OSLC Core Version 3.0. Part 2: Discovery

Committee Specification Draft 02 /
Public Review Draft 02

02 February 2017

Specification URIs

This version:
http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/csprd02/part2-discovery/oslc-core-v3.0-csprd02-part2-discovery.html

Previous version:

Latest version:

Technical Committee:
OASIS OSLC Lifecycle Integration Core (OSLC Core) TC

Chairs:
Jim Amsden (jamsden@us.ibm.com), IBM
Martin Sarabura (msarabura@ptc.com), PTC

Editor:
Jim Amsden (jamsden@us.ibm.com), IBM

Additional artifacts:
This specification is one component of a Work Product that also includes:


Related work:
This specification is related to:
RDF Namespaces:
http://open-services.net/ns/core#

Abstract:
This document outlines a common approach for HTTP/LDP-based servers to be able to publish their RESTful API capabilities and how clients discover and use them.

Status:
This document was last revised or approved by the OASIS OSLC Lifecycle Integration Core (OSLC Core) 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 http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=oslc-core#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 oslc-core-comments@lists.oasis-open.org, after subscribing to it by following the instructions at the “Send A Comment” button on the TC’s web page at https://www.oasis-open.org/committees/oslc-core/.

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/oslc-core/ipr.php).

Note that any machine-readable content (aka Computer Language Definitions) declared Normative for this Work Product is provided in separate plain text files. In the event of a discrepancy between any such plain text file and display content in the Work Product's prose narrative document(s), the content in the separate plain text file prevails.

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

[OSLC-Discovery-3.0]

Notices

Copyright © OASIS Open © 2017. 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 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, 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
   1.1 Terminology
   1.2 References
   1.3 Typographical Conventions and Use of RFC Terms
2. Motivation
3. Basic Concepts
   3.1 Bootstrapping Discovery
   3.2 Approaches to Discovery
   3.3 Updating Discovery Information
4. Discovery Capabilities
   4.1 General Discovery Methods
   4.2 Resource Creation Discovery
   4.3 Resource Creation and Update Constraints Discovery
   4.4 Resource User Interface Preview Discovery
   4.5 Resource User Interface Delegated Dialogs Discovery
   4.6 Authentication Discovery
Appendix A. Resource Constraints
   A.1 Resource: ServiceProviderCatalog
   A.2 Resource: ServiceProvider
   A.3 Resource: Service
   A.4 Resource: CreationFactory
   A.5 Resource: QueryCapability
   A.6 Resource: Publisher
   A.7 Resource: PrefixDefinition
   A.8 Resource: OAuthConfiguration
Appendix B. Change History

1. Introduction

This section is non-normative.

A common problem with building interoperable solutions is having a mechanism for a client to explore a server API or end-point to learn if the target application supports a set of capabilities. Client applications would then provide features based on what is discovered. For example, a person using a quality management tool wants to be able to record a defect in a change management tool. The integration from the quality management tool will want to be able to do a number of things on behalf of the user and provide an integrated experience to streamline the users workflow. To do this, the quality management tool will need to discover information about the change management tool including:

- How to authenticate
- If the target tool is capable of receiving creation requests for defects
- Whether defect creation can be handled via a user interface
- What fields are required, with what types of data
- If the defect record can be pre-filled with some data from the test currently being executed

OSLC Discovery 3.0 defines a capability providing client applications a standard way to introspect servers to determine what resource types the server supports, how to preview, select or create instances of those resources, and any constraints on resource creation or update. Discovery capabilities allow clients to determine what capabilities are provided by a server so they can adapt to, and integrate
with different servers in support of end user integration scenarios.

1.1 Terminology

Terminology uses and extends the terminology and capabilities of OSLC Core Overview [OSLCCore3], W3C Linked Data Platform [LDP], W3C's Architecture of the World Wide Web [WEBARCH], Hyper-text Transfer Protocol [HTTP11].

