OpenADR Alliance

Certification Policy

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1 TABLE OF CONTENTS

2 ABOUT THIS DOCUMENT

2.1 CONTACT INFORMATION

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2.2 REVISION HISTORY

Revision number	Date	Comments	Author
V0.0	5/1/2012	Initial Draft	Rolf Bienert
V1.0	8/6/2012	Final	Rolf Bienert
V1.1	4/19/2019	Added certification by similarity, other minor edits	Rolf Bienert

3 REFERENCES

Certification Requirements OpenADR 2.0a – PLEASE REVIEW FOR LATEST VERSION INFO

OpenADR 2.0a/b Profile Specification v1.1 or later

OpenADR 2.0 Protocol Implementation Conformance Statement (PICS) v1.1.2 (use latest version for certification)

OpenADR 2.0 Test Specification v1.1.2

OASIS Energy Interoperation Specification v.1.0

OpenADR Certificate Policy v1.1 (this document)

4 INTRODUCTION

The OpenADR Alliance was formed to build on the foundation of technical activities to support the development, testing, and deployment of commercial OpenADR and facilitates its acceleration and widespread adoption. This approach needs to engage service providers (such as electric utilities and systems operators) within the domain of the Smart Grid that publish OpenADR signals, as well as the facilities or third-party entities that consume them to manage electric loads. The OpenADR Alliance will enable all stakeholders to participate in automated DR, dynamic pricing, and electricity grid reliability.

Key element to a widespread and simplified adoption is the establishment of a certification program to ensure compliance and interoperability. This document outlines the policy, processes and procedures for OpenADR 2.0 testing and certification.

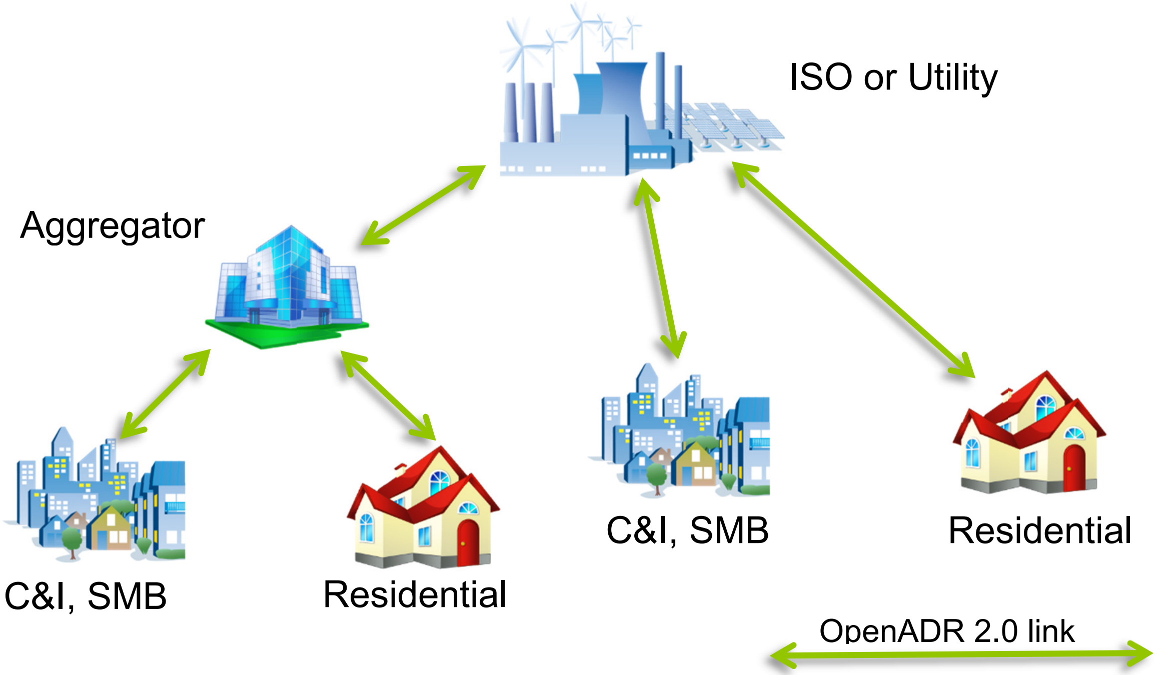
OpenADR2.0 follows the notion of Virtual Top Nodes (VTN) and Virtual End Nodes (VEN) as outlined in the OASIS Energy Interoperation. For the purpose of device development, the OpenADR Alliance always tests the interface between a VTN and a VEN whereas either node can be the device under test (DUT). Intelligence build into the systems not related to the OpenADR 2.0 message exchange is not part of the OpenADR Alliance testing program.

