

Service Catalogues in a Federated Context

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Abstract:

This document explores the needs and gaps regarding an interfederation-scale service catalogue. Several recommendations are made, including a proposal to consolidate the MET and eduGAIN metadata catalogues, and reconcile inconsistent entries with a goal of determining the best entry for service catalogue purposes.

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1. Introduction: What is a Service Catalogue

A service catalogue—in the context of identity federations—is an organized and curated collection of any and all services that are potentially available to members of a federation (noting that specific policies or subscription information may restrict access to specific users or organizations). This type of catalogue is primarily designed for reporting and management; end users may access it, but the catalogue is not optimized for their use. Individuals and organizations may be familiar with the term “service” in an Information Technology Infrastructure Library (ITIL) context, where the service may be customer facing or resource facing; for the purposes of this document, we are primarily referring to customer facing services.

After consultation with the REFEDS community, the general consensus is that an inter-federation service catalogue aimed at end users within an individual federation is impractical. A service catalogue aimed at the federation operators and service owners (both SPs and IdPs) that are considering or taking advantage of membership within a federation has a much higher value to the community.

Some federations already have a service catalogue for their members; others do not. Keeping such a catalogue up to date can be a significant burden to a small federation, even if they are using whatever data they have in their existing federation metadata. Keeping the data consistent and working through what information is required from IdPs and SPs takes time. Having a service catalogue fed by multiple federations may help smaller federations build their own catalogue by taking advantage of metadata records recorded by other federations and incorporating that data into a local catalogue that may be geared towards a more local set of requirements.

The proposal in this document suggests using the eduGAIN metadata feed as a basis for a queryable database that federations can either refer to directly or use as a basis for their own service catalogue. With eduGAIN as the source of much of the information, additional information would be scoped to match a standard service catalogue. The target audience for the service catalogue as outlined are federation operators and business managers. The document describes the user stories for a service catalogue, lists the baseline requirements and behaviours, and suggests a taxonomy for describing items in a service catalogue.

Problem statement

Federation operators, particularly those interested in interfederation, are regularly asked to provide information on what services are available to support the value proposition for both federation and interfederation. By creating a set of best practices and a common vocabulary to be used in a service catalogue, auditing and reporting on all potentially available services will become significantly less of a burden to the federation operator.

Primary Audience User Story

- Federation Operator - reporting capabilities

- I am a federation operator and need to be able to generate reports on the numbers and types of IdPs and SP supported by my federation.
- I am an outreach manager in a federation and need to be able to provide information to potential IdPs and SPs interested in joining my federation and/or eduGAIN but want to know what other entities are part of the federation that may complement or compete with my service.

Secondary Audience User Stories

While federation members and end users are not the direct audience for a federation-level service catalogue, there are possible use cases here for federations that want to pursue them.

- As an academic Identity Provider, I want to know before I join what services might be available to me through the federation. I would like to see a filtered list of Service Providers relevant to me.
- As a Service Provider, I want to know how the federation will help me inform potential customers that I exist. How will Identity Providers and their users find me?
- As a researcher, I am interested in international collaboration and want to know what services are available to me as an end user at a specific Identity Provider.
- As a librarian, I need to know what extended resources might be available to my users, and how to access them.

2. Existing Tools and Future Relationships

Tools and services currently exist that hold some similarities to a service catalogue, such as individual federation registries, the eduGAIN database, and the Metadata Explorer Tool (MET). Those repositories of entity metadata tend to vary, however, in terms of scope and accuracy. For a generalized service, we'll focus on metadata repositories that include metadata from more than one federation, specifically the eduGAIN database and MET.

MET is a searchable database of information that lets an individual search for entity information based on an aggregation of federation metadata. Each entity record will display the entity identifier, the display name, and a list federations that include that entity. The metadata also includes entity types (Service Provider, Identity Provider, or Attribute Authority) and entity categories (such as Research and Scholarship). When compared to the eduGAIN metadata feed, MET does not receive as much support or review as it is not pushed as a service to the same extent that eduGAIN is to federations.

The eduGAIN metadata feed also contains a significant amount of information regarding an entity. The metadata includes entity types and entity categories, very similar in structure to MET. Unfortunately, the actual information available is not identical between the MET and the eduGAIN feed. eduGAIN reflects only the first entity record from a federation's metadata feed; all other entries are ignored. The quality of the metadata is, therefore, varies significantly. Some federations have indicated that, while interested in a service catalogue, they cannot use interfederation metadata for this purpose.

Regardless of whether a new tool is created, or an existing tool adapted to include additional information to make it suitable to be a service catalogue, care needs to be taken around the size of the metadata that would be transported to clients of the service. (Example: for sites consuming the eduGAIN metadata feed, if they are trying to download the entire metadata file, rather than supporting MDQ, it will cause problems in their

environment.)

3. Service Catalogue Functional Requirements

In addition to the standard metadata information, a service catalogue should also include:

- Service Type - this will need a controlled vocabulary
- Availability - 24/7 service? By reservation?
- Target Audience(s) - this will need a controlled vocabulary
- Business Contact
- Support Contact
- A searchable/filterable list of IdPs and SPs per federation
 - This SHOULD be driven out of the federation's registry. Driving it out of the registry means the catalogue will be as up to date as the federation's business processes. Note that some processes may need to change to turn some currently optional information into required information.

It would be very helpful if the Service Catalogue can provide the following additional information:

- SP
 - Target End Users
 - Pre-requisite /eligibility Requirements (e.g. member of a community or organization, a service contract between the SP organization and IdP organization or the end user)
 - Supporting the listing of SPs registered by an organization in a federation
- IdP
 - Scope of End Users served by the IdP (e.g. values of eduPersonAffiliation asserted)

4. Mappings to Existing Service Catalogue Specifications

The [TM Forum](#) is "global industry association that drives collaboration and collective problem-solving to maximize the business success of communication and digital service providers and their ecosystem of suppliers." They provide a [useful framework](#) for a service catalogue based on ICT needs. While much of their work is beyond what is needed for an identity federation service catalogue, enough of their material is useful that we can start from there rather than entirely reinvent this space.

