, the test case can be executed using a script created by OCA that will be provided to the test lab.

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- In other cases the OCA Board will determine what will be done during the handling of the issue by OCA.
- In case that it is necessary, OCA will try to speed up the process by scheduling meetings before they are regularly scheduled.

2.2.1 Analysis by OCA Technical Editor(s)

The first step is an analysis by the OCA Technical Editor(s), that will:

- determine what the exact issue is
- what the cause / reason of the issue is

The outcome of the analysis determines the remainder of the issue handling process: if it turns out that it is an issue in the vendor Implementation / configuration, the Technical Editor(s) will reply to the issue raised, to both the test laboratory as well as the vendor. This reply will contain the analysis including argumentation. In this case it is up to the vendor to fix the issue and restart certification in case of a failed test case.

If, based on this analysis, it is a valid issue, it is handled by the applicable OCA task group:

- in case of an issue in the OCPP specification the issue will be forwarded to the OCA Technology Working Group (TWG) and be handled in the next working group call.
- in case of an issue in the OCPP Compliancy Testing Tool or certification documentation (i.e. procedures, test plans, etc.) the issue will be forwarded to the OCA Compliance Working Group (CWG) and be handled in the next working group call

Maximum time for analysis: 5 working days.

Step in Figure 4: 2.

2.2.2 Specification issue

OCPP specification issues will be handled by the OCA TWG. After receiving an issue, the OCA TWG Chair will put the issue on the agenda for the next working group call. During this call, the issue will be discussed and a decision will be taken by the TWG. In case that, for example, additional expertise is necessary, the TWG can decide to postpone the decision to a next call.

In case the vendor is an OCA member, it can join the TWG call and join the discussion on the issue. If not an OCA member, the discussion will take place based on the analysis by the technical editor and the issue raised by the test laboratory.

If the issue is indeed an issue in the OCPP specification, the OCA TWG will take the following steps:

1. Write a correction or clarification as an erratum to the OCPP specification;
2. Contact the OCA Compliance Working Group to change the OCPP Testing Tool and / or certification documentation;

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3. In parallel discuss the issue with the OCA Board. See paragraph 2.2.6.

Maximum time: 30 working days.

Step in Figure 4: 3a, 3b, 3c.

2.2.3 Certification issue

Issues in the (test cases in the) OCPP Compliancy Testing Tool and / or the certification documentation will be handled by the Compliance Working Group (CWG). After receiving an issue, the OCA CWG Chair will put the issue on the agenda for the next working group call. During this call, the issue will be discussed and a decision will be taken by the CWG. In case the vendor is an OCA member, it can join the CWG call and join the discussion on the issue. If not an OCA member, the discussion will take place based on the analysis by the technical editor and the issue raised by the test laboratory.

If the issue is indeed an issue in the OCPP Compliancy Testing Tool and / or the certification documentation, the OCA CWG will take the following steps:

1. If necessary: write a correction or clarification for the certification documentation;
2. If necessary: fix an issue in the test cases that define the functionality of the OCPP Compliancy Testing Tool or fix a bug in the OCPP Compliancy Testing Tool. (The latter is excluded from the maximum time below). Please refer to paragraph 5 of this appendix for more information on the maintenance process of the OCPP Compliance Testing Tool;
3. If necessary: inform all test laboratories of a bug in the OCPP Compliancy Testing Tool;
4. In parallel discuss the issue with the OCA Board. See paragraph 2.2.6.

Maximum time: 30 working days.

Steps in Figure 4: 5a, 5b.

2.2.4 Determining severity

The severity of an issue is initially determined by the Working Group chair of the working group that handles the issue and can classified as either “high” or “low”. This is then discussed and approved by the OCA Board, that is in contact with the working group chair in parallel to the discussion in the working group (4a).

The severity is determined by:

- The impact on interoperability in the field;
- Whether it requires manual actions (either from vendors, buyers or test laboratories);
- Whether it causes the charging stations to malfunction.

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If the severity of the issue is classified as “high”, the OCA will contact certified vendors for which the issue is applicable, to inform them of the issue. As stated in the OCA Certification Procedure, certificates handed out previously will remain valid, but vendors are informed to prevent interoperability issues in the field.