5 DEVICE AND SYSTEM CERTIFICATION

5.1 PRODUCT TYPES

The Virtual Top Nodes (VTN) is an information exchange server. This server can be located at the highest infrastructure level (e.g. Utility Company), at an aggregator level, or at the managed facility. Each VTN can have 1-N VENs. Commonly VTNs are reasonably powerful computer systems.

The Virtual End Nodes (VEN) are clients to one or more VTN and can be located one level below any of the suitable VTN locations. VENs can be simple devices like load controllers, thermostats or more powerful implementations like energy management systems or aggregator level control servers.



Images courtesy of Clasma Events, Inc.

Figure 1 – Example System Architecture

As illustrated in Figure 1 above, any combination or VTN and VEN is possible. Also, as shown above, systems can function as a VEN to a VTN in a higher layer of the hierarchy and as a VTN to subordinate VENs. The exchanged events in either direction can be independent from each other and the OpenADR Alliance neither describes nor tests any processes executed within this VEN/VTN system. However, both interfaces will be evaluated and tested independently to assure adherence to the profile specification and interoperability.

Based on the above structure, the OpenADR Alliance tests and certifies VTN (server) and VEN (client) interfaces. If a device or system incorporates both functionalities, each function will be tested separately. However, only one certification will be needed in this case.

Examples:

VTN – Demand Response (DR) server at a utility; DR server at an aggregator; Energy Management unit at a large facility with subordinate end devices – Tested as server with Push and Pull modes.

VEN – Building Automation System, Energy Management system, Thermostat, Load Controller

The OpenADR Alliance understands and appreciates that the OpenADR 2.0 functionality can be one part of a larger system. In order to keep testing and certification efforts as simple and effective as possible, we encourage vendors to create separate part numbers and version numbers for the OpenADR 2.0 server and client implementation.
NOTE: Any changes to the OpenADR 2.0 implementation will need to be re-evaluated and re-certified. This can include none, partial or full testing of the system upon review by the OpenADR Alliance.

5.1.1 REQUIRED INFORMATION FOR CERTIFICATION

The following is a list of required information in order to certify an OpenADR 2.0 implementation.

- Manufacturer Name
- Device/System/Implementation Name or model designation
- VTN or VEN, Combination of both
- Hardware Version if applicable
- Firmware/Software version of the OpenADR 2.0 stack
- Supported Profile (a,b,c)
- Push mode support
- Supported Security level (minimum Standard)
- Supported Transport Protocol (minimum Simple HTTP)

The following is a list of documents required for certification. The templates can be downloaded from the alliance website (members section)

- Filled in Declaration of Conformity
- Filled in Protocol Implementation Conformance Statement (PICS)
- Passing Test Report from authorized test service provider
- Product Picture or System overview sketch (optional)
- Web link to implementation (for website posting)
- Marketing text for website (optional)

5.2 LOGO USAGE

Only devices or systems using one of the OpenADR Alliance profiles that have gone through test house testing and certification administered by the OpenADR Alliance can use the OpenADR certifies logo. The OpenADR Alliance logos are administered by the OpenADR Alliance Logo License Agreement.

5.3 PROFILE COMPATIBILITY

The OpenADR 2.0 Profile Specification contains a matrix of mandatory and optional features that are applicable for different product certifications. Vendors should review this matrix before the design is being created.

The OpenADR 2.0a profile with a simple HTTP transport mechanism, Standard Security and Pull functionality is by default interoperable between all VTNs and VENs. Additional features may not be compatible depending on the associated systems. It is therefore imperative to review the required features to determine the level of functionality and interoperability needed.

