



OSLC Core Version 3.0. Part 8: Constraints

OASIS Standard
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Open Project:

[OASIS Open Services for Lifecycle Collaboration \(OSLC\) OP](#)

Project Chairs:

Jim Amsden (jamsden@us.ibm.com), [IBM](#)
Andrii Berezovskyi (andriib@kth.se), [KTH](#)

Editors:

Jim Amsden (jamsden@us.ibm.com), [IBM](#)
Andrii Berezovskyi (andriib@kth.se), [KTH](#)

Additional components:

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

- OSLC Core Version 3.0. Part 1: Overview. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/oslc-core.html>
- OSLC Core Version 3.0. Part 2: Discovery. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/discovery.html>
- OSLC Core Version 3.0. Part 3: Resource Preview. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/resource-preview.html>
- OSLC Core Version 3.0. Part 4: Delegated Dialogs. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/dialogs.html>
- OSLC Core Version 3.0. Part 5: Attachments. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/attachments.html>
- OSLC Core Version 3.0. Part 6: Resource Shape. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/resource-shape.html>
- OSLC Core Version 3.0. Part 7: Vocabulary. <https://docs.oasis-open-projects.org/oslc-op/core/v3.0/os/core-vocab.html>

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- OSLC Core Version 3.0. Part 8: Constraints (*this document*). <https://docs.oasis-open-projects.org/osl-op/core/v3.0/os/core-shapes.html>
- OSLC Core Version 3.0. Machine Readable Vocabulary Terms. <https://docs.oasis-open-projects.org/osl-op/core/v3.0/os/core-vocab.ttl>
- OSLC Core Version 3.0. Machine Readable Constraints. <https://docs.oasis-open-projects.org/osl-op/core/v3.0/os/core-shapes.ttl>

Related work:

This specification is related to:

- OSLC Core Version 3.0: Link Guidance. <https://osl-op.github.io/osl-specs/notes/link-guidance.html>

RDF Namespaces:

<http://open-services.net/ns/core#>

Abstract:

Core Vocabulary defines the OSLC Core RDF vocabulary terms and resources, that have broad applicability across various domains. This document specifies the standard constraints on those vocabulary terms using OSLC ResourceShapes.

Status:

This document was last revised or approved by the membership of OASIS on the above date. The level of approval is also listed above. Check the "Latest stage" location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Open Project are listed at <https://github.com/osl-op/osl-specs>.

Comments on this work can be provided by opening issues in the project repository or by sending email to the project's public comment list osl-op.

The English version of this specification is the only normative version. Non-normative translations may also be available. Note that any machine-readable content ([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.

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1. Introduction

This section is non-normative.

RDF vocabularies define the terms and resources for a domain of interest, life-cycle management in the case of OSLC Core. These vocabularies are often specified in an open manner, without providing information such as property domain and range assertions, cardinalities, etc. This helps keep the vocabulary applicable for a wide range of uses and furthering integration with other vocabularies.

However, it is often desirable to closed down a vocabulary with specific constraints to facilitate using the vocabulary for a specific purpose. This document specifies the constraints for using the OSLC Core vocabulary in OSLC. **Different sets of constraints *MAY* be applied to a vocabulary in order to tailor its use, without overly constraining the vocabulary for other usages.** [cc-1]

These constraints apply to the core vocabulary defined in [OSLC Core Version 3.0. Part 7: Vocabulary](#).

1.1 Terminology

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

No newterms are defined in this part.

1.2 References

1.2.1 Normative references

[DC-TERMS]

DCMI Usage Board. [Dublin Core Metadata Terms, version 1.1](#). DCMI, 11 October 2010. DCMI Recommendation. URL: <http://dublincore.org/documents/2010/10/11/dcmi-terms/>

[FOAF]

Dan Brickley; Libby Miller. [FOAF Vocabulary Specification 0.99 \(Paddington Edition\)](#). FOAF project, 14 January 2014. URL: <http://xmlns.com/foaf/spec>

[HTTP11]

R. Fielding, Ed.; J. Reschke, Ed.. [Hypertext Transfer Protocol \(HTTP/1.1\): Message Syntax and Routing](#). IETF, June 2014. Proposed Standard. URL: <https://httpwg.org/specs/rfc7230.html>

[LDP]

Steve Speicher; John Arwe; Ashok Malhotra. [Linked Data Platform 1.0](#). W3C, 26 February 2015. W3C Recommendation. URL: <https://www.w3.org/TR/ldp/>

[OSLCCore2]

S. Speicher; D. Johnson. [OSLC Core 2.0](#). <http://open-services.net>. Finalized. URL: <http://open-services.net/bin/view/Main/OslcCoreSpecification>

[RFC2119]

S. Bradner. [Key words for use in RFCs to Indicate Requirement Levels](#). IETF, March 1997. Best Current Practice. URL: <https://www.rfc-editor.org/rfc/rfc2119>

[RFC8174]

B. Leiba. [Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words](#). IETF, May 2017. Best Current Practice. URL: <https://www.rfc-editor.org/rfc/rfc8174>

[rdf-schema]

Dan Brickley; Ramanathan Guha. [RDF Schema 1.1](#). W3C, 25 February 2014. W3C Recommendation. URL:

<https://www.w3.org/TR/rdf-schema/>

[rdf11-concepts]

