

Attributes

Attribute Release Policy

SURFconext has a minimal disclosure principle: only the absolute necessary (personal) information is transferred to a service. When you request a connection to the Production environment, you must specify the attributes needed. SURFconext Support will review your request and configure an Attribute Release Policy accordingly.

When Identity Providers are asked if they want to be coupled to your service, they will be informed of the attributes your service requests. The IdP must agree to the release of these attributes to your service.

Attribute overview

See for the attribute best practice: [Attribute best practice](#)

When a user logs in to a Service Provider, SURFconext sends a SAML assertion to the Service Provider, containing:

- user identifier (transient/persistent NameID)
- additional attributes (optional)

SURFconext's SAML2 implementation adheres to the [SAML2int standard 0.2.1](#).

In this section we will show you which attributes SURFconext and their Identity Providers have to offer.

- [User identifiers](#)
- [Useful links](#)
- [Attribute schemas](#)
- [Attribute overview](#)
- [Detailed attribute descriptions](#)
 - ID
 - Surname
 - Given name
 - Common name
 - Display name
 - Email address
 - uid
 - Home organization
 - Organization type
 - Employee-student number
 - Affiliation
 - Scoped Affiliation
 - Entitlements
 - Principal name
 - isMemberOf
 - Preferred Language
 - eduPersonTargetedID
 - eduPersonORCID

User identifiers

The user's identity is transmitted in the form of the NameID element. Every IdP must supply a NameID, but for privacy reasons SURFconext will generate a new one, which is duplicated in the attribute eduPersonTargetedID.

To identify a user the Service Provider must use the NameID or eduPersonTargetedID. The NameID is guaranteed to be stable for a fixed user, except in the case of transient identifiers. SURFconext will generate a NameID for each new user. It is unique for the user and specific to the SP, so SP's cannot correlate their received NameID's between each other. There are two types of NameIDs:

- `urn:oasis:names:tc:SAML:2.0:nameid-format:persistent`
A persistent NameID contains a unique string identifying the user for this SP and is persisting over multiple sessions.
- `urn:oasis:names:tc:SAML:2.0:nameid-format:transient`
A transient NameID contains a unique string identifying the user for this SP during the session. If the user logs in again, a new transient identifier will be generated.

Remark

The NameID and eduPersonTargetedID, which is basically a copy of the NameID, is unlikely to change and very privacy aware but can change when service providers or identity provider make critical changes. This can cause user profiles for services to be lost. The NameID, as used in the SAML assertion to a service provider when logging on, is generated using the **uid**, **schacHomeOrganisation**, the **Entity ID** of the **service provider** together with a secret that uses a SHA algorithm. Institutions or services that are in production and change one of these attributes, will cause a new NameID and eduPersonTargetedID to be generated by SURFconext when doing so. This can cause loss of access to profiles at services. We will notify identity providers and service providers when we see a change in one of these attributes to prevent user data being lost.

Useful links

If you have an account at an institution you can get information about attributes shared with SURFconext by visiting [our profile page](#). This page gives you insight in which personal data, provided by your institution via SURFconext, has been forwarded to which service and what they look like. For new IdP's or for IdP's that upgrade their environment, system administrators will at some point be asked to share the metadata of their account for analyses. When asked, visit [this page](#) and click the 'Mail to SURFconext' button. We will get back to you when we have judged the submitted metadata. This page will also show you the attributes shared and their values.

- Profile Page <https://profile.surfconext.nl/>
- Mail response from Identity Provider to SURFconext or review your attributes: <https://engine.surfconext.nl/authentication/sp/debug>

Attribute schemas

A schema is an abstract representation of an object's characteristics and relationship to other objects.

SURFconext supports two attribute schemas:

- `urn:oid` schema (SAML2.0 compliant)
- `urn` schema (SAML1.1 compliant)

Both can be used to convey the same information (except for the NameID, which is only available in the `urn:oid` schema). By default SURFconext will provide attributes in both schemas as part of the assertion. However it is not recommended to mix the use of the schemas.