OpenADR profiles are backwards compatible on the VTN level. Higher function systems will support lower function clients.

5.4 TEST FACILITIES

The OpenADR Alliance has approved a number of test service providers to assure the highest possible level of interoperability and consistency. Furthermore, certification testing can only be executed using the OpenADR Alliance Test Tool. The current test facilities can be found here - https://www.openadr.org/certification-process

Manufacturers are also encouraged to purchase the official OpenADR Alliance test tool to do their own pretesting before contracting the test facility. For more information please visit www.openadr.org/shop

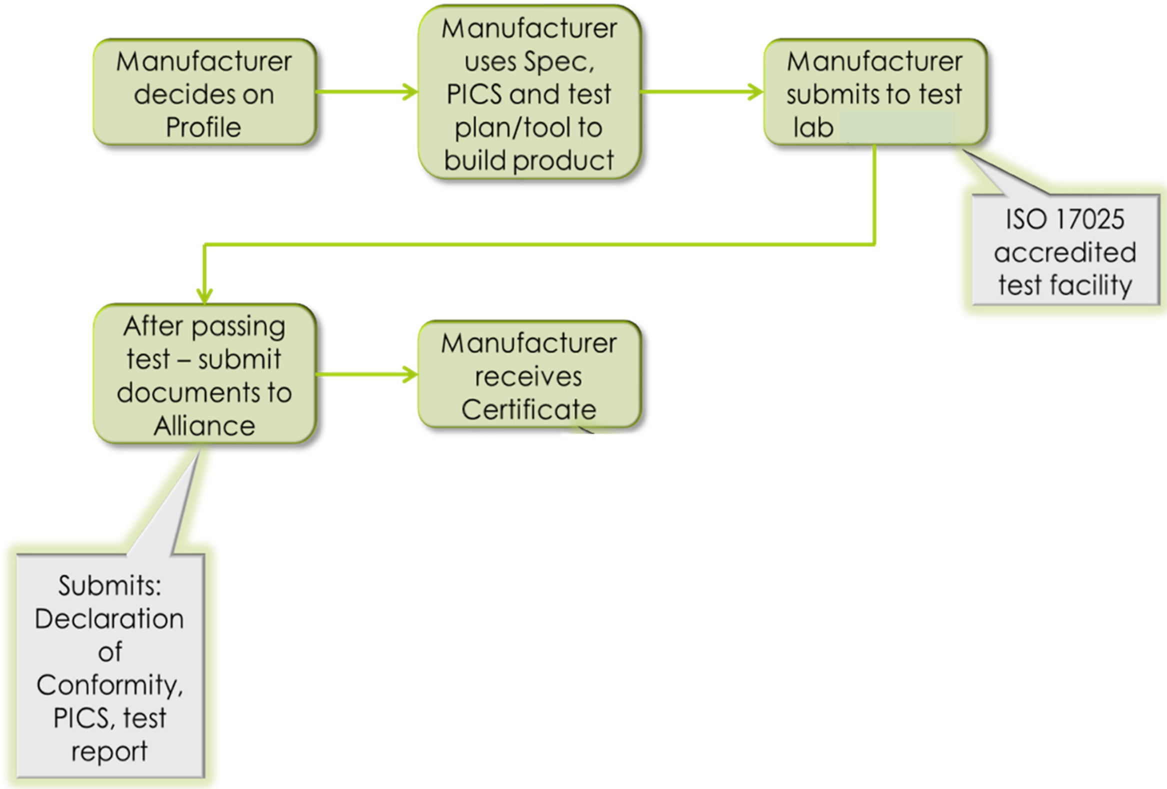
6 TESTING AND CERTIFICATION REQUIREMENTS & PROCEDURES

6.1 GENERAL REQUIREMENTS

As previously mentioned, only devices tested at an OpenADR Alliance authorized test facility using the OpenADR Alliance Test Tool are eligible for certification. The only exception is certification by similarity (see section 6.3.7). Please note the following important requirements that apply during testing.