Richard Cyganiak; David Wood; Markus Lanthaler. *RDF 1.1 Concepts and Abstract Syntax*. W3C, 25 February 2014. W3C Recommendation. URL: <https://www.w3.org/TR/rdf11-concepts/>

1.2.2 Informative references

[CSS21]

Bert Bos; Tantek Çelik; Ian Hickson; Håkon Wium Lie. *Cascading Style Sheets Level 2 Revision 1 (CSS 2.1) Specification*. W3C, 7 June 2011. W3C Recommendation. URL: <https://www.w3.org/TR/CSS21/>

[SHACL]

Holger Knublauch; Arthur Ryman. *Shapes Constraint Language (SHACL)*. <http://www.w3.org/>. Draft. URL: <https://w3c.github.io/data-shapes/shacl/>

[WEBARCH]

Ian Jacobs; Norman Walsh. *Architecture of the World Wide Web, Volume One*. W3C, 15 December 2004. W3C Recommendation. URL: <https://www.w3.org/TR/webarch/>

[skos-reference]

Alistair Miles; Sean Bechhofer. *SKOS Simple Knowledge Organization System Reference*. W3C, 18 August 2009. W3C Recommendation. URL: <https://www.w3.org/TR/skos-reference/>

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 "**MUST**", "**MUST NOT**", "**REQUIRED**", "**SHALL**", "**SHALL NOT**", "**SHOULD**", "**SHOULD NOT**", "**RECOMMENDED**", "**NOT RECOMMENDED**", "**MAY**", and "**OPTIONAL**" in this specification are to be interpreted as described in [BCP 14](#) [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Common Properties

Unlike the rest of the Core specification, these properties change and grow as new common properties are added. The properties that we list here are available for use in OSLC domain specifications when defining OSLC resources, but this does not mean that they are required to be in OSLC resources. OSLC domain specifications decide which properties are allowed and required for resources needed to realize their use cases. The OSLC common properties include properties defined in other standard vocabularies including:

- [Friend of a Friend \(FOAF\)](#)
- [Dublin Core \(dcterms\)](#)
- [RDF Schema \(rdfs\)](#)

2.1 Properties on Any Resource

- **Describes:** *Common Properties*
- **Summary:** Defines common properties that are be applicable to any OSLC resource. OSLC domains **SHOULD** use these properties where applicable rather than defining their own properties [cc-2]. The cardinality, representations, ranges, and other columns of the following table indicate typical usage. However, a domain **MAY** apply its own constraints for particular resource shapes [cc-3].

Common Properties Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:contributor</code>	Zero-or-many	unspecified	AnyResource	Either	<code>oslc:Any, foaf:Person</code>	Contributor or contributors to the resource. It is likely that the target resource will be a foaf:Person but that is not necessarily the case.
<code>dcterms:created</code>	Zero-or-one	unspecified	dateTime	N/A	Unspecified	Timestamp of resource creation.
<code>dcterms:creator</code>	Zero-or-many	unspecified	AnyResource	Either	<code>oslc:Any, foaf:Person</code>	Creator or creators of the resource. It is likely that the target resource will be a foaf:Person but that is not necessarily the case.
<code>dcterms:description</code>	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Descriptive text about resource represented as rich text in XHTML content.
<code>dcterms:identifier</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A unique identifier for a resource. Typically read-only and assigned by the service provider when a resource is created. Not typically intended for end-user display.
<code>dcterms:modified</code>	Zero-or-many	unspecified	dateTime	N/A	Unspecified	Timestamp of latest resource modification.
<code>dcterms:references</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A related resource that is referenced, cited, or otherwise pointed to by the described resource.

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Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
dcterms:relation	Zero-or-many	unspecified	AnyResource	Either	Unspecified	Relation which identifies a related resource.
dcterms:subject	Zero-or-many	unspecified	string	N/A	Unspecified	Tag or keyword for a resource. Each occurrence of a dcterms:subject property denotes an additional tag for the resource.
dcterms:title	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Title of the resource represented as rich text in XHTML content.
oslc:archived	Zero-or-one	unspecified	boolean	N/A	Unspecified	Indicates whether the subject has been marked as archived, no longer an actively updating resource.
oslc:discussedBy	Zero-or-one	unspecified	Resource	Either	oslc:Discussion	A series of notes and comments about this resource.
oslc:error	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A series of errors associated with this resource.
oslc:instanceShape	Zero-or-many	unspecified	Resource	Reference	oslc:ResourceShape	The URI of a Resource Shape that describes the possible properties, occurrence, value types, allowed values and labels. This shape information is useful in displaying the subject resource as well as guiding clients in performing modifications. Instance shapes may be specific to the authenticated user associated with the request that retrieved the resource, the current state of the resource and other factors and thus should not be cached.
oslc:modifiedBy	Zero-or-many	unspecified	Resource	Either	oslc:Any, foaf:Person	The URI of a resource describing the entity that most recently modified the subject resource. The link target is usually a foaf:Person or foaf:Agent, but could be any type. This is modeled after dcterms:creator, but Dublin Core currently has no equivalent property.