**Discovery**

The act of an OSLC Client to be able to determine if an OSLC Server supports a given capability.

http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/csprd02/part4-delegated-dialogs/oslc-core-v3.0-csprd02-part4-delegated-dialogs.html

[HTTP11]

[LDP]
Steve Speicher; John Arwe; Ashok Malhotra. *Linked Data Platform 1.0*. 26 February 2015. W3C Recommendation. URL: https://www.w3.org/TR/ldp/

[OSLCCore2]
S. Speicher; D. Johnson. *OSLC Core 2.0*. Finalized. URL: http://open-services.net/bin/view/Main/OslcCoreSpecification

[OSLCCore3]

http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/csprd02/part7-core-vocabulary/oslc-core-v3.0-csprd02-part7-core-vocabulary.html

[RFC2119]

http://docs.oasis-open.org/oslc-core/oslc-core/v3.0/csprd02/part3-resource-preview/oslc-core-v3.0-csprd02-part3-resource-preview.html

1.2.2 Informative references

[WEBARCH]

1.3 Typographical Conventions and Use of RFC Terms

As well as sections marked as non-normative, all authoring guidelines, diagrams, examples, and notes in this specification are non-normative. Everything else in this specification is normative.

The key words \texttt{MUST}, \texttt{MUST NOT}, \texttt{REQUIRED}, \texttt{SHOULD}, \texttt{SHOULD NOT}, \texttt{RECOMMENDED}, \texttt{MAY}, and \texttt{OPTIONAL} in this specification are to be interpreted as described in [RFC2119].

2. Motivation

\textit{This section is non-normative.}

Management and use of shared information in complex domains such as IT application lifecycle management and systems and software engineering often involve the integration of many data sources supported by tools developed by different vendors on different technical architectures, and introduced at different times. Integrating these tools in order to support a wide range of evolving end user scenarios requires flexible and loosely coupled interactions between consumers and providers of this shared information. An important way of achieving this flexibility and loose coupling is to allow clients to incrementally discover the capabilities of any given server, and then adapt to what is discovered in order to maximize end user capabilities. Although a client may not know ahead of time what capabilities a given server might provide, they can know a standard means of discovering those capabilities, and can be developed to dynamically adapt to the discovered capabilities.

Key usage scenarios that motivate a number of requirements for discovery include determining if the target tool supports:

- A certain authentication model (OAuth2, OpenID Connect, HTTPS Basic)
- Creating resources with a given type
- User interface previews of a given resource
- User interface dialogs for creating or selecting resources of given types
- Prefilling dialogs for resource creation
- Describing the constraints on a resource creation or update request (allowable properties or values)
• Querying resources to select specific instances and property values
• Adding attachments to resources

Additionally there is motivation to establish a common way for tools to support similar mechanisms so that each new capability doesn't introduce a new discovery model. It is also desired to have capabilities defined, whether within a standards development group or proprietary, to be able to leverage a similar approach to discovery.

Security concerns are also important when managing shared information across organization and tool boundaries. The specific security needs of any application however are difficult to predict. Experience has shown that this variability results in complexity for tool integration and therefore some standard mechanism for authentication discovery is highly desired.

The basis for how clients discover capabilities should be based on the methods established by [LDP] and [HTTP11], and service provider resources defined by [OSLCCore2].

3. Basic Concepts

This section is non-normative.

The following sections introduce the basic concepts of OSLC discovery including how clients find discovery URIs, different approaches clients might use to discover server capabilities, and how server capabilities might be extended.

3.1 Bootstrapping Discovery

This section is non-normative.

Discovery will always have to start with at least one discovery resource URI to bootstrap discovery on that server. Servers must provide some way for clients to learn about, find, or discover such LDPC URIs. For example, servers could provide such information:

• In their user documentation or UI
• Using HTTP options * to return a ServiceProviderCatalog or link headers to root LDPCs describing the discovery capabilities offered

The URI could be for a ServiceProviderCatalog or context LDPC resource on which either static up-front or dynamic incremental discovery can be performed. Different server implementation architectures and extensibility mechanisms may require different approaches for discovering OSLC discovery resource URIs.

This specification specifies how servers respond to discovery requests through LDPC Link headers or ServiceProviderCatalog and/or ServiceProvider resources. It does not specify how servers organize their LDPCs, how they make distinguished LDPCs known to end users to start the discovery process, or how servers provide efficient access to discovery information that may be distributed over many LDPCs managed by the server. Servers may choose to support the OSLC Query capability on OSLC LDPCs and discovery resources in order to facilitate access to discovery information.

3.2 Approaches to Discovery

This section is non-normative.

There are various approaches for how servers define and advertise their capabilities, and how clients can efficiently discover what is available. The following sections will provide guidance on approaches that should be used.

OSLC defines two broad approaches for clients to discover capabilities provided by a server, loosely categorized as "Static Up-Front" and "Dynamic Incremental".

