

Identity Authority Interface Version 1.0

Committee Specification Draft 01

03 December 2015

Specification URIs

This version:

<http://docs.oasis-open.org/coel/IDA/v1.0/csd01/IDA-v1.0-csd01.docx> (Authoritative)

<http://docs.oasis-open.org/coel/IDA/v1.0/csd01/IDA-v1.0-csd01.html>

<http://docs.oasis-open.org/coel/IDA/v1.0/csd01/IDA-v1.0-csd01.pdf>

Previous version:

N/A

Latest version:

<http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.docx> (Authoritative)

<http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.html>

<http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.pdf>

Technical Committee:

[OASIS Classification of Everyday Living (COEL) TC](https://www.oasis-open.org/committees/coel/)

Chairs:

David Snelling (David.Snelling@UK.Fujitsu.com), [Fujitsu Limited](http://www.fujitsu.com/)

Joss Langford (joss@activinsights.co.uk), [Activinsights Ltd](http://www.activinsights.com/)

Editor:

Paul Bruton (Paul.Bruton@tessella.com), [Tessella Ltd.](http://tessella.com/)

Related work:

This specification is related to:

* *Classification of Everyday Living Version 1.0.* Edited by Joss Langford. Latest version: <http://docs.oasis-open.org/coel/COEL/v1.0/COEL-v1.0.html>.
* *Roles, Principles, and Ecosystem Version 1.0*. Edited by Matthew Reed. Latest version: <http://docs.oasis-open.org/coel/RPE/v1.0/RPE-v1.0.html>.
* *Behavioural Atom Protocol Version 1.0*. Edited by Joss Langford. Latest version: <http://docs.oasis-open.org/coel/BAP/v1.0/BAP-v1.0.html>.
* *Minimal Management Interface Version 1.0*. Edited by David Snelling. Latest version: <http://docs.oasis-open.org/coel/MMI/v1.0/MMI-v1.0.html>.
* *Public Query Interface Version 1.0.* Edited by David Snelling. Latest version: <http://docs.oasis-open.org/coel/PQI/v1.0/PQI-v1.0.html>.

Abstract:

This document defines the interface protocol for an Identity Authority (IDA). The IDA is a central web-based service, needed in any ecosystem that conforms to the ecosystem architecture, that statelessly provides unique, signed Pseudonymous Keys. These Pseudonymous Keys are used to register actors within the ecosystem and are then requested by an actor wishing to register an individual person within the ecosystem (and thus enter into data exchanges about that person's Behavioural Atoms).

Status:

This document was last revised or approved by the OASIS Classification of Everyday Living (COEL) TC on the above date. The level of approval is also listed above. Check the “Latest version” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at <https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=coel#technical>.

TC members should send comments on this specification to the TC’s email list. Others should send comments to the TC’s public comment list, after subscribing to it by following the instructions at the “[Send A Comment](https://www.oasis-open.org/committees/comments/index.php?wg_abbrev=coel) button on the TC’s web page at <https://www.oasis-open.org/committees/coel/>.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the TC’s web page (<https://www.oasis-open.org/committees/coel/ipr.php>).

Citation format:

When referencing this specification the following citation format should be used:

[COEL-IDA-v1.0]

*Identity Authority Interface Version 1.0*. Edited by Paul Bruton. 03 December 2015. OASIS Committee Specification Draft 01. <http://docs.oasis-open.org/coel/IDA/v1.0/csd01/IDA-v1.0-csd01.html>. Latest version: <http://docs.oasis-open.org/coel/IDA/v1.0/IDA-v1.0.html>.

Notices

Copyright © OASIS Open 2015. All Rights Reserved.

All capitalized terms in the following text have the meanings assigned to them in the OASIS Intellectual Property Rights Policy (the "OASIS IPR Policy"). The full [Policy](https://www.oasis-open.org/policies-guidelines/ipr) may be found at the OASIS website.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published, and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this section are included on all such copies and derivative works. However, this document itself may not be modified in any way, including by removing the copyright notice or references to OASIS, except as needed for the purpose of developing any document or deliverable produced by an OASIS Technical Committee (in which case the rules applicable to copyrights, as set forth in the OASIS IPR Policy, must be followed) or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by OASIS or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and OASIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY OWNERSHIP RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

OASIS requests that any OASIS Party or any other party that believes it has patent claims that would necessarily be infringed by implementations of this OASIS Committee Specification or OASIS Standard, to notify OASIS TC Administrator and provide an indication of its willingness to grant patent licenses to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification.

OASIS invites any party to contact the OASIS TC Administrator if it is aware of a claim of ownership of any patent claims that would necessarily be infringed by implementations of this specification by a patent holder that is not willing to provide a license to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification. OASIS may include such claims on its website, but disclaims any obligation to do so.