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:queryable</code>	Zero-or-one	unspecified	boolean	N/A	Unspecified	Indicates whether a property is queryable (can appear in <code>oslc.where</code> and <code>oslc.select</code> clause) or not. Defaults to true if unspecified.
<code>oslc:serviceProvider</code>	Zero-or-many	unspecified	Resource	Reference	<code>oslc:ServiceProvider</code>	A link to the resource's OSLC Service Provider. There may be cases when the subject resource is available from a service provider that implements multiple domain specifications, which could result in multiple values for this property.
<code>oslc:shortId</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A short, human-readable, plain text value. This value should be unique in some context that is apparent to human users of a service.
<code>oslc:shortTitle</code>	Zero-or-many	unspecified	XMLLiteral	N/A	Unspecified	Shorter form of <code>dcterms:title</code> for the resource represented as rich text in XHTML content.
<code>rdf:type</code>	Zero-or-many	unspecified	Resource	Reference	<code>rdfs:Class</code>	The resource type URIs.
<code>rdfs:member</code>	Zero-or-many	unspecified	Resource	Either	Unspecified	OSLC domains might define a number of member or contains relationships between resources. The <code>rdfs:member</code> property is suitable for use when only one such relationship needs to be defined, or when no additional semantics need to be implied by the property name.

2.2 Person Properties

- **Describes:** <http://xmlns.com/foaf/0.1/Person>
- **Summary:** Person is a resource defined by FOAF that is used as the value for a `dcterms:creator` or `dcterms:contributor` property. This shape specifies the recommended minimal FOAF Person properties that should be provided for OSLC.

Person Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
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Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>foaf:familyName</code>	Zero-or-many	unspecified	string	N/A	Unspecified	Family name of person expressed as simple text string.
<code>foaf:givenName</code>	Zero-or-many	unspecified	string	N/A	Unspecified	Given name of person expressed as simple text string.
<code>foaf:mbox</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A personal mailbox for this person, typically identified using the mailto: URI scheme (see RFC 2368).
<code>foaf:name</code>	Zero-or-many	unspecified	string	N/A	Unspecified	The full name of a person expressed as simple text string.
<code>foaf:nick</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A short informal nickname or login identifier expressed as simple text string.

2.3 Implementation Conformance

Changes to the OSLC Core Vocabulary **MUST** be approved by the OASIS OSLC Open Project. [cc-4] The OSLC Core Vocabulary is assigned the namespace URI of the `http://open-services.net/ns/core#`.

Domain TCs and other extensions **MUST** contribute their vocabulary terms in a namespace which is assigned to them as an authority. [cc-5]

OSLC Core, domain and other extensions **SHOULD** reuse existing vocabulary terms from stable vocabularies such as [DC-TERMS], RDF [rdf11-concepts], RDF Schema [rdf-schema], [FOAF], [skos-reference] and OSLC. [cc-6] New vocabulary terms **SHOULD** only be created when there is no clear existing choice available. [cc-7] See the [LDP] [similar clause on reuse](#).

3. Discussion

3.1 Shape: Discussion

It is common to collect a series of comments on a lifecycle resource, often referred to as a discussion. For example: tasks, bug reports, requirements, assets and so on, are often collected across various types of resources such as project. A project might reflect the planning of work to deliver a product that realizes the requirements as validated through test cases and bug reports. Discussions allow users to collaborate with each other for more efficient and effective delivery. This Discussion resource definition provides a minimal shape describing the needed properties.

- **Describes:** <http://open-services.net/ns/core#Discussion>
- **Summary:** OSLC Core Discussion Shape

Discussion Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:comment</code>	Zero-or-many	false	AnyResource	Either	<code>oslc:Comment</code>	Comment about resource.
<code>oslc:discussionAbout</code>	Exactly-one	false	Resource	Reference	Unspecified	Reference to associated resource.

3.2 Shape: Comment

Used in conjunction with [Shape: Discussion](#) to provide a minimal resource definition for a collection of comments.

- **Describes:** <http://open-services.net/ns/core#Comment>
- **Summary:** OSLC Core Comment Shape

Comment Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:created</code>	Exactly-one	unspecified	dateTime	N/A	Unspecified	When the comment resource was created.
<code>dcterms:creator</code>	Exactly-one	unspecified	AnyResource	Either	<code>foaf:Person</code>	The person who created the comment.
<code>dcterms:description</code>	Exactly-one	unspecified	XMLLiteral	N/A	Unspecified	Details or body of the comment; SHOULD include only content that is valid and suitable inside an XHTML <code><div></code> element [cc-8].
<code>dcterms:identifier</code>	Exactly-one	unspecified	string	N/A	Unspecified	A service defined identifier.
<code>dcterms:title</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	A brief title for the comment; SHOULD include only content that is valid and suitable inside an XHTML <code></code> element [cc-9].
<code>oslc:inReplyTo</code>	Zero-or-one	unspecified	Resource	Reference	<code>oslc:Comment</code>	Reference to the comment to which this comment replies.

4. Errors

4.1 Implementation Conformance

When an OSLC Server incurs an error, it is **RECOMMENDED** that useful information be provided to clients in the body of the HTTP response. [cc-10]

OSLC Servers **SHOULD** use the [Error resource](#) defined below as the basis for forming error responses. [cc-11]

OSLC Servers **SHOULD** return an [Error resource](#) using the same representation format requested by the client via the HTTP **Accept** request header. [HTTP11] [cc-12]

OSLC Clients **SHOULD** treat the `oslc:statusCode` as a String that starts with digits, but **MAY** contain non-digit text. [cc-13]

4.2 Shape: Error

Used when servers need a consistent shape to communicate error messages.