Static Up-Front discovery, which is compatible with [OSLCCore2], is an up-front or somewhat more static approach to discovery that utilizes ServiceProviderCatalog, ServiceProvider, and Service resources. Typically a client would perform discovery on startup by accessing the Services defined by any ServiceProvider resources the client might need. A client could also access one or more ServiceProviderCatalog resources in order to locate the available ServiceProvider resources. The client would then configure its capabilities based on what was discovered. In many, or possibly most instances, the ServiceProvider resources will be dynamically created by servers based on the state of the information they manage. Clients may choose to periodically refresh their capabilities by re-reading the ServiceProvider and adapting to the newly available services. Therefore this approach to discovery is not completely static, or up-front, but that does represent a possible common usage pattern.

Figure Fig. 1 Service Provider concepts and relationships illustrates the Service Provider Catalog and Service Provider concepts and relationships. There are two resources defined: Service Provider Catalog and Service Provider, that provide the discovery information. There are also a set of local in-line resources that are provided inside these resources to define namespaces, OAuth configurations, contributors as well as services and their capabilities.

To allow clients to discover the RDF vocabularies supported by a server, those vocabularies should be referenced from the service discovery documents, and the vocabularies themselves and their constraining ResourceShapes should be readable RDF resources. The oslc:domain property references a namespace that should resolve to the vocabulary document.
Dynamic Incremental discovery is a second approach that utilizes lazy or deferred discovery, getting just the information that is needed for any client capability when it is needed, and not getting information about server capabilities that might not ever be used. Clients typically utilize HTTP OPTIONS or HEAD methods on LDPCs and get discovery information from Link headers included in the HTTP response. This approach is more applicable for situations where the services provided by a server are changing rapidly as the result of resource creation or update, and clients will need to do incremental discovery before executing the next operations. This approach is also useful for clients that only need to do very specific things and are not necessarily involved in a long-running conversation with a server. Discovery in this case can be a simple HTTP OPTIONS request on the required LDPC and the client can immediately complete its operation without needing to deal with potentially large discovery documents.

Both of these approaches are based on a uniform discovery capability. ServiceProviderCatalog, ServiceProvider and Service resources from [OSLCCore2] are specific kinds of LDP Containers. The members of a ServiceProviderCatalog resource include ServiceProviderCatalogs and ServiceProvider LDPCs. ServiceProvider resource members include Service LDPCs. Each of these LDPCs have additional properties as defined by the OSLC vocabulary and shapes. This allows clients to use either approach to discover server provided OSLC capabilities, and maintains compatibility with [OSLCCore2] while providing new, simple and flexible approaches to service discovery.

3.3 Updating Discovery Information

This section is non-normative.

Servers may chose to support changes to their configurations in order to support adding new domains and services, extending existing domains and services, and/or integrating domains. This specification does not specify how servers provide extensibility mechanisms. Some possible approaches could include:

- Configuration information could be provided through files that are read at startup to define the service providers and services for the supported domains. These files could utilize the ServiceProviderCatalog and ServiceProvider resource formats.
- Servers may provide administration facilities or operational modes (through commands, REST services, GUI, etc.) that:
  - Create and configure additional LDPCs that provide new services
4.2.5 Servers

of [LDP] conformance clause about URI

4.2.1 Servers

4.1.2 Servers

response content body from other HTTP methods.

4.2.2 The existence of an [LDP] resource type is supported. The [LDP] resource types

Resource creation is done by sending an HTTP POST to a URI that supports resource creation, providing the resource content in the entity request body. Clients can discover resources that support resource creation either through the http://open-services.net/ns/core#creationFactory property of a Service in a ServiceProvider resource, or by using an OPTIONS request on an LDPC to determine if it accepts the POST method.

4.2.4 In a response to Request-URI on an LDPC, servers

The ServiceProviderCatalog, ServiceProvider and Service shapes specify that much of the discovery information provided in these resource representations is read-only. Therefore clients accessing these resources cannot expect to change read-only properties via HTTP PUT operation on the discovery resources as a means of updating server configurations. However, these constraints only apply to these particular discovery resource representations and do not prevent servers from providing other means of modifying their configuration information. These modifications would then be reflected in read-only properties in the discovery resource representations when they are accessed.

4. Discovery Capabilities

The following sections define the OSLC Core discovery capabilities.

