

Service Genre: Mint

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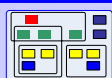
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LSAL

Information Architecture & Design, Learning Technologies, Training

Introduction

The Introduction provides a brief, standalone overview of the Service Genre. It is for a non technical reader. It may duplicate other material in the Service Genre Description.

The mint service genre provides an abstract service end point for generating a new unique, persistent, resolvable identifier for an object (e.g., a metadata object, a content object). The minter takes the “locator” for the object, creates a “name” for the identifier, “associates” the name with the locator as the “identifier”, and creates a managed stored instance of the data needed to resolve the identifier to get the locator to access the content.

Service Genre Description

The Service Genre Description is the complete, formal documentation of the Service Genre.

The mint service genre defines how to create a new unique, persistent, resolvable identifier for an object (e.g., a metadata object, a content object) managed by an identifier system. The service genre encapsulates a multi-step workflow, and is part of a more comprehensive identifier service usage model.

This is a general description of a mint service genre, independent of application end point, resource, data object, or underlying communications protocols and service models. The service genre is independent of any data model. The service genre includes a mechanism to authenticate clients. The service genre does not include authorization methods to control the return and filtering of results.

Service Genre Metadata

The Service Genre Metadata contains basic labeling, classification and a version history for the Service Genre.

Name

- Service Genre Name: mint
- LSAL ID: hdl:1870/CAE742A5FF9A46F0818ED87C1FB31773
- ADL Name: register identifier
- JADL IPA ID: hdl:JADL-IPA-NA/6A3EAA6AB132436EA61F3406CF0337C8 (source for derivative)

Classification

Classification Facets:

- Service Genre Status: Unapproved
- Domains: All
- Domain Coverage: Multiple
- Deployment Status: Developmental
- Deployment Scale: Isolated
- Maturity: Immature
- Composition: Individual
- Purpose: Exemplar, Application

Technical Facets:

- State Behavior: Stateless
- Transactional Behavior: Non Transactional
- Batch Behavior: Individual
- Time Constraint Behavior: None
- Service End Point: Provider
- Authentication / Authorization: Auth'ed
- Exposure: Public



Version

- LSAL Version 1.0.0 [hdl:1870/CAE742A5FF9A46F0818ED87C1FB31773]
- JADL IPA Version: 1.0.0 [hdl:JADL-IPA-NA/6A3EAA6AB132436EA61F3406CF0337C8]

Version History			
Version	Date	Author	Description
0.50	2007-09-04	DR	Initial D ³ UI version hdl:JADL-IPA-NA/6A3EAA6AB132436EA61F3406CF0337C8
0.51	2007-09-25	DR	Editorial review, consistency.
0.70	2007-10-07	DR	Draft for review.
0.90	2007-10-13	DR	Final editorial.
1.0.0	2007-10-21	DR	Final D ³ UI V 1.0.0.
1.0.0	2008-06-18	DR	LSAL V 1.0.0. Derivative from D ³ UI version.

Notation

The Notation element includes conventions used to describe the Service Genre.

The words MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL in this document are to be interpreted as described in [RFC 2119].

Notational conventions follow those given in the LSAL *Service Notation and Document Conventions*.

The identification and versioning scheme follows those given in the LSAL *Service Component Identification Scheme*.

The service classification scheme follows those given in the LSAL *Service Classification Scheme*.

The Service Genre Description follows those given in the LSAL *Service Genre Description Guidelines*.

Description

The Description element is an informal, standalone, non technical narrative description of the Service Genre (problem, process, business-level capabilities and workflow).

Identifiers are used throughout the content creation and management process to uniquely identify an object or a piece of content. The identifier serves as a proxy for the content in many operations; having the identifier is a substitute for the content when only the existence of the content is needed to be manipulated, not the actual content itself.

Identifiers assigned to objects MUST be:

- Unique – the same identifier cannot be assigned to different objects
- Resolvable – the identifier can be used to provide a way to access the actual content, providing a “locator” value that associates the identifier with the stored location of the object
- Persistent – the identifier must be maintained (useful in resolution) over time.

Identifiers may be assigned to any type of object, e.g., a content object, a content package, a competency, a metadata record.