- **Describes:** <http://open-services.net/ns/core#Error>
- **Summary:** OSLC Core Error Shape

Error Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:created</code>	Zero-or-one	unspecified	dateTime	N/A	Unspecified	Optional indication of when the error was detected.
<code>dcterms:identifier</code>	Zero-or-many	unspecified	string	N/A	Unspecified	A unique human-readable string identifier for this resource, such as an error number or code.
<code>dcterms:references</code>	Zero-or-many	unspecified	AnyResource	Either	Unspecified	A reference to any resources that are the subject of this error.
<code>oslc:cause</code>	Zero-or-many	true	AnyResource	Either	<code>oslc:Error</code>	An error that was the cause of this error.
<code>oslc:extendedError</code>	Zero-or-one	true	AnyResource	Either	<code>oslc:ExtendedError</code>	Extended error information.
<code>oslc:message</code>	Exactly-one	true	string	N/A	Unspecified	An informative message describing the error that occurred.
<code>oslc:statusCode</code>	Exactly-one	true	string	N/A	Unspecified	The HTTP status code reported with the error.

4.3 Shape: ExtendedError

Additional details about an error the server had when processing the request.

- **Describes:** <http://open-services.net/ns/core#ExtendedError>
- **Summary:** OSLC Core ExtendedError Shape

ExtendedError Properties

Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
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Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:hintHeight</code>	Zero-or-one	true	string	N/A	Unspecified	Values MUST be expressed in relative length units as defined in the W3C Cascading Style Sheets Specification (CSS 2.1) Em and ex units are interpreted relative to the default system font (at 100% size) [cc-14].
<code>oslc:hintWidth</code>	Zero-or-one	true	string	N/A	Unspecified	Values MUST be expressed in relative length units as defined in the W3C Cascading Style Sheets Specification (CSS 2.1) Em and ex units are interpreted relative to the default system font (at 100% size) [cc-15].
<code>oslc:moreInfo</code>	Zero-or-one	true	Resource	Reference	Unspecified	A resource giving more information on the error SHOULD be of an HTML content-type [cc-16].
<code>oslc:rel</code>	Zero-or-one	true	string	N/A	Unspecified	If present and set to 'alternate' then indicates that work-around is provided, behavior for other values is undefined.

4.4 Shape: ResponseInfo

Resource representations returned via [OSLCCore2] Resource Paging **MUST** include a resource of type `oslc:ResponseInfo`, as defined in this section. [cc-17] A response info resource representation describes information about a paged HTTP response body in which it appears.

- **Describes:** `http://open-services.net/ns/core#ResponseInfo`
- **Summary:** The shape of a resource providing information about a paged HTTP response body.

ResponseInfo Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:description</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	Descriptive text about resource represented as rich text in XHTML content.
<code>dcterms:title</code>	Zero-or-one	unspecified	XMLLiteral	N/A	Unspecified	Title of the resource represented as rich text in XHTML content.
<code>oslc:nextPage</code>	Zero-or-one	true	Resource	Reference	Unspecified	Link to the next page of a response.
<code>oslc:postBody</code>	Zero-or-one	true	string	N/A	Unspecified	The body of a POST request to return the next page if the response was to a POST request. Where a paged resource supports POST with an <code>application/x-www-form-urlencoded</code> body as an alternative to GET to avoid the request URI exceeding server limitations, the <code>oslc:ResponseInfo</code> in the response to the POST SHOULD contain this property so that a client knows what to POST to get the next page [cc-18].

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Prefix Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:totalCount</code>	Zero-or-one	true	integer	N/A	Unspecified	This optional property indicates the total number of results across all pages, its value SHOULD be non-negative [cc-19]. In the context of a query resource, this value SHOULD be the total number of results, i.e. the number of resources that match the query [cc-20]. In the context of other resources, the value SHOULD be the total number of property values (i.e. RDF triples) of the resource [cc-21]. Unless Stable Paging is in effect, the total count MAY vary as a client retrieves subsequent pages [cc-22].

5. Resource Shape

The shape of an RDF resource is a description of the set of triples it is expected to contain and the integrity constraints those triples are required to satisfy. Applications of shapes include validating RDF data, documenting RDF APIs, and providing meta-data to tools, such as form and query builders, that handle RDF data. OSLC Core uses shapes to:

- Define specific vocabulary constraints including allowed values, max size, cardinality, representation in RDF specifications and if the property is read only.
- Specify the properties required for resource creation.
- Specify what servers all allow for prefilling delegated dialogs.
- Describe the results of query operations.

Constraints on OSLC Core and Domain resources **SHOULD** be described using [ResourceShapes](#) which is included as part of the OSLC Core multi-part specifications. [cc-23] Servers **MAY** use other constraint languages such as [SHACL] to define resource constraints. [cc-24]

ResourceShape Constraints

- **Describes:** <http://open-services.net/ns/core#ResourceShape>
- **Summary:** A shape resource describes the contents of and constraints on some set of described resources.
- **Description:** A resource should satisfy all the constraints defined by its applicable shapes.