Attribute overview

SURFconext supported relaying of the following attributes:

Friendly name	Attribute name	Definition	Data type	Example
ID	(NameID) <code>urn:mace:dir:attribute-def:eduPersonTargetedID</code> <code>urn:oid:1.3.6.1.4.1.5923.1.1.1.10</code>	eduPerson (1)	UTF8 string (unbounded)	bd09168cf0c2e675b2def0ade6f50b7d4bb4aae
Surname	<code>urn:mace:dir:attribute-def:sn</code> <code>urn:oid:2.5.4.4</code>	X.520	UTF8 string (unbounded)	Vermeegen
Given name	<code>urn:mace:dir:attribute-def:givenName</code> <code>urn:oid:2.5.4.42</code>	X.520	UTF8 string (unbounded)	Mërgim Lukáš Brúður
Common name	<code>urn:mace:dir:attribute-def:cn</code> <code>urn:oid:2.5.4.3</code>	X.520	UTF8 String (unbounded)	Prof.dr. Mërgim Lukáš Vermeegen , PhD.

Display name	urn:mace:dir:attribute-def:displayName urn:oid: 2.16.840.1.113730.3.1.241	RFC2798	UTF8 String (unbounded)	Prof.dr. Mërgim L. Vermeegen , PhD.
Email address	urn:mace:dir:attribute-def:mail urn:oid: 0.9.2342.19200300.100.1.3	RFC4524	RFC-5322 address (max 256 chars)	m.l.vermeegen@university.example.org maarten.t.hart@uniharderwijk.nl "very.unusual.@.but.valid.nonetheless"@example.com mlv@[IPv6:2001:db8::1234:4321]
Organization	urn:mace:terena.org:attribute-def:schacHomeOrganization urn:oid: 1.3.6.1.4.1.25178.1.2.9	Schac	RFC-1035 domain string	example.nl something.example.org
Organization Type	urn:mace:terena.org:attribute-def:schacHomeOrganizationType urn:oid: 1.3.6.1.4.1.25178.1.2.10	Schac	RFC-2141 URN see Schac standard	urn:mace:terena.org:schac:homeOrganizationType:int:university urn:mace:terena.org:schac:homeOrganizationType:es:opi
Employee/student number	urn:schac:attribute-def:schacPersonalUniqueCode urn:oid: 1.3.6.1.4.1.25178.1.2.14	Schac	RFC-2141 URN see SURFnet registry	urn:schac:personalUniqueCode:nl:local:example.edu:employeeid:x12-3456 urn:schac:personalUniqueCode:nl:local:example.nl:studentid:s1234567
Affiliation	urn:mace:dir:attribute-def:eduPersonAffiliation urn:oid: 1.3.6.1.4.1.5923.1.1.1.1	eduPerson (1)	Enum type (UTF8 String)	employee, student, faculty, member, affiliate, pre-student (staff is deprecated; library-walk-in, alum are not allowed)
Scoped affiliation	urn:mace:dir:attribute-def:eduPersonScopedAffiliation urn:oid: 1.3.6.1.4.1.5923.1.1.1.9	eduPerson (1)	UTF8 String user@domain	student@uniharderwijk.nl employee@uniharderwijk.nl
Entitlement	urn:mace:dir:attribute-def:eduPersonEntitlement urn:oid: 1.3.6.1.4.1.5923.1.1.1.7	eduPerson (1)	RFC-2141 URN Multi-valued	to be determined per service (see Standardized values for eduPersonEntitlement)
PrincipalName	urn:mace:dir:attribute-def:eduPersonPrincipalName urn:oid: 1.3.6.1.4.1.5923.1.1.1.6	eduPerson (1)	UTF8 String user@scope	piet.jønsen@example.edu not.a@vålid.émail.adreß
isMemberOf	urn:mace:dir:attribute-def:isMemberOf urn:oid: 1.3.6.1.4.1.5923.1.5.1.1	eduMember	RFC-2141 URN Multi-valued	urn:collab:org:surf.nl urn:collab:org:clarin.org
uid	urn:mace:dir:attribute-def:uid urn:oid: 0.9.2342.19200300.100.1.1	RFC4519	UTF8 String (max 256 chars)	s9603145 flåp@example.edu

preferredLanguage	urn:mace:dir:attribute-def:preferredLanguage urn:oid: 2.16.840.1.113730.3.1.39	RFC2798 BCP47	List of