4.1 General Discovery Methods

The following clauses apply to all discovery capabilities including resource creation, resource preview, delegated dialogs for resource creation and selection, and resource constraints discovery. OSLC discovery capabilities may also apply to OSLC resources themselves, including LDPCs, and the discovery LDPC resources including ServiceProviderCatalog, ServiceProvider and Service resources. This allows servers to dynamically configure their capabilities, or provide users with a means of selecting the capabilities they need from those provided by a server.

4.1.1 Clients SHOULD use HTTP OPTIONS to fetch various headers and other configuration information that may be exposed in the response content body from other HTTP methods.

4.1.2 Servers SHOULD minimize the use of HTTP response headers on various HTTP operations as to avoid unnecessary additional response content for clients to consume. This is also to avoid the complexity on server implementations that would be needed to provide such additional content.

4.2 Resource Creation Discovery

Resource creation is done by sending an HTTP POST to a URI that supports resource creation, providing the resource content in the entity request body. Clients can discover resources that support resource creation either through the http://open-services.net/ns/core#creationFactory property of a Service in a ServiceProvider resource, or by using an OPTIONS request on an LDPC to determine if it accepts the POST method.

4.2.1 Servers MAY provide one or more creation factories to enable creation of new resources. Creation factories are LDPCs whose URI MAY be given in the oslc:creationFactory property of a Service resource.

4.2.2 The existence of an Accept-Post header on an HTTP response to a given Request-URI indicates i) that an HTTP POST will be accepted for authorized requests and ii) what types of content are supported in the entity body of the HTTP POST request. Restating of [LDP] conformance clause about Accept-Post.

4.2.3 The existence of a Link: <http://www.w3.org/ns/ldp#Container>; rel="type" header on an HTTP response to a given Request-URI will indicate that the resource is an LDP Container. Restating conformance clause for [LDP] link header and resource types.

4.2.4 In a response to Request-URI on an LDPC, servers SHOULD include Link headers with the relation-types set to rel="http://open-services.net/core#resourceType" and the Target URIs set to the rdf:type Of resources that can be created in the LDPC. Note: An LDPC can contain multiple types of resources, and the supported member types may change over time. Since there is always some time between when the test is done and when the creation request is sent, and that there may be additional server enforced constraints on the creation resource representation, there is no guarantee that a future creation request will succeed.

4.2.5 Servers MAY include a RDF triple in response body of the form: <container-URI> oslc:resourceType <type-URI>. Clients SHOULD use the predicate oslc:resourceType when converting HTTP Link headers that have http://open-services.net/ns/core#resourceType as the Link-relation ("rel") value into RDF triples. This is to assist with scenarios where client applications may want to use the RDF representation in a query to locate LDP Containers that can be used to create the same resource types.

The following example is an OPTIONS request on the /bugs/ resource that demonstrates some of the discovery capabilities.

```
EXAMPLE 1

OPTIONS /bugs/ HTTP/1.1
Host: example.com
```

The response to this example request indicates that POST is supported for creating resources while the Accept-Post header indicates Turtle and JSON-LD content types are supported. The "type" link header indicates the resource is an LDP BasicContainer. The
4.3 Resource Creation and Update Constraints Discovery

In addition to the ways one can discover if a given OSLC Server supports creation of resources and for which types, it is helpful to understand if there are server-enforced constraints on the resource representation. Clients can discover these constraints either through the http://open-services.net/ns/core#resourceShape property of a Creation Factory resource, or by using Link header with the relation-type set to "http://www.w3.org/ns/ldp#constrainedBy" and the Target URI set to the URI of a resource that defines constraints on the to-be created or updated resource representation in the LDPC. The resource referenced by Target URI is RECOMMENDED to be a machine-readable representation such as OSLC Resource Shape [OSLCCoreVocab], but MAY be some variant or other constraint document. See [LDP] section about server published constraints.

EXAMPLE 2

HTTP/1.1 204 No Content
Date: Thu, 12 Jun 2014 18:26:59 GMT
Allow: POST, OPTIONS, HEAD, PUT
Accept-Post: text/turtle, application/ld+json
Link: <http://www.w3.org/ns/ldp#Resource>; rel="type",
     <http://example.com/vocab#Feature>; rel="http://open-services.net/ns/core#resourceType",
     <http://example.com/shapes/bug>; rel="http://www.w3.org/ns/ldp#constrainedBy"

EXAMPLE 3

Link: <http://example.com/shapes/bug>; rel="http://www.w3.org/ns/ldp#constrainedBy"

The link header in the example above would be returned on an OPTIONS or HEAD request to a resource of type <http://open-services.net/ns/cm#Bug> to provide the URI of the creation or update constraints.