ResourceShape Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
dcterms:description	Zero-or-one	true	XMLLiteral	N/A	Unspecified	The description of the defined constraint.
dcterms:title	Zero-or-one	true	XMLLiteral	N/A	Unspecified	The summary of this shape.
oslc:describes	Zero-or-many	true	Resource	Reference	rdfs:Class	The described resource types that this shape applies to.
oslc:hidden	Zero-or-one	true	boolean	N/A	Unspecified	Indicates the resource or property should not be displayed to users.
oslc:property	Zero-or-many	true	Resource	Inline	oslc:Property	Indicates an expected property of the described resources.
rdf:type	Zero-or-many	true	Resource	Reference	Unspecified	An OSLC resource shape SHOULD have an RDF type of oslc:ResourceShape .

Property Constraints

- **Describes:** <http://open-services.net/ns/core#Property>
- **Summary:** Specifies the name, description, summary, occurrence, value type, allowed values, and several other aspects of the defined property.

Property Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
dcterms:description	Zero-or-one	true	XMLLiteral	N/A	Unspecified	The description of the defined constraint.
dcterms:title	Zero-or-one	true	XMLLiteral	N/A	Unspecified	The summary of the defined property.

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<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:allowedValue</code>	Zero-or-many	true	unspecified	Either	Unspecified	Specifies the allowed values of a property.
<code>oslc:allowedValues</code>	Zero-or-one	true	Resource	Reference	<code>oslc:AllowedValues</code>	The resource containing a set of allowed values of the defined property.
<code>oslc:defaultValue</code>	Zero-or-one	true	unspecified	Either	Unspecified	The default value of the defined property.
<code>oslc:hidden</code>	Zero-or-one	true	boolean	N/A	Unspecified	Indicates the resource or property should not be displayed to users.
<code>oslc:isMemberProperty</code>	Zero-or-one	true	boolean	N/A	Unspecified	If true then the described resource is a container and the defined property is used for container membership.
<code>oslc:maxLength</code>	Zero-or-one	true	integer	N/A	Unspecified	For string datatype properties, the maximum number of characters.
<code>oslc:name</code>	Exactly-one	true	string	N/A	Unspecified	The local name of the defined property.
<code>oslc:occurs</code>	Exactly-one	true	Resource	Reference	<code>oslc:Cardinality</code>	The number of times the defined property may occur.
<code>oslc:propertyDefinition</code>	Exactly-one	true	Resource	Reference	<code>rdf:Property</code>	The URI of the defined or constrained property.
<code>oslc:queryable</code>	Zero-or-one	true	boolean	N/A	Unspecified	Indicates whether a property is queryable (can appear in <code>oslc.where</code> and <code>oslc.select</code> clause) or not.
<code>oslc:range</code>	One-or-many	true	Resource	Reference	<code>rdfs:Class</code>	For object properties, specifies what the target resource type is expected to be, but that is not necessarily the case.
<code>oslc:readOnly</code>	Zero-or-one	true	boolean	N/A	Unspecified	If true then the defined property cannot be directly written by clients, but may be updated indirectly by servers.
<code>oslc:representation</code>	Zero-or-one	true	Resource	Reference	<code>oslc:Representation</code>	For object properties, how the object resource is represented in the representation of the described resource.
<code>oslc:valueShape</code>	Zero-or-one	true	Resource	Reference	<code>oslc:ResourceShape</code>	For object properties, the URI of a shape resource that describes the object resource.
<code>oslc:valueType</code>	Zero-or-many	true	Resource	Reference	<code>oslc:ResourceValueType</code>	The type of values of the defined property.

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>rdf:type</code>	Zero-or-many	true	Resource	Reference	Unspecified	An OSLC property SHOULD have an RDF type of <code>oslc:Property</code> .

AllowedValues Constraints

- **Describes:** <http://open-services.net/ns/core#AllowedValues>
- **Summary:** Defines a set of allowed values for a defined property.

AllowedValues Properties

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:allowedValue</code>	One-or-many	true	unspecified	Either	Unspecified	Specifies the allow values in an AllowedValue constraint.

6. Discovery constraints

6.1 Resource: ServiceProviderCatalog

- **Describes:** <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 [cc-25]. The members of these catalogs may include other nested catalogs as well as service providers.

ServiceProviderCatalog Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:description</code>	Zero-or-one	true	XMLLiteral	N/A	Unspecified	Description of the services provided.
<code>dcterms:publisher</code>	Zero-or-one	true	AnyResource	Inline	<code>oslc:Publisher</code>	Describes the software product that provides the implementation.
<code>dcterms:title</code>	Zero-or-one	true	XMLLiteral	N/A	Unspecified	Title of this resource.
<code>oslc:domain</code>	Zero-or-many	true	Resource	Reference	Unspecified	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 [cc-26].
<code>oslc:oauthConfiguration</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:OAuthConfiguration</code>	Defines the three OAuth URIs required for a client to act as an OAuth consumer.
<code>oslc:serviceProvider</code>	Zero-or-many	true	AnyResource	Either	<code>oslc:ServiceProvider</code>	A service provider LDPC offered by this server.
<code>oslc:serviceProviderCatalog</code>	Zero-or-many	true	AnyResource	Either	<code>oslc:ServiceProviderCatalog</code>	Additional service provider catalog LDPCs used to organize services.

6.2 Resource: ServiceProvider

- **Describes:** <http://open-services.net/ns/core#ServiceProvider>
- **Summary:** Service Provider
- **Description:** An LDPC whose members are the Service LDPCs offered by an OSLC server.