1. The test tool contains all applicable test cases. All applicable test cases must pass for certification purposes and the manufacturer is required to be able to set up the Device under Test (DUT) as per the test case requirements.
2. Any failing test cases and consequent DUT modification result in a FULL RETEST of the DUT. The test lab is required to adhere to this procedure. In certain cases this will lead to additional fees. Therefore we recommend pre-testing your implementation with the OpenADR Alliance test tool. Configuration issues that result in failing test cases do NOT require a full retest.
3. Interoperability – The OpenADR Alliance test tool is the principal reference implementation for certification. However, after successful testing against the tool, the DUT will be spot tested with existing 'real' reference implementations to assure a higher level of interoperability
4. In case of any dispute between the test house and the manufacturer, please contact certification@openadr.org
5. Testing and Certification is only valid for the tested revision of the implementation. Any changes to the either hardware (for devices) or software will need to be re-evaluated.

6.2 CERTIFICATION FLOWCHART


Manufacturer decides on Profile
Manufacturer uses Spec, PICS and test plan/tool to build product
Manufacturer submits to test lab
ISO 17025 accredited test facility
After passing test – submit documents to Alliance
Manufacturer receives Certificate
Submits: Declaration of Conformity, PICS, test report

6.3 PROCESSES AND PROCEDURES

6.3.1 MANDATORY AND OPTIONAL FEATURES

Manufacturers should note that there are two kinds of “optionality” in OpenADR 2.0

1. Optional in Payload: There are features, operations and attributes in the payload of OpenADR 2.0 that do not have to be included in ALL messages. However, if they are present then the implementation MUST be able to process them
2. Optional Features: There are some features that will not be supported by all implementations. VTNs or VENs must not require any optional feature to be present at its peer for basic functionality.

The OpenADR 2.0 Profile Specification and the OpenADR Alliance Protocol Implementation Conformance Statement (PICS) contains a list of the Optional Features. Any supported optional features must be declared by the manufacturer and must be tested.

6.3.2 RECORD HANDLING AND RETENTION

The OpenADR Alliance will retain certification records for at least 10 years. The OpenADR Alliance appointed test and certification bodies are required to follow ISO 17025 and ISO 17065 respectively.

6.3.3 COMPONENT OR MODULAR TESTING

The OpenADR Alliance currently does not support subcomponent testing. Only full OpenADR 2.0 Implementations can be certified. The Alliance understands that full implementations can be used in different products. However, these products must be certified separately. Certification by similarity is possible upon request to certification@openadr.org.

6.3.4 NEW SPEC RELEASES

All certifications are valid for the current specification version only. The OpenADR Alliance will take any reasonable steps to maintain backwards compatibility between current and future versions of the specifications. Manufacturers are not required to retest and certify an implementation for a newer specification version unless otherwise specified. The OpenADR Alliance Architectural Review Committee will define the necessity for such re-certifications.

6.3.5 CERTIFICATE INFORMATION

Upon completion of testing and certification, manufacturers will received a certificate which includes all aforementioned product information, the tested specification version, issue date and expiration date of the certificate, and a sample of the logo that can be used in conjunction with the implementation.

All implementations are also posted on the OpenADR Alliance' website at https://products.openadr.org/ .

If products are revised and retested, a revised product will be added to the website identifying the different version.

All documents pertaining to a certification are part of the listing to identify all relevant parameters.

6.3.6 TEST PLAN

The OpenADR test plan has been created by the Profile Working Group and is available at the Profile Working Group website.

The current version for certification testing is: **V1.1.3 (or later)**

6.3.7 RETESTING AND CERTIFICATION BY SIMILARITY

Any modification to an OpenADR 2.0 implementation must be re-evaluated and re-certified. Please submit the request to certification@openadr.org.

6.3.7.1 CERTIFICATION BY SIMILARITY

6.3.7.1.1 INTRODUCTION

In certain circumstances the OpenADR Alliance allows the certification of new products without additional testing at an accredited test facility, or with limited testing scope. Every product that claims to be an "OpenADR Certified Product" must nonetheless go through the OpenADR Alliance certification process. For a company to have a certified product, company must be a member of the OpenADR Alliance and the product shall be listed on the OpenADR Alliance products web page.