EXAMPLE 4

Link: <http://example.com/shapes/bug>; rel="http://www.w3.org/ns/ldp#constrainedBy"

The link header in the example above would be returned on a POST or PUT to a resource of type <http://open-services.net/ns/cm#Bug> that violated the referenced constraint.

4.3.2 In a response to an HTTP OPTIONS, HEAD or GET method on a given Request-URI referencing an LDPC, servers SHOULD include a Link header with the relation-type set to "http://open-services.net/ns/core#constrainedBy" and the Target URI set to the URI of a resource that defines constraints on the to-be created or updated resource representation in the LDPC. The resource referenced by Target URI is RECOMMENDED to be a machine-readable representation such as OSLC Resource Shape [OSLCCoreVocab], but MAY be some variant or other constraint document. See [LDP] section about server published constraints.

4.3.3 In a response to an HTTP POST or PUT method on a given Request-URI referencing an LDPC, servers SHOULD include a Link header with the relation-type set to "http://open-services.net/ns/core#constrainedBy" and the Target URI set to the URI of a resource that defines constraints that on the to-be created or updated resource representation in the LDPC that were not satisfied. The resource referenced by Target URI is RECOMMENDED to be a machine-readable representation such as OSLC Resource Shape [OSLCCoreVocab], but MAY be some variant or other constraint document. See [LDP] section about server published constraints.

4.4 Resource User Interface Preview Discovery

See [ResourcePreview] for resource preview discovery using the the Link header or the Prefer header.

4.5 Resource User Interface Delegated Dialogs Discovery

See [Dialogs] for resource selection and creation delegated UI discovery using the http://open-services.net/ns/core#selectionDialog or http://open-services.net/ns/core#creationDialog properties of a Service resource, or the the Link header or the Prefer header.

4.6 Authentication Discovery

4.6.1 Clients SHOULD determine what authentication schemes a server supports by parsing and processing the challenge sent by the target server in response to a request for a protected resource.
4.6.2 Servers **MAY** provide OAuth configuration information in the OAuthConfiguration member of a ServiceProviderCatalog as described in Appendix A, Resource Constraints.

## Appendix A. Resource Constraints

This document applies the following constraints to the [OSLCCoreVocab] vocabulary terms.

### A.1 Resource: ServiceProviderCatalog

- **Name:** `core#ServiceProviderCatalog`
- **Type URI:** `http://open-services.net/ns/core#ServiceProviderCatalog`
- **Summary:** Service Provider Catalog
- **Description:** An LDPC describing an OSLC server that offers one or more ServiceProvider LDPCs. Servers **MAY** also organize the ServiceProviders in one or more ServiceProviderCatalog LDPCs to enable OSLC clients to find ServiceProviders offered. The members of these catalogs may include other nested catalogs as well as service providers.

### `core#ServiceProviderCatalog` Properties

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>dcterms:description</code></td>
<td>Zero-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Description of the services provided.</td>
</tr>
<tr>
<td><code>dcterms:publisher</code></td>
<td>Zero-one</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline</td>
<td><code>oslc:Publisher</code></td>
<td>Describes the software product that provides the implementation.</td>
</tr>
<tr>
<td><code>dcterms:title</code></td>
<td>Zero-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Title of this resource.</td>
</tr>
<tr>
<td><code>oslc:domain</code></td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>Namespace URI of the specification that is implemented by this service. In most cases this namespace URI will be for an OSLC domain, but other URIs <strong>MAY</strong> be used.</td>
</tr>
<tr>
<td><code>oslc:oauthConfiguration</code></td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline</td>
<td><code>oslc:OAuthConfiguration</code></td>
<td>Defines the three OAuth URIs required for a client to act as an OAuth consumer.</td>
</tr>
<tr>
<td><code>oslc:serviceProvider</code></td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Either</td>
<td><code>oslc:ServiceProvider</code></td>
<td>A service provider LDPC offered by this server.</td>
</tr>
<tr>
<td><code>oslc:serviceProviderCatalog</code></td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Either</td>
<td><code>oslc:ServiceProviderCatalog</code></td>
<td>Additional service provider catalog LDPCs used to organize services.</td>
</tr>
</tbody>
</table>

### A.2 Resource: ServiceProvider

- **Name:** `core#ServiceProvider`
- **Type URI:** `http://open-services.net/ns/core#ServiceProvider`
- **Summary:** Service Provider

---

Copyright © OASIS Open 2017. All Rights Reserved.