ServiceProvider Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:description</code>	Zero-or-one	true	XMLLiteral	N/A	Unspecified	Description of the services provided.
<code>dcterms:publisher</code>	Zero-or-one	true	AnyResource	Inline	<code>oslc:Publisher</code>	Describes the software product that provides the implementation.
<code>dcterms:title</code>	Zero-or-one	true	XMLLiteral	N/A	Unspecified	Title of this resource.
<code>oslc:details</code>	Zero-or-many	true	Resource	Reference	Unspecified	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.
<code>oslc:oauthConfiguration</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:OAuthConfiguration</code>	Defines the three OAuth URLs required for a client to act as an OAuth consumer.
<code>oslc:prefixDefinition</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:PrefixDefinition</code>	Defines a namespace prefix for use in JSON representations and in forming OSLC Query Syntax strings.
<code>oslc:service</code>	One-or-many	true	AnyResource	Inline	<code>oslc:Service</code>	Describes a service LDPC offered by the service provider.

6.3 Resource: Service

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

Service Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:creationDialog</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:Dialog</code>	Enables clients to create a resource via UI.
<code>oslc:creationFactory</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:CreationFactory</code>	An LDPC that enables clients to create new resources.

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>oslc:domain</code>	Exactly-one	true	Resource	Reference	Unspecified	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 [cc-27].
<code>oslc:queryCapability</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:QueryCapability</code>	Enables clients query across a collection of resources.
<code>oslc:selectionDialog</code>	Zero-or-many	true	AnyResource	Inline	<code>oslc:Dialog</code>	Enables clients to select a resource via UI.
<code>oslc:usage</code>	Zero-or-many	true	Resource	Reference	Unspecified	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 <code>oslc:default</code> .

6.4 Resource: CreationFactory

- **Describes:** <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.

CreationFactory Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:title</code>	Exactly-one	true	XMLLiteral	N/A	Unspecified	Title string that could be used for display.
<code>oslc:creation</code>	Exactly-one	true	Resource	Reference	<code>ldp:Container</code>	To create a new resource via the factory, post it to this URI.
<code>oslc:label</code>	Zero-or-one	true	string	N/A	Unspecified	Very short label for use in menu items.
<code>oslc:resourceShape</code>	Zero-or-many	true	Resource	Reference	<code>oslc:ResourceShape</code>	A Creation Factory MAY provide Resource Shapes that describe shapes of resources that may be created [cc-28].
<code>oslc:resourceType</code>	Zero-or-many	true	Resource	Reference	<code>rdfs:Class</code>	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 <code>rdf:type</code> property.
<code>oslc:usage</code>	Zero-or-many	true	Resource	Reference	Unspecified	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 <code>oslc:default</code> .

6.5 Resource: QueryCapability

- **Describes:** <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.

QueryCapability Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:title</code>	Exactly-one	true	XMLLiteral	N/A	Unspecified	Title string that could be used for display.
<code>oslc:label</code>	Zero-or-one	true	string	N/A	Unspecified	Very short label for use in menu items.
<code>oslc:queryBase</code>	Exactly-one	true	Resource	Reference	Unspecified	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.
<code>oslc:resourceShape</code>	Zero-or-one	true	Resource	Reference	<code>oslc:ResourceShape</code>	The Query Capability SHOULD provide a Resource Shape that describes the query base URI [cc-29].
<code>oslc:resourceType</code>	Zero-or-many	true	Resource	Reference	<code>rdfs:Class</code>	The expected resource type URI that will be returned with this query capability. These would be the URIs found in the result resource's rdf:type property.
<code>oslc:usage</code>	Zero-or-many	true	Resource	Reference	Unspecified	An identifier URI for the domain specified usage of this query capability. If a service provides multiple query capabilities, it may designate the primary or default one that should be used with a property value of <code>oslc:default</code> .

6.6 Resource: Publisher

- **Describes:** <http://open-services.net/ns/core#Publisher>
- **Summary:** Publisher
- **Description:** A Publisher identifies and describes the software product that provides the OSLC implementation.

Publisher Properties

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

6.7 Resource: PrefixDefinition

- **Describes:** <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 [cc-30]. Each Prefix Definition defines a namespace prefix that clients **MAY** use in forming OSLC Query Syntax strings [cc-31].

PrefixDefinition Properties

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

6.8 Resource: OAuthConfiguration

- **Describes:** <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 [cc-32].

OAuthConfiguration Properties

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:authorizationURI</code>	Exactly-one	true	Resource	Reference	Unspecified	URI for obtaining OAuth authorization.
<code>oslc:oauthAccessTokenURI</code>	Exactly-one	true	Resource	Reference	Unspecified	URI for obtaining OAuth access token.
<code>oslc:oauthRequestTokenURI</code>	Exactly-one	true	Resource	Reference	Unspecified	URI for obtaining OAuth request token.

7. Resource Preview Constraints

7.1 Resource: Compact

- **Describes:** <http://open-services.net/ns/core#Compact>
- **Summary:** Describes how to display a resource preview.