The [Australian Access Federation](#) has also done extensive work in the service catalogue space. While their catalogue includes items specific to their business requirements, there is some overlap into what is supported by the TM Forum Service Catalogue API and the elements supported by eduGAIN.

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TM Forum Service Catalogue REST Elements

TMForum	
id	(string) Unique identifier of the catalogue
href	(string) Unique reference of the catalogue
name	(string) name of the catalogue
description	(string) Description of this catalogue
@type	(string) Indicates the (class) type of catalogue. For service catalogues, this should be 'ServiceCatalog'.
@schemaLocation	(string) This field provides a link to the schema describing this REST resource
@baseType	(string) Indicates the base (class) type of this REST resource
version	(string) Catalogue version
validFor	The period for which the catalogue is valid
lastUpdate	(DateTime) Date and time of the last update
lifecycleStatus	(string) Used to indicate current lifecycle status (e.g., In Design, In Test, Active, Rejected, Launched, Retired, Obsolete)

TM Forum Service Category Resource / AAF service catalogue mapping / eduGAIN

TM Forum	TMF Description	AAF	eduGAIN
id	(string) Unique identifier of the category	entityID	entityID
href	(string) Unique reference of the category	Service web page	<i>(not currently included; would be extremely useful)</i>
name	(string) name of the category	Service Name	DisplayName
description	(string) Description of this category	Short Description, Full Description	Description
@type	(string) Indicates the (class) type of category. <i>(e.g., entity category)</i>	Subject	
@schemaLocation	(string) This field provides a link to the schema describing this REST resource		
@baseType	(string) Indicates the base (class) type of this REST resource <i>(e.g., IdP, SP, AA)</i>		
version	(string) Category version		
validFor	The period for which the category is valid		
lastUpdate	(DateTime) Date and time of the last update	Date Last Updated	
lifecycleStatus	(string) Used to indicate current lifecycle status (for TMForum,	Status	

	these would be: In Design, In Test, Active, Rejected, Launched, Retired, Obsolete)		
parentId	(string) Unique identifier of the parent category		
isRoot	(boolean) If true, this Boolean indicates that the category is a root of categories		
relatedParty	A list of related party references. A related party defines party or party role linked to a specific entry		
serviceCandidate	A list of service candidate references to a ServiceCandidate object		
category	A list of category references. The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other categories and/or product offerings, resource or service candidates.	Service Category	
		About This Service	InformationURL
		Privacy Statement	PrivacyStatementURL
			Logo
			KeyInfo
			ArtifactResolutionService
			NameIDFormat

			SingleSignOn Service
			Organization Name
		Organisation Name	Organization DisplayName
			Organization URL
		Support Contact	ContactPerson
		Organisation category	
		Subject	
		Target Audience	
		Date Registered	
		Date Archived	
		Archived?	
		Protocol	
		Integration and/or Access Requirements	
		Technical Considerations	
		Hide this entry	
		International Use / Available / International Access	

		Service Login	
		How to login	
		Terms of use	
		SIRTFI Compliant	
		Country	
		Host Federation	
		ECP enabled?	

5. Proposed Service Catalogue

Controlled Vocabulary

REFEDS and/or eduGAIN members would need to define a controlled vocabulary for a Service Catalogue field. That field would need to be multi-valued. Initial terms (all of which need to be clearly defined) may include:

- Education
- Federation
- General
- Academic Content
- Research
- Cloud Storage
- Computational services (HPC)
- Collaboration Tool
- Student
- Administration (or Management)
- Collaboration
- Dataset
- Network
- Security
- Subscription
- Entity Category
 - [current list of REFEDS' defined Entity Categories]
- Service type
 - Paid | Free

6. Advanced Issues Still to Consider

Feedback from federation operators regarding a curated service catalogue has been positive. That said, there are still a variety of issues to consider, ranging from more clearly defining the vocabulary, more advanced requirements, and policy questions for handling conflicts or discrepancies. Some of these issues are noted below; others are certain to come up as we start to operationally define the service to support the catalogue.

- Need to have a shared vocabulary common to all federations (to support interop of catalogues)
 - A concrete schema and API in an eduGAIN context will ultimately be needed, but the vocabulary (as touched on in the Mapping section) is the first problem to tackle.
- Need to support hiding certain services, IdPs from all but authorized individuals
 - respect the entity category Hide From Discovery for IdPs
- Federations that have a service delivery group may find that using that group to ensure consistency of terms and accurate information in the metadata will be extremely helpful
- Problems of which metadata feeds we use (see [open issue](#) in MET GitHub)
- The catalogue should be technology agnostic, which means including services regardless of standard (e.g., SAML, OIDC). Which technology is supported by a service, however, needs to be expressed somewhere in the catalogue entry.
- Any recommendations on how to handle poorly formed (i.e., incomplete) metadata records? Should the recommendation be not to include them in a catalogue?
 - Initial recommendation: do not include them in a service catalogue; consider creating an automated tool that would send a notice to the federation and entity contact indicating that they are not being included because of poorly formed metadata records and suggest they talk with their FedOp to clean it up
 - Note that this might be considered a GDPR issue as the contacts have not necessarily agreed to receive notifications about a service catalogue entry.
- Using something like “status” would allow for eduGAIN to clarify dev, test, and prod deployments, rather than having them all in one undifferentiated mix.
- Can we use a service catalogue to drive support for entity categories like SIRTFI?