OASIS takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on OASIS' procedures with respect to rights in any document or deliverable produced by an OASIS Technical Committee can be found on the OASIS website. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this OASIS Committee Specification or OASIS Standard, can be obtained from the OASIS TC Administrator. OASIS makes no representation that any information or list of intellectual property rights will at any time be complete, or that any claims in such list are, in fact, Essential Claims.

The name "OASIS" is a trademark of [OASIS](https://www.oasis-open.org/), the owner and developer of this specification, and should be used only to refer to the organization and its official outputs. OASIS welcomes reference to, and implementation and use of, specifications, while reserving the right to enforce its marks against misleading uses. Please see <https://www.oasis-open.org/policies-guidelines/trademark> for above guidance.

Table of Contents

[1 Introduction 5](#_Toc440991465)

[1.1 Terminology 5](#_Toc440991466)

[1.2 Normative References 5](#_Toc440991467)

[1.3 Non-Normative References 5](#_Toc440991468)

[2 The Identity Authority 6](#_Toc440991469)

[3 Protocol Overview 7](#_Toc440991470)

[4 API Overview 9](#_Toc440991471)

[4.1 Introduction 9](#_Toc440991472)

[4.2 Authentication and Authorisation 9](#_Toc440991473)

[4.3 PseudonymousKey endpoint 9](#_Toc440991474)

[4.3.1 Response 10](#_Toc440991475)

[4.4 PseudonymousKeyBatch endpoint 10](#_Toc440991476)

[4.4.1 Request 11](#_Toc440991477)

[4.4.2 Response 11](#_Toc440991478)

[4.5 Validation endpoint 12](#_Toc440991479)

[4.5.1 Request 12](#_Toc440991480)

[4.5.2 Response 13](#_Toc440991481)

[5 Conformance 14](#_Toc440991482)

[Appendix A. Acknowledgments 15](#_Toc440991483)

[Appendix B. Revision History 16](#_Toc440991484)

# Introduction

[All text is normative unless otherwise labeled]

## Terminology

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

## Normative References

[RFC2119] Bradner, S., “Key words for use in RFCs to Indicate Requirement Levels”, BCP 14, RFC 2119, March 1997. <http://www.ietf.org/rfc/rfc2119.txt>.

[RFC4122] Leach, P., Mealling, M., Salz, R., “A Universally Unique Identifier (UUID) URN Namespace”, RFC 4122, July 2005. <http://tools.ietf.org/html/rfc4122>

[RFC3339] Klyne, G., Newman, C., “Date and Time on the Internet: Timestamps”, RFC 3339, July 2002. <http://www.ietf.org/rfc/rfc3339.txt>

[COEL\_RPE-1.0] *Roles, Principles, and Ecosystem Version 1.0.* Latest version: <http://docs.oasis-open.org/coel/RPE/v1.0/RPE-v1.0.docx>

## Non-Normative References

[Data to Life] Reed, M. & Langford, J. (2013). Data to Life. Coelition, London. ISBN 978-0957609402

# The Identity Authority

An Identity Authority (IDA) provides an Identity Authority Interface (the API) that generates and subsequently validates a digitally signed unique Pseudonymous Key to be used in signup to Data Engine services. The IDA does not require any input to generate the Pseudonymous Key.

Section 3 of this document describes how the API is used by Operators and Data Engines to register Consumers or Devices. Section 4 gives details on the API itself.

The terms Pseudonymous Key, Data Engine, Operator, Hardware Developer and Service Provider are as defined in **[COEL-RPE-1.0]**.

# Protocol Overview



Figure 1: IDA/Data Engine signup sequence

Figure 1 shows the sequence an Operator MUST follow in signing up a new consumer: obtain a Pseudonymous Key from IDA and then use it to signup with the Data Engine. The Pseudonymous Key is used in all subsequent communications with the Data Engine such as sending data, requesting reports. For each new consumer, the Operator and Data Engine use a separate Pseudonymous Key. Applications that generate input (Behavioural Atoms) for the Data Engine also use the Pseudonymous Key.

The signature is used so that the Data Engine can be assured that the Pseudonymous Key is genuine. Rather than using asymmetric key-pairs and distributing a public key and signing algorithm, the IDA provides the means for a receiver of a signed Pseudonymous Key to validate its signature. The Data Engine MUST use this validation mechanism..

It is assumed that this transaction is short – Operators only request Pseudonymous Keys when they need them and register them shortly afterwards (probably within minutes). The Identity Authority needs to be free to alter the means of signature (if for example it believes the mechanism used internally has been revealed). If this change happens during a transaction then validation will fail. This is an unlikely event, but parties in the transaction need to be able to manage it:

* Data Engines receiving a failed validation code MUST pass the failure back to the Operator.
* Operators receiving a failed validation code from the Data Engine MUST discard the Pseudonymous Key and request a new one from the IDA.
* If the second attempt also fails, the Operator SHOULD try once more after a short delay (1-2 seconds) before aborting the attempt to register.