For both low and high severity issues, the specification / OCTT / certification will be updated, see next paragraph.

Maximum time: 3 working days.

Steps in Figure 4: 4a, 6a and 6b.

2.2.5 Update specification / certification

If based on an issue anything has changed to the OCPP specification, the OCTT or other test tools or the certification, this information and possible new versions of tooling and documentation are distributed to all test laboratories. They can in turn distribute this update to the vendors that are in the process of certification.

Step in Figure 4: 6c.

2.2.6 Role of CWG

The Compliance Working Group (CWG) of the OCA has regular meetings in which the certification program is discussed. Issues raised by test laboratories will be part of this discussion and it is the role of the CWG to take a decision about whether a vendor will be certified or not in case that an issue has been raised.

Steps in Figure 4: 4a, 4b.

2.2.7 Previously certified companies

In case an issue is found that leads to a change in the certification, this will not influence the certification of companies that are previously certified. Although the OCA might inform them of possible issues in the field based on the severity as mentioned in 2.2.4, the device that was previously certified, remains certified. Of course, in case of re-certification, the vendor should pass the latest certification procedures with the latest errata and latest version of the OCTT. So when re-certifying, the vendor has to be prepared for the change in the certification and cannot make any claims based on the previous certification.

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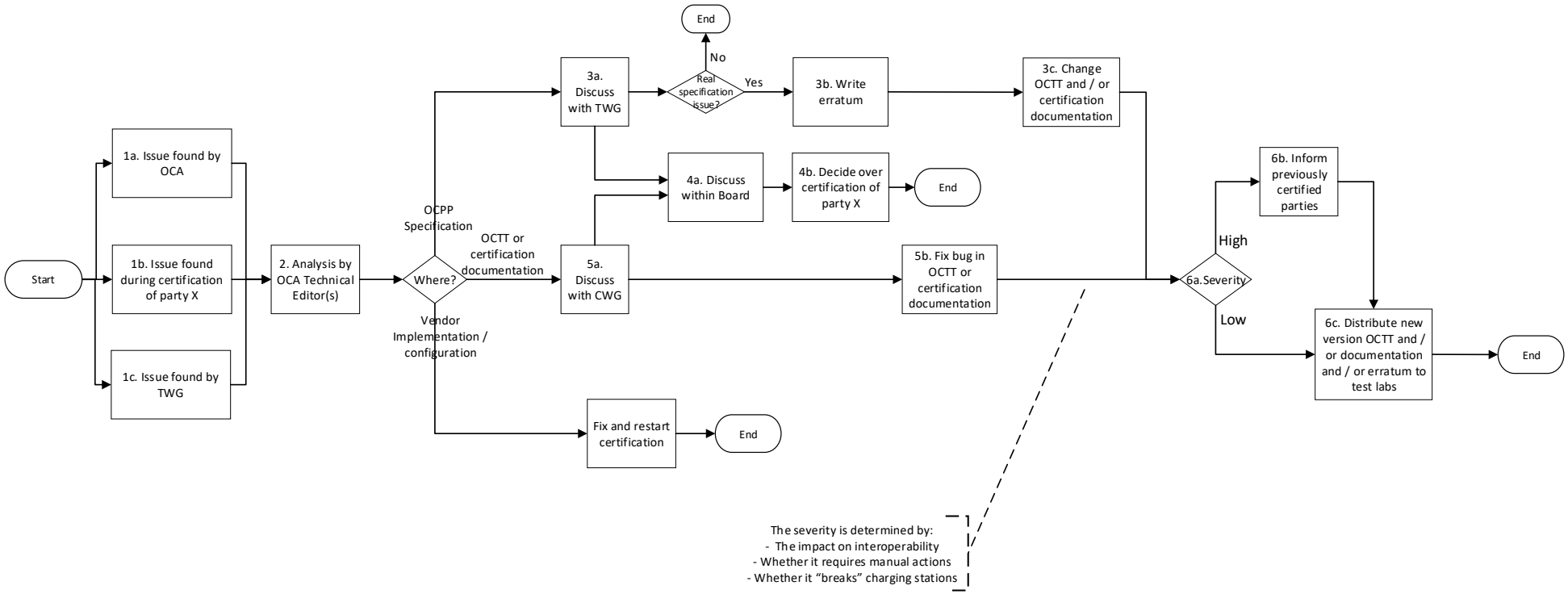


Figure 4: schematic overview of the issue handling process

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2.3 Other issues

All issues that do not fit in the procedure as described in paragraph 2.2 will be handled by the OCA Board on an individual basis.