Compact Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:title</code>	Zero-or-one	true	string	N/A	Unspecified	Title that may be used in the display of a link to the resource. The value should include only content that is valid inside an HTML <code></code> element. Providers should include a <code>dcterms:title</code> property with an informative label for the resource. The title is typically shown to a user as a hyperlink. For a resource with no obvious title, Providers should omit the <code>dcterms:title</code> property. Providers must first HTML escape the contents of the <code>dcterms:title</code> before sending the response.
<code>oslc:icon</code>	Zero-or-one	true	Resource	Reference	Unspecified	URI of an image which may be used in the display of a link to the resource.
<code>oslc:iconAltLabel</code>	Zero-or-one	true	string	N/A	Unspecified	Alternative label used in association with the <code>oslc:icon</code> , such as HTML <code>img</code> tag's <code>alt</code> attribute.
<code>oslc:iconSrcSet</code>	Zero-or-one	true	string	N/A	Unspecified	Specification of a set of images of different sizes based on HTML <code>img</code> element <code>srcset</code> attribute.
<code>oslc:iconTitle</code>	Zero-or-one	true	string	N/A	Unspecified	Title used in association with the <code>oslc:icon</code> , such as HTML <code>img</code> tag's <code>title</code> attribute.
<code>oslc:largePreview</code>	Zero-or-one	true	AnyResource	Either	<code>oslc:Preview</code>	URI and sizing properties for an HTML document to be used for a large preview.
<code>oslc:shortTitle</code>	Zero-or-one	true	string	N/A	Unspecified	Abbreviated title which may be used in the display of a link to the resource. The value should include only content that is valid inside an HTML <code></code> element. Providers should include an abbreviated title for the resource when possible. The abbreviated title is typically shown to a user as a hyperlink in presentations where visual space is limited. As a general guideline, the length of the abbreviated title should be 5 characters or less. A user-visible identifier that ordinarily appears in the <code>dcterms:title</code> , such as a defect number, makes for a good <code>oslc:shortTitle</code> value. When a resource has no obvious identifier or handle, Providers should omit the <code>oslc:shortTitle</code> property. Providers must first HTML escape the contents of the <code>oslc:shortTitle</code> before sending the response.

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:smallPreview</code>	Zero-or-one	true	AnyResource	Either	<code>oslc:Preview</code>	URI and sizing properties for an HTML document to be used for a small preview.

7.2 Resource: Preview

- **Describes:** <http://open-services.net/ns/core#Preview>
- **Summary:** An HTML representation of a resource that can be embedded in another user interface.

Preview Properties

<i>Prefixed Name</i>	<i>Occurs</i>	<i>Read-only</i>	<i>Value-type</i>	<i>Representation</i>	<i>Range</i>	<i>Description</i>
<code>oslc:document</code>	Exactly-one	true	Resource	Reference	Unspecified	The URI of an HTML document to be used for the preview.
<code>oslc:hintHeight</code>	Zero-or-one	true	string	N/A	Unspecified	Recommended height of the preview. Values are expressed using length units as specified in [CSS21].
<code>oslc:hintWidth</code>	Zero-or-one	true	string	N/A	Unspecified	Recommended width of the preview. Values are expressed using length units as specified in [CSS21].

8. Delegated Dialogs Constraints

- **Describes:** <http://open-services.net/ns/core#Dialog>
- **Summary:** Describes information about a dialog such as its title and dimensions.

Dialog Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:title</code>	Exactly-one	true	XMLLiteral	N/A	Unspecified	Title string that could be used for display.
<code>oslc:dialog</code>	Exactly-one	true	unspecified	Either	Unspecified	The URI of the dialog.
<code>oslc:hintHeight</code>	Zero-or-one	true	unspecified	Either	Unspecified	Recommended height of the dialog. Values are expressed using length units as specified in [CSS21].
<code>oslc:hintWidth</code>	Zero-or-one	true	unspecified	Either	Unspecified	Recommended width of the dialog. Values are expressed using length units as specified in [CSS21].
<code>oslc:label</code>	Zero-or-one	true	string	N/A	Unspecified	Very short label for use in menu items.
<code>oslc:resourceShape</code>	Zero-or-many	true	Resource	Reference	<code>oslc:ResourceShape</code>	Describes constraints on dialog prefill requests.
<code>oslc:resourceType</code>	Zero-or-many	true	Resource	Reference	<code>rdfs:Class</code>	The expected resource type URI for the resources that will be returned when using this dialog. These would be the URIs found in the result resource's <code>rdf:type</code> property.
<code>oslc:usage</code>	Zero-or-many	true	Resource	Reference	Unspecified	An identifier URI for the domain specified usage of this dialog. If a resource has multiple uses, it may designate the primary or default one that should be used with a property value of <code>oslc:default</code> .

9. Resource Constraints

9.1 Resource: AttachmentDescriptor

The `oslc:AttachmentDescriptor` resource type is used to describe the binary resource (or non-RDF Resource) associated with a particular resource. When a client POSTs an attachment content to a server, the server stores the attachment content and assigns a URI just like any other type of resource creation but it may also create an `oslc:AttachmentDescriptor` resource to contain data about the attachment.

There is no restriction on the content of each attachment resource. For example, it could be a photo of a kitten, an installation manual, a log file, or a source code patch. Since the attachment cannot be expected to contain additional client or server supplied data, a typical set of properties for each attachment is included with the `oslc:AttachmentDescriptor` resource itself. Thus, the object of each `oslc:attachment` statement is the binary attachment. Issuing an HTTP HEAD or GET operation on that binary attachment resource URL should produce an HTTP response with a header value of `Link: rel='describedBy'` to indicate the URL of the `oslc:AttachmentDescriptor` resource. The properties for the `oslc:AttachmentDescriptor` resource are indicated in the table below.