Figure 2: Hardware Developer registering a batch of DeviceIDs

The IDA also provides a means to generate a batch of up to 1000 Pseudonymous Keys in one request. The batch contains a single signature and the same protocol MUST be followed for validation: The Hardware Developer passes the batch to the Data Engine which MUST validate the batch with the IDA. It is expected that the batch transaction will be used to generate Pseudonymous Keys to be used in devices.

Pseudonymous Keys are primarily intended to represent a consumer in the ecosystem. However, Operators and Service Providers also require keys to identify themselves in their machine to machine interactions. IDA generated Pseudonymous Keys MAY be used for this purpose since they are devoid of DIPI and unique across the ecosystem.

# API Overview

## Introduction

The Identity Authority (IDA) API provides a means for Operators to generate unique Pseudonymous Keys for Consumers or Devices. A Pseudonymous Key is REQUIRED when an Operator registers a consumer or device with a Data Engine. Pseudonymous Keys are digitally signed so that Data Engines can validate them to ensure they were generated by IDA and have not been altered.

## Authentication and Authorisation

To access the IDA API, callers need API Credentials with two components:

* A userid to identify the caller.
* A password to authenticate the caller.

A userid MUST be assigned to one of the following two roles in the IDA:

* *Generator:* Allowing the userid to generate Pseudonymous Keys
* *Validator*: Allowing the userid to validate Pseudonymous Keys

HTTP basic authentication SHALL be used to authenticate calls to the API. Passwords SHOULD be 64 bytes in length and MUST be supplied as an ASCII string. This MUST be prefixed with the userid followed by a colon to form the token passed in the HTTP Authorisation Header.

Example:

“9abf5386-2ac6-4e61-abc4-6b809a85d6cb:JhmiDAlnpo1SBrlrN6H09RqQoerdLCyepbXgE7005OSzXzMeUsGCEXaVNAMrKv8D”

If the userid is unrecognized, or the wrong password is supplied a HTTP status code *401 Invalid username or password* SHALL be returned.

If a request is made with a userid that is assigned a role that is not authorized to perform that action then the HTTP status code *403 Unauthorised* SHALL be returned.

## PseudonymousKey endpoint

The IDA SHALL provide a PseudonymousKey end-point which provides the means to generate Pseudonymous Keys for users whose API Credentials have the Generator role.

| **API** | **Description** |
| --- | --- |
| POST /PseudonymousKey | Generate a new signed Pseudonymous Key for an actor. The mechanism used to sign the response is periodically changed, so the response SHOULD be passed to the Data Engine shortly after generation or validation can return false.  |

### Response

The response SHALL contain three parameters: The Pseudonymous Key; the timestamp at which the response was generated; and a signature that can be used for validation.

| **Parameter Name** | **Description** | **Type** |
| --- | --- | --- |
| **PseudonymousKey** | Unique key to be used to represent a consumer, Service Provider, Operator or device in the ecosystem. | **String**: Formatted as a UUID as defined in [RFC\_4122, Section 3] |
| **TimeStamp** | Date and time at which the PseudonymousKey was generated. | **String:** Formatted as a date-time according to [RFC\_3339]. |
| **Signature** | ASCII encoded signature which the IDA will use for validation. | **String** |

**Media type:**

application/json, text/json

**Sample:**

{
 “PseudonymousKey”: “00000000-0000-0000-0000-000000000000”,
 “TimeStamp”: “2011-02-14T00:00:00”,
 “Signature”: “SGFDXCTVIVVIFUJUVUYBKYKJHBK==”
}

## PseudonymousKeyBatch endpoint

The IDA SHALL provide a PseudonymousKeyBatch end-point which provides the means to generate a batch of Pseudonymous Keys in one response packet for users whose API Credentials have the Generator role.

| **API** | **Description** |
| --- | --- |
| POST /PseudonymousKeyBatch | Generate a new signed batch of Pseudonymous Keys. The mechanism used to sign the response is periodically changed, so the response SHOULD be passed to the Data Engine shortly after generation or validation can return false.  |

### Request

The request body SHALL contain one parameter: Size.

| **Parameter Name** | **Description** | **Type** |
| --- | --- | --- |
| **Size** | The number of PseudonymousKeys to return in the batch.  | **Integer:** 1 <= n <= 1000 |

**Media type:**

application/json, text/json

**Sample:**

{“Size”: 1000}

### Response

The response SHALL contain three parameters: An array of Pseudonymous Keys; the timestamp at which the response was generated; and a signature that can be used for validation.