Standards Track Work Product

02 February 2017
**Description**: An LDPC whose members are the Service LDPCs offered by an OSLC server.

### core#ServiceProvider Properties

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dcterms:description</td>
<td>Zero-or-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Description of the services provided.</td>
</tr>
<tr>
<td>dcterms:publisher</td>
<td>Zero-or-one</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:Publisher</td>
<td></td>
<td>Describes the software product that provides the implementation.</td>
</tr>
<tr>
<td>dcterms:title</td>
<td>Zero-or-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Title of this resource.</td>
</tr>
<tr>
<td>oslc:details</td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>A URL that may be used to retrieve a resource to determine additional details about the service provider such as a web page describing it.</td>
</tr>
<tr>
<td>oslc:oauthConfiguration</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:OAuthConfiguration</td>
<td></td>
<td>Defines the three OAuth URIs required for a client to act as an OAuth consumer.</td>
</tr>
<tr>
<td>oslc:prefixDefinition</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:PrefixDefinition</td>
<td></td>
<td>Defines a namespace prefix for use in JSON representations and in forming OSLC Query Syntax strings.</td>
</tr>
<tr>
<td>oslc:service</td>
<td>One-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:Service</td>
<td></td>
<td>Describes a service LDPC offered by the service provider.</td>
</tr>
</tbody>
</table>

### A.3 Resource: Service

- **Name**: core#Service
- **Type URI**: http://open-services.net/ns/core#Service
- **Summary**: Service
- **Description**: An LDPC whose properties describe specific services offered by a server, and the URIs to use for those services in the context of that ServiceProvider.

### core#Service Properties

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>oslc:creationDialog</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:Dialog</td>
<td></td>
<td>Enables clients to create a resource via UI.</td>
</tr>
<tr>
<td>oslc:creationFactory</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:CreationFactory</td>
<td></td>
<td>An LDPC that enables clients to create new resources.</td>
</tr>
<tr>
<td>oslc:domain</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>Namespace URI of the specification that is implemented by this service. In most cases this namespace URI will be for an OSLC domain, but other URIs MAY be used.</td>
</tr>
<tr>
<td>oslc:queryCapability</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:QueryCapability</td>
<td></td>
<td>Enables clients query across a collection of resources.</td>
</tr>
<tr>
<td>oslc:selectionDialog</td>
<td>Zero-or-many</td>
<td>true</td>
<td>AnyResource</td>
<td>Inline oslc:Dialog</td>
<td></td>
<td>Enables clients to select a resource via UI.</td>
</tr>
</tbody>
</table>
**A.4 Resource: CreationFactory**

- **Name:** core#CreationFactory
- **Type URI:** http://open-services.net/ns/core#CreationFactory
- **Summary:** Creation Factory
- **Description:** A Creation Factory describes a capability for creating resources, including an LDPC capable of creating and containing new resources via HTTP POST.

### core#CreationFactory Properties

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dcterms:title</td>
<td>Exactly-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Title string that could be used for display</td>
</tr>
<tr>
<td>oslc:creation</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>ldp:Container</td>
<td>To create a new resource via the factory, post it to this URI.</td>
</tr>
<tr>
<td>oslc:label</td>
<td>Zero-or-one</td>
<td>true</td>
<td>string</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Very short label for use in menu items.</td>
</tr>
<tr>
<td>oslc:resourceShape</td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>oslc:ResourceShape</td>
<td>A Creation Factory MAY provide Resource Shapes that describe shapes of resources that may be created.</td>
</tr>
<tr>
<td>oslc:resourceType</td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>rdfs:Class</td>
<td>The expected resource type URI of the resource that will be created using this creation factory. These would be the URIs found in the result resource's rdf:type property.</td>
</tr>
<tr>
<td>oslc:usage</td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>An identifier URI for the domain specified usage of this resource. If a resource has multiple uses, it may designate the primary or default one that should be used with a property value of oslc:default.</td>
</tr>
</tbody>
</table>

**A.5 Resource: QueryCapability**

- **Name:** core#QueryCapability
- **Type URI:** http://open-services.net/ns/core#QueryCapability
- **Summary:** Query Capability
- **Description:** A Query Capability describes a query capability, capable of querying resources via HTTP GET or POST.

### core#QueryCapability Properties

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dcterms:title</td>
<td>Exactly-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Title string that could be used for display</td>
</tr>
<tr>
<td>oslc:label</td>
<td>Zero-or-one</td>
<td>true</td>
<td>string</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Very short label for use in menu items.</td>
</tr>
<tr>
<td>oslc:queryBase</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>The base URI to use for queries. Queries are invoked via HTTP GET on a query URI formed by appending a key=value pair to the base URI, as described in Query Capabilities section.</td>
</tr>
<tr>
<td>oslc:resourceShape</td>
<td>Zero-or-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>oslc:ResourceShape</td>
<td>The Query Capability SHOULD provide a Resource Shape that describes the query base URI.</td>
</tr>
<tr>
<td>oslc:usage</td>
<td>Zero-or-many</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>The expected resource type URI that will be returned with this query</td>
</tr>
</tbody>
</table>
A.6 Resource: Publisher

- **Name**: `core#Publisher`
- **Type URI**: `http://open-services.net/ns/core#Publisher`
- **Summary**: Publisher
- **Description**: A Publisher identifies and describes the software product that provides the OSLC implementation.

### `core#Publisher Properties`

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dcterms:identifier</td>
<td>Exactly-one</td>
<td>unspecified</td>
<td>string</td>
<td>N/A</td>
<td>Unspecified</td>
<td>A URN that uniquely identifies the implementation.</td>
</tr>
<tr>
<td>dcterms:title</td>
<td>Exactly-one</td>
<td>true</td>
<td>XMLLiteral</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Title string that could be used for display.</td>
</tr>
<tr>
<td>oslc:icon</td>
<td>Zero-or-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>URL to an icon file that represents the provider. This icon should be a favicon format and 16x16 pixels in size.</td>
</tr>
<tr>
<td>oslc:label</td>
<td>Zero-or-one</td>
<td>true</td>
<td>string</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Very short label for use in menu items.</td>
</tr>
</tbody>
</table>

A.7 Resource: PrefixDefinition

- **Name**: `core#PrefixDefinition`
- **Type URI**: `http://open-services.net/ns/core#PrefixDefinition`
- **Summary**: Prefix Definition
- **Description**: Service Providers MUST provide a Prefix Definition for each prefix supported by the service. Each Prefix Definition defines a namespace prefix that clients MAY use in forming OSLC Query Syntax strings.

### `core#PrefixDefinition Properties`

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>oslc:prefix</td>
<td>Exactly-one</td>
<td>true</td>
<td>string</td>
<td>N/A</td>
<td>Unspecified</td>
<td>Namespace prefix to be used for this namespace.</td>
</tr>
<tr>
<td>oslc:prefixBase</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>The base URI of the namespace.</td>
</tr>
</tbody>
</table>

A.8 Resource: OAuthConfiguration

- **Name**: `core#OAuthConfiguration`
- **Type URI**: `http://open-services.net/ns/core#OAuthConfiguration`
- **Summary**: OAuth Configuration
- **Description**: Service Providers that support OAuth Authentication SHOULD provide a way for clients to automatically discover the three OAuth URIs necessary to act as an OAuth Consumer.

### `core#OAuthConfiguration Properties`

<table>
<thead>
<tr>
<th>Prefixed Name</th>
<th>Occurs</th>
<th>Read-only</th>
<th>Value-type</th>
<th>Representation</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>oslc:authorizationURI</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>URI for obtaining OAuth authorization.</td>
</tr>
<tr>
<td>oslc:oauthAccessTokenURI</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>URI for obtaining OAuth access token.</td>
</tr>
<tr>
<td>oslc:oauthRequestTokenURI</td>
<td>Exactly-one</td>
<td>true</td>
<td>Resource</td>
<td>Reference</td>
<td>Unspecified</td>
<td>URI for obtaining OAuth request token.</td>
</tr>
</tbody>
</table>
Appendix B. Change History

This section is non-normative.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Editor</th>
<th>Changes Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>07/06/2016</td>
<td>Jim Amsden</td>
<td>CSD was approved and published.</td>
</tr>
</tbody>
</table>