3. Disputes

In case of a dispute between a test laboratory and a vendor, this can be reported to the OCA at:

e-mail: certification@openchargealliance.org

Disputed will be handled by the OCA Board on an individual basis and only to the extent that it is related to the OCPP specification and / or certification program.

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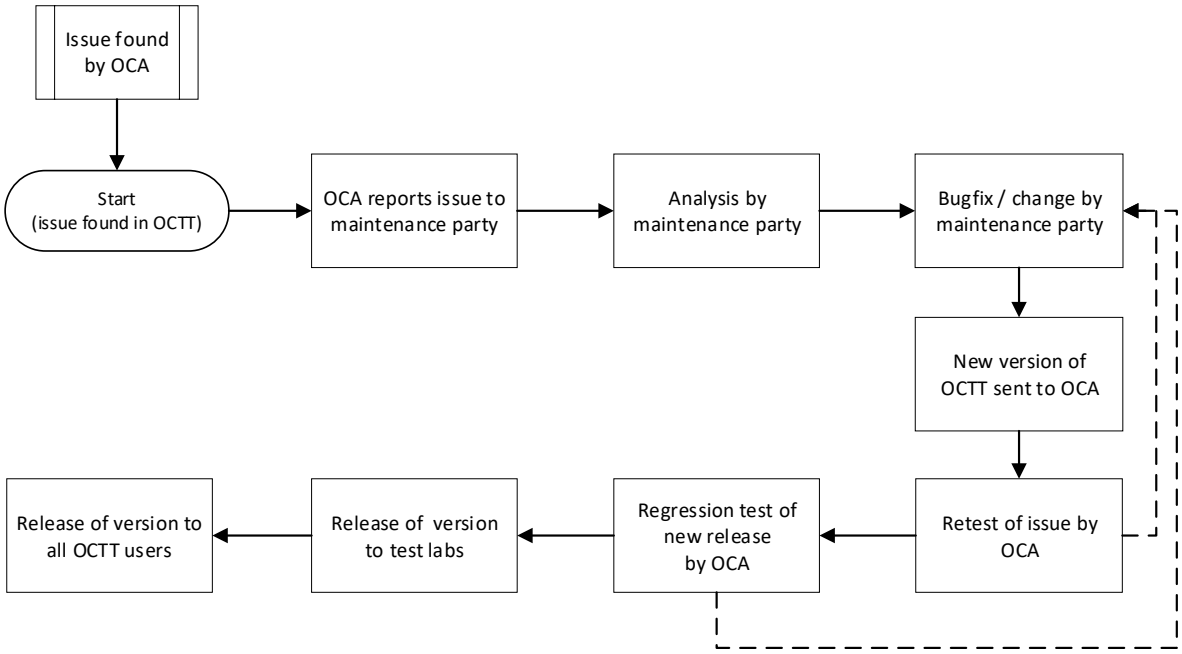
4. Issue template

Issue template	
Vendor	<name>
	Contact details: Name: <name of contact person> E-mail: <email address> Phone: <phone number>
Test laboratory	<name>
	Contact details: Name: <name of contact person> E-mail: <email address> Phone: <phone number>
Summary	<summary of the issue>
Test type	☐ Conformance test ☐ Performance measurement
Test reference	Name of test / test number
Description	<more elaborate description of the issue>
Applicable documentation	<documentation supporting the issues>
Attached logging	<if applicable: logging of the failed test>

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5. Tool maintenance

The OCA has a maintenance agreement with the company that has developed the OCPP Compliance Testing Tool. The details of this mutual agreement are private, but the overall process of fixing issues in the OCTT is schematically represented in the figure below:



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