| **Parameter Name** | **Description** | **Type** |
| --- | --- | --- |
| **PseudonymousKeys** | Array of unique keys to be used to represent a devices in the ecosystem. | **Array of String**: Each string formatted as a UUID as defined in [RFC\_4122, Section 3] |
| **TimeStamp** | Date and time at which the PseudonymousKey was generated. | **String:** Formatted as a date-time according to [RFC\_3339]. |
| **Signature** | ASCII encoded signature which the IDA will use for validation. | **String** |

**Media type:**

application/json, text/json

**Sample:**

{
 “PseudonymousKeys”: [
 “00000000-0000-0000-0000-000000000000”,
 “00000000-0000-0000-0000-000000000001”,
 “00000000-0000-0000-0000-000000000002”]
 “TimeStamp”: “2011-02-14T00:00:00”,
 “Signature”: “SGFDXCTVIVVIFUJUVUYBKYKJHBK==”
}

The IDA SHALL be capable of generating a batch of up to 1000 PseudonymousKeys.

## Validation endpoint

The IDA SHALL provide a Validation end-point which provides the means to validate a signed PseudonymousKey or a signed batch of PseudonymousKeys for users whose API Credentials have the Validator role.

| **API** | **Description** |
| --- | --- |
| POST /Validation | Validates a single signed Pseudonymous Key or a signed batch of Pseudonymous Keys to ensure that they were generated by IDA. The mechanism used for signing is periodically changed. If validation returns false, the caller MUST request that the Operator requests a new Pseudonymous Key. |

### Request

The request body format SHALL conform to the specification of EITHER the /PseudonymousKey response packet OR the /PseudonymousKeyBatch response packet.

**Media type:**

application/json, text/json

**Sample 1 (Single input):**

{
 “PseudonymousKey”: “00000000-0000-0000-0000-000000000000”,
 “TimeStamp”: “2011-02-14T00:00:00”,
 “Signature”: “SGFDXCTVIVVIFUJUVUYBKYKJHBK==”
}

**Sample 2 (Batch input):**

{
 “PseudonymousKeys”: [
 “00000000-0000-0000-0000-000000000000”,
 “00000000-0000-0000-0000-000000000001”,
 “00000000-0000-0000-0000-000000000002”]
 “TimeStamp”: “2011-02-14T00:00:00”,
 “Signature”: “SGFDXCTVIVVIFUJUVUYBKYKJHBK==”
}

### Response

The response SHALL contain one parameter: the result of the validation.

| **Parameter Name** | **Description** | **Type** |
| --- | --- | --- |
| **Result** | Validity of the packet: true or false | **Boolean:** true or false. |

**Media type:**

application/json, text/json

**Sample:**

{“Result”: true}

# Conformance

An implementation is a conforming Identity Authority Interface if the implementation meets the conditions in Section 4 of this document AND the conformance criteria in [COEL\_RPE-1.0]

1. Acknowledgments

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

Participants:

Paul Bruton, Individual Member

Joss Langford, Activinsights

Matthew Reed, Coelition

David Snelling, Fujitsu

1. Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Editor** | **Changes Made** |
| 1 | 27/07/2015 | Paul Bruton | Initial version for OASIS submission |
| 2 | 15/09/2015 | Paul Bruton | Header page, references, acknowledgements, conformance sections finalized. Body text still needs a review so that it clearly uses normative language in section 4, with sections 2 and 3 being descriptive text only.  |
| 3 | 21/09/2015 | Paul Bruton | Clarification of terms by replacing ‘access credentials’ with ‘API Credentials’ to signify that the userid/password combination is used only for API access. |
| 4 | 22/09/2015 | Paul Bruton | Action #0016: Removed ‘api/’ prefix from methods in API. |
| 5 | 23/09/2015 | Paul Bruton | Added normative references for UUID and TimeStamp formats. Corrected sequence diagrams following removal of api/. Section 4 altered to use appropriate normative terms. Added definitions of request and response (action #0014). Added references to related works |
| 6 | 25/09/2015 | Joss Langford | Review with minor changes to clarify meanings and correct spelling. |
| 7 | 05/10/2015 | Paul Bruton | Previous changes accepted. Added reference to conformance criteria in RPE and clarified the name of the conformance target: Identity Authority Interface, referred to as the API. |
| 8 | 19/10/2015 | David Snelling | A few tweaks and fixed the COEL link. |
| 9 | 20/10/2015 | Paul Bruton | Accepted changes, Resolved COEL-39 (data engine must validate) and COEL-40 (removed unnecessary text about combining data engine data) |
| 10 | 21/10/2015 | Paul Bruton  | Minor changes for consistent style |
| 11 | 31/10/2015 | Joss Langford | Accept all changes, track changes off, check references and style consistency. |
| 12 | 02/11/2015 | David Snelling | Final data change. |
| 13 | 03/11/2015 | Paul Bruton | Spelling correction following review. |
| 14 | 25/11/2015 | David Snelling | Set date for final CD publication. |