6.3.7.1.2 CERTIFICATION BY SIMILARITY USE CASES AND OPTIONS

6.3.7.1.2.1 IDENTICAL PRODUCTS

A certified product company may decide to sell their OpenADR Certified Product under a different label without re-testing if the OpenADR functionality has not been changed. All components and API characteristics of the OpenADR software stack must remain unchanged. The newly branded product must go through the certification and listing process at the OpenADR Alliance, but testing will not be required. If another product company wants to private label the already certified product under their company name, the company private labeling the product must be a member of the OpenADR Alliance and submit the product for certification.

Requirements and options:

- Listing company must be a member of the alliance

- Certification must be authorized by the OpenADR Alliance or an appointed certification body
- OpenADR stack component and API characteristics must be identical to the certified product
- Company must provide a written affidavit that the newly branded product is identical to the already tested and certified product
- Examples of allowed modification: Different color, external features, or hardware ports on physical devices; Modified graphical user interface while maintaining the required functionalities; different branding, packaging, or logos. Other changes must be reviewed by the OpenADR Alliance
- While not required, it is encouraged to self-test each product variation using the official OpenADR Alliance test tool

6.3.7.1.2.2 MODIFIED API OR INTERFACE APPLICATION

In some cases, a manufacturer might elect to re-purpose the stack contained in their OpenADR Certified Product implementing different API characteristics or interfacing with the APIs in a substantially different way that the originally certified product. Due to the nature of OpenADR implementations, it is impossible to exactly define where the "fully working" OpenADR software stack ends and where unrelated (for the OpenADR functionality) functionality starts. It is therefore difficult to specify when a re-test must be conducted. A manufacturer interested in selling and marketing such an OpenADR product using different interface applications can submit an overview of their implementation, the APIs, or interface applications to the OpenADR Alliance or to the selected test lab for review. Independent technical experts will review the code and decide if certification by similarity is possible for the product series or if re-testing is required. The assessment fee by the OpenADR Alliance is USD $499. The assessment fee of test labs depends on the lab. Requests should be submitted to certification@openadr.org. Approved OpenADR test labs can also provide this service after submitting their evaluation process to the OpenADR Alliance. Other requirements from paragraph 1 (Identical Products) apply.

6.3.7.1.2.3 SELF-TESTING FOR UPDATED PRODUCTS

In some cases, manufacturers of certified products are allowed to self-test product updates and submit these for re-certification. Generally, this applies to minor product upgrades, firmware updates, etc.

Note: This path to certification requires pre-approval by the OpenADR Alliance and is dependent on the manufacturer's engagement in alliance activities and knowledge of OpenADR. A decision will be made based on an evaluation of these criteria.

Requirements

- The product was initially tested at an accredited test facility
- The updated product does not represent a new product or product line
- The manufacturer owns an up-to-date copy of the OpenADR Test Tool
- The manufacturer consistently participates in the OpenADR working group activities and discussions
- The manufacturer has demonstrated advanced knowledge and understanding of OpenADR and the test tool.
- The manufacturer performs an uninterrupted "Certification Test Run" as provided by the test tool
- The manufacturer submits a new set of supporting documents to the Alliance

Questions should be addressed to certification@OpenADR.org

6.3.8 TEST EVENTS

From time to time the OpenADR Alliance conducts test events for the purpose of spec development and implementation support. These events are not certification events and implementations will still need to go through the full testing and certification process to obtain OpenADR 2.0 certification.

During specification development, test events are being held with an initial group of implementers to ensure stability and functionality of the specification. A minimum of three implementations are required to advance the specification to the next revision level during its creation or to add additional functionalities. These initial implementations will be retained as reference implementations for certification testing.

During the test events, the OpenADR Alliance test tool will be the principal reference and will also be validated by completing testing with the other required implementations.