The mint service genre is used to create a new, unique, persistent, resolvable identifier for an object maintained at a known storage location. Minting an identifier is typically a multi-stage process: creating the “name” (e.g., the string that is the identifier), associating the name with the location and other data used in resolution, and managing the identifier over its lifetime. The mint service genre provides a simple, abstract interface to automate all steps needed to create a new identifier, given an object’s location.



The mint service genre is part of a larger identifier service usage model that provides a collection of services for using and managing identifiers. The concepts and model that underlie the service genre are based on the *PILIN Ontology for Identifiers and Identifier Services*.

The mint service genre defines the minimum expected behavior of a minting service and outlines common design issues involved in implementing such a service. The mint service genre defines the interfaces to the minting service. It does not describe the processes used internally by the service to create and manage identifiers or an identifier system.

The service genre is specialized in service expressions to create identifiers using a particular identifier system (e.g., the Handle System). The service expressions specify formats for locators and identifiers, and specify details of transport and communication when passing data to and from the service end point.

The mint service genre is authentication controlled. A client request will include necessary authentication credentials such that the service end point can permit or deny access to the service. The source of the authentication credentials is not defined by the service genre. The service end point does not apply filtering to responses according to authorization-based access control constraints.

Note, as with other service genres, there is no expectation that all service implementations will be interoperable. Different service expressions MAY take different approaches to defining interfaces and data models.

Usage Scenarios

The Usage Scenarios element is an informal, non technical description of how the Service Genre is used. An illustration of process or problem workflows, expressed using services, is included. An illustration of an application using the components of the Service Genre may be included (but not a description of the design of the application). No critical or essential information required to understand the Service Genre should be included.

The basic usage scenario for the mint service genre is to embed the minter in another tool, e.g., within the *Reload* editor, as demonstrated in the (D³UI) Content Authoring service usage model. The tool invokes the minter, specifying the object locator. The minter returns the minted identifier to the tool for further processing. All of the interactions with the minter service are hidden from the end user (the end user may not know which service end point was used) and the mint workflow is fully automated. Alternatively, a simple GUI tool could be created as a wrapper to use the minter as part of a manual content management workflow process.

Applicability

The Applicability element details when the Service Genre is used or not used. It represents specific constraints and assumptions on the use of the Service Genre. It is more specific and normative than the informal Usage Scenarios. No critical or essential information required to understand the Service Genre should be included.

As defined, the mint service genre is applicable for minting an identifier for any object, given the object locator.

Any subsequent processing of the identifier is out of scope for this service genre.

The service genre is defined for minting a single identifier for one object. Batch behavior is not defined.

The service genre is defined for associating a single locator with an object. Creating related identifiers and using identifiers to support version control or multi-resolution is not defined.

The service genre is defined to require authentication to use the service end point. Authentication credentials are included in the service request.

Behavior of the service genre is not defined when the service end point requires its own authentication processes to create identifiers.



The service genre does not define how to obtain the locator of the content object for which the identifier is to be minted.

Behavior of the service genre is not defined if communications need to be secure.

Functionality

The Functionality element details and illustrates the behaviors provided by the Service Genre, in terms of services, workflows, messages, resources, and data objects. It is not a technical description of the Service Genre, but it must provide sufficient information to develop the Requests & Behaviors of the Service Genre and to evaluate conformance of the Service Genre to the stated behaviors. It should not include implementation-specific information.

The mint service genre supports a single function to mint a new identifier.

A request SHALL specify:

- The locator of the content object for which the identifier is to be minted [REQUIRED].
- Authentication credentials to use the service end point [REQUIRED].

A request MAY specify:

- Additional identifier attributes to be assigned to the minted identifier [OPTIONAL].

No other functionality is defined. The functionality that is defined MAY be extended. Major new or additional functionality SHOULD NOT be included; extended capabilities SHOULD be included in other service genres.

Requests & Behaviors

The Requests & Behaviors element details all of the behaviors exposed by the Service Genre. It lists functionality that can be used by applications or Service Implementations. The information must be sufficient to specialize the Service Genre to one or more Service Expressions.

The format and definitions for requests and responses SHALL be defined by the service expressions that specialize the service genre. Requests and behaviors SHALL meet the following conditions:

- One *Mint Function* SHALL be defined:
 - The function SHALL be capable of minting a new, unique, managed, persistent identifier using the provided object locator.
 - The request SHALL include authentication credentials used to control access to the service end point.
 - A normal (non error) response SHALL include the minted identifier.
- Responses shall include error indicators or other needed control information.