- **Describes:** `http://open-services.net/ns/core#AttachmentDescriptor`
- **Summary:** LDP-RS to contain data about a LDP-NR(Attachment)

AttachmentDescriptor Properties

Prefixed Name	Occurs	Read-only	Value-type	Representation	Range	Description
<code>dcterms:created</code>	Zero-or-one	true	dateTime	N/A	Unspecified	Timestamp of attachment creation.
<code>dcterms:creator</code>	Zero-or-many	true	AnyResource	Either	Unspecified	Creator or creators of the attachment. Likely a <code>foaf:Person</code> , but not necessarily so.
<code>dcterms:description</code>	Zero-or-one	false	XMLLiteral	N/A	Unspecified	Descriptive text about the attachment.
<code>dcterms:format</code>	Zero-or-one	true	unspecified	Either	Unspecified	MIME type of the attachment content; SHOULD be a PURL media-type resource [cc-33] .
<code>dcterms:identifier</code>	Zero-or-one	true	string	N/A	Unspecified	System-assigned identifier.
<code>dcterms:title</code>	Zero-or-one	false	string	N/A	Unspecified	Client-specified file name or title.
<code>oslc:attachmentSize</code>	Zero-or-one	true	integer	N/A	Unspecified	Size in bytes of the attachment content.

10. Conformance

OSLC servers **MUST** follow the constraints defined here where required, and with the meanings defined here. [cc-34]

OSLC servers **MAY** provide additional constraints for specific purposes. [cc-35]

Clause Number	Requirement
cc-1	Different sets of constraints MAY be applied to a vocabulary in order to tailor its use, without overly constraining the vocabulary for other usages.
cc-2	OSLC domains SHOULD use these properties where applicable rather than defining their own properties
cc-3	However, a domain MAY apply its own constraints for particular resource shapes
cc-4	Changes to the OSLC Core Vocabulary MUST be approved by the OASIS OSLC Open Project.
cc-5	Domain TCs and other extensions MUST contribute their vocabulary terms in a namespace which is assigned to them as an authority.
cc-6	OSLC Core, domain and other extensions SHOULD reuse existing vocabulary terms from stable vocabularies such as [DC-TERMS], RDF [rdf11-concepts], RDF Schema [rdf-schema], [FOAF], [skos-reference] and OSLC.
cc-7	New vocabulary terms SHOULD only be created when there is no clear existing choice available.
cc-8	Details or body of the comment; SHOULD include only content that is valid and suitable inside an XHTML <div> element
cc-9	A brief title for the comment; SHOULD include only content that is valid and suitable inside an XHTML element
cc-10	When an OSLC Server incurs an error, it is RECOMMENDED that useful information be provided to clients in the body of the HTTP response.
cc-11	OSLC Servers SHOULD use the Error resource defined below as the basis for forming error responses.
cc-12	OSLC Servers SHOULD return an Error resource using the same representation format requested by the client via the HTTP Accept request header. [HTTP11]
cc-13	OSLC Clients SHOULD treat the <code>oslc:statusCode</code> as a String that starts with digits, but MAY contain non-digit text.
cc-15	Values MUST be expressed in relative length units as defined in the W3C Cascading Style Sheets Specification (CSS 2.1) Em and ex units are interpreted relative to the default system font (at 100% size)
cc-16	A resource giving more information on the error SHOULD be of an HTML content-type
cc-17	Resource representations returned via [OSLC Core2] Resource Paging MUST include a resource of type <code>oslc:ResponseInfo</code> , as defined in this section.
cc-18	Where a paged resource supports POST with an application/x-www-form-urlencoded body as an alternative to GET to avoid the request URI exceeding server limitations, the <code>oslc:ResponseInfo</code> in the response to the POST SHOULD contain this property so that a client knows what to POST to get the next page
cc-19	This optional property indicates the total number of results across all pages, its value SHOULD be non-negative
cc-20	In the context of a query resource, this value SHOULD be the total number of results, i.e. the number of resources that match the query
cc-21	In the context of other resources, the value SHOULD be the total number of property values (i.e. RDF triples) of the resource
cc-22	Unless Stable Paging is in effect, the total count MAY vary as a client retrieves subsequent pages
cc-23	Constraints on OSLC Core and Domain resources SHOULD be described using ResourceShapes which is included as part of the OSLC Core multi-part specifications.
cc-24	Servers MAY use other constraint languages such as [SHACL] to define resource constraints.
cc-25	Servers MAY also organize the ServiceProviders in one or more ServiceProviderCatalog LDPCs to enable OSLC clients to find ServiceProviders offered
cc-26	In most cases this namespace URI will be for an OSLC domain, but other URIs MAY be used
cc-27	In most cases this namespace URI will be for an OSLC domain, but other URIs MAY be used
cc-28	A Creation Factory MAY provide Resource Shapes that describe shapes of resources that may be created
cc-29	The Query Capability SHOULD provide a Resource Shape that describes the query base URI
cc-30	Service Providers MUST provide a Prefix Definition for each prefix supported by the service
cc-31	Each Prefix Definition defines a namespace prefix that clients MAY use in forming OSLC Query Syntax strings

Standards Track Work Product

Clause Number	Requirement
cc-32	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
cc-33	MIME type of the attachment content; SHOULD be a PURL media-type resource
cc-34	OSLC servers MUST follow the constraints defined here where required, and with the meanings defined here.
cc-35	OSLC servers MAY provide additional constraints for specific purposes.