6.3.9 CERTIFICATE EXPIRATION AND MARKET SURVEILLANCE

Issued OpenADR 2.0 Certificates are valid for one year. The designated Certification Body (CB) or the OpenADR Alliance may contact the certificate holder at the expiration time to start the renewal process. The certification will auto-renew if the OpenADR Alliance does not contact the manufacturer.

Certificate holders are required to be members of the OpenADR Alliance. If membership is cancelled, the product listing will be removed from the website and the certificate will expire at the expiration date.

The OpenADR Alliance retains the right to randomly select 1-5 implementations per year for market surveillance testing. The manufacturer is required to provide an off-the-shelf sample of the implementation for testing. The Alliance will bear the cost of the testing. If products are found to not comply with the OpenADR 2.0 Specification and test plan, the certification will be revoked until a full retest and re-certification was conducted.

6.3.10 SECURITY TESTING

The OpenADR Alliance has evaluated all available NIST and UCAIUG OpenSG guidelines for cyber security and has selected to implement two levels of security. Please see the OpenADR 2.0 Profile Specification, the OpenSG OpenADR Security Task Force Guidelines and the relevant NISTIR documents for reference.

OpenADR 2.0 used common security mechanisms (TLS and digital signatures) with server and client side certificates to secure the link between the VTN and the VEN. During compliance testing, several positive and negative test cases will be executed to test and validate the proper implementation of the security mechanisms.

The OpenADR Alliance strongly recommends that DR program operators and manufacturers follow Common Criteria Security guidelines for systems, products and services. These are however outside the realm of OpenADR 2.0.

6.3.11 FEEDBACK ON TESTING, CERTIFICATION AND SPECIFICATION

The OpenADR Alliance is very interested in feedback from manufacturers. Any technical comments are welcome and will be discussed in the Profile Working Group and the Architectural Review Committee. If comments are deemed appropriate, the OpenADR 2.0 documents will be amended. If comments relate to the OASIS Energy Interoperation Standard, the OpenADR Alliance is a member of OASIS and will work with the OASIS team to resolve the issues.

Please submit your comment to comments@openadr.org

6.3.12 DISPUTE RESOLUTION

Any disputes during testing and certification can be raised with the OpenADR Alliance. The following is the process for resolution.

1. Manufacturer and test house try to resolve the issue
2. Either party can contact the OpenADR Alliance to escalate the issue at certification@openadr.org
3. The Alliance will review the issue and depending on the nature of the dispute discuss the topic anonymously in the Working Groups, Architecture Review Committee or Board or Directors if it cannot be resolved by the Technical Director of the Alliance.
4. Within 10 business days, the Alliance will reply to the dispute resolution request.

6.3.13 TEST FACILITY AND CERTIFICATION BODY

In order to maximize interoperability and consistency of the testing and certification program, the OpenADR Alliance decided to initially only authorize one testing firm to conduct OpenADR 2.0 certification testing. The testing facility has been selected in an RFP process and is ISO 17025 accredited. Furthermore, the OpenADR Alliance reviewed the dedicated staff and processed at the test facility to ensure a high level of proficiency.

Initially all certifications will be channeled through the OpenADR Alliance. In the next step, an ISO17065 accredited certification body (CB) will assume the responsibility for document review, storage and issuance of certificates.

The OpenADR Alliance annually reviews the accreditation of the test facility and certification body.

Personnel at the test facility must have the following qualifications:

- At least 2 years of experience testing products for certification
- Experience testing software based systems
- Supervised testing of at least 5 OpenADR implementations
- At least 8 weeks of experience using the OpenADR Alliance test tool
- Participating in OpenADR Alliance Profile Working Group calls

The OpenADR Alliance will use the following high level guidelines to audit the test facility

- Qualifies personnel on site and interviewed
- Facility follows ISO17025 rules for access control, storage and sample handling
- ISO17025 accreditation is current and OpenADR 2.0 Test Plan is added to the testing scope
- Review of test bed and supervision of one full OpenADR 2.0 test

- Review of test facilities project management and quoting system
- Monthly status and review meetings

Any problems discovered by the test facility that are pertinent to the OpenADR 2.0 testing must be reported to Alliance for resolution.

- End Of Document -