Use & Interactions

The Use & Interactions element details how the Requests & Behaviors are combined to provide the stated functionality of the Service Genre. This is a precise technical description of how the Service Genre provides its capabilities.

The model for a client to interact with a service implementation SHALL be defined by the service expressions that specialize the service genre.

Structure

The Structure element provides a conceptual model of how the Service Genre manipulates data and state to provide results in response to requests. An illustration of the structure should be included. The structure information is used to specialize the Service Genre to one or more Service Expressions, but is not needed to understand how to use or interact with the Service Genre.

The structure of the service genre SHALL be defined by the service expressions that specialize the service genre.

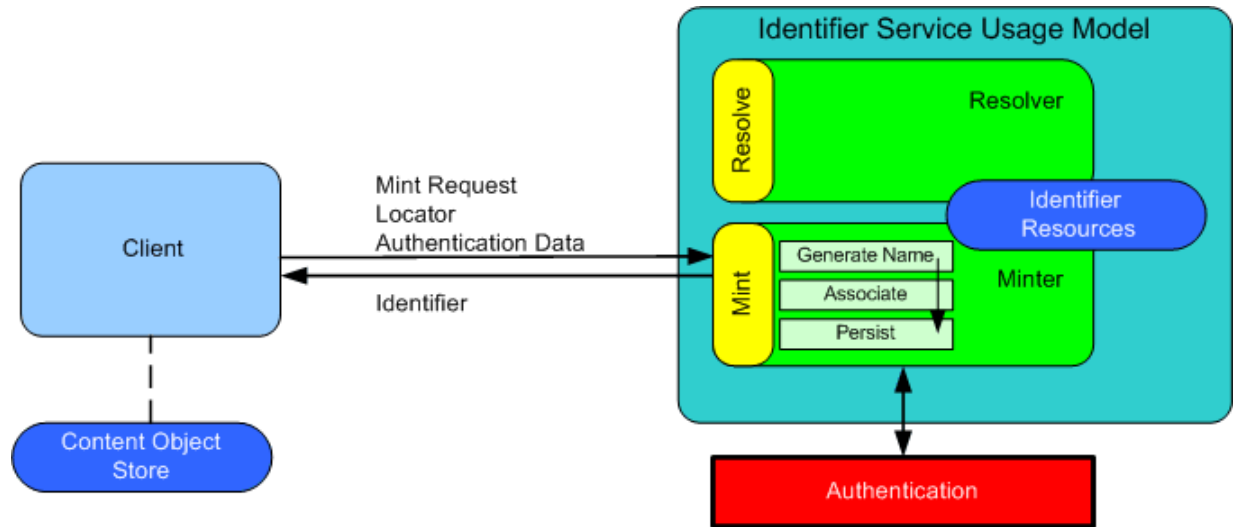
Core workflow steps include:

- Create a new, unique name.
- Validate the locator (optional).



- Associate the name with the locator and store the association as a managed, persistent, resolvable identifier in the identifier system.

The overall flow of interactions with the service is illustrated in the diagram.



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Figure 1: Mint Service Genre [© Copyright 2007, Learning Systems Architecture Lab, All Rights Reserved.]

Design Decisions & Tradeoffs

The Design Decisions & Tradeoffs element documents overall choices, tradeoffs and their implications on the design of the Service Genre. It does not address the issues related to the internal details of a Service Implementation used to implement the Service Expression based on the Service Genre. No critical or essential information required to understand the Service Genre should be included.

Internal processes of the identifier system are not defined; the service genre only defines interfaces and observable behaviors, not internal models and structure. Processes SHALL be defined in the service expressions that specialize the service genre.

The service genre supports only individual, not batch processing. The service genre may be extended to support batch requests or a separate service genre may be defined. The overall requests and behaviors would remain the same.

Implementation Guide & Dependencies

The Implementation Guide & Dependencies element describes issues of concern in specializing the Service Genre to one or more Service Expressions and their corresponding Service Implementations. Resolution of issues discussed is deferred to the actual Service Implementation design. No critical or essential information required to understand the Service Genre should be included.

The following design decisions apply to the service expressions that specialize the service genre.

Structure and Design:

- A service implementation provides interfaces to an identifier system resource. The provisioning of these resources is not defined but MUST be considered in the implementation design.

Performance:

- A service implementation SHALL be capable of handling simultaneous requests from different clients.



Security and Privacy Considerations:

- Service implementations may be subject to denial-of-service attacks.
- Care should be taken to maintain privacy of any personal data or other records that may disclose usage patterns.

Applicable Standards

The Applicable Standards element lists domain-specific standards applicable to the Service Genre as a whole. Standards are described in terms of name, version and citation link. Conformance requirements and extensions should be noted. Standards used to implement applications are excluded. No critical or essential information required to understand the Service Genre should be included.

None. No standards are directly applicable to the service genre as a whole.

The service expressions that specialize the service genre **SHALL** be defined in terms of standards:

- Service expressions **SHALL** specify applicable standards for locators.
- Service expressions **SHALL** specify applicable standards for identifier systems.
- Service expressions **SHALL** specify applicable communications, encoding and transport protocol standards.
- Service expressions **SHALL** specify applicable standards-based authentication models.

Known Uses

The Known Uses element documents actual uses of the Service Genre in applications and systems, including how used, extensions, limits.

Actual: The service genre is specialized in the D³UI development-to-deposit prototype using *Reload* to create Handles for metadata objects and content objects (content packages).

Potential: The service genre could be used in any content management or content creation process to create resolvable identifiers.

Potential: The service genre could be used in a service usage model for a repository federation. Identifiers are assigned to various object types in different parts of the workflow.

Service Genre Dependencies

The Service Genre Dependencies lists other Service Genres that this Service Genre is dependent upon. Dependent Service Genres are identified by name and version.

authenticate: Vx.xx.

[\[link to service genre\]](#)

The service genre requires authentication for use. The authenticate service genre is part of the identity service usage model [\[link to service usage model\]](#). The identity service usage model is an integrated set of service genres that provides the operational user identity infrastructure that includes the creation of user rights and roles, user authentication and user authorization.



Related Service Usage Models

The Related Service Usage Models element documents and illustrates how the Service Genre is used in Service Usage Models. Related Service Usage Models are identified by name and version. No critical or essential information required to understand the Service Genre should be included.

(D³UI) authoring: V1.0.0.

[[D³UI content-authoring-sum-v100 / hdl:1870/3FD212C661F1464AA79DBB22D3DE00FF](#)]

Mint (genre) is part of the (D³UI) content authoring service usage model (genre based) and is used within an authoring and content deposit workflow to create unique, persistent, resolvable identifiers for objects (metadata, content) stored in repositories and registries.

(FRED) repository federation: V1.0.0.

[[link to service usage model](#)]

Mint (genre) is a part of the repository federation service usage model (genre based) and is used to create identifiers for the content in the repositories and collections that participate in the federation. The repository federation service usage model provides an integrated set of service genres used to populate and use the metadata registry that supports a repository federation. Functionality includes content management (creation and management of metadata objects within a repository federation), content discovery (discovery of content objects from a repository federation) and content delivery (retrieval of and access to content objects discovered through a repository federation).

(ADL-R) repository federation: V1.0.0.

[[ADL-R repository-federation-sum-v100 / hdl:1870/E2FE4AD428A1468FA284E270245F72D7](#)]

The (ADL-R) repository federation service usage model is a derivative subset of the (FRED) repository federation service usage model. For the purposes of this service genre they are interchangeable.

identifier: Vx.xx.

[[link to service usage model](#)]

The identifier service usage model is an integrated set of service genres that provides the operational identifier infrastructure. Functionality includes the creation, registering, publishing, managing and resolving of individual identifiers.

identifier provisioning and management: Vx.xx.

[[link to service usage model](#)]

The identifier provisioning and management service usage model is an integrated set of service genres that manages the identifier infrastructure. Functionality includes provisioning and management of the identifier system.

Related Service Patterns

The Related Service Patterns element documents and illustrates how the Service Genre is used in Service Patterns. Related Service Patterns are identified by name and version.

None.

References

The References element includes references and bibliographic citations to works needed to understand the Service Genre.

PILIN Ontology for Identifiers and Identifier Services.

Glossary & Terminology

The Glossary & Terminology element defines domain-specific terms used in documenting the Service Genre.

Terms in the LSAL *Service Glossary* are applicable to this Service Genre.



Working Notes / Things To Do

The Working Notes element documents open issues in the development of the Service Genre and is for internal project use only. It should be deleted before the Service Genre is submitted for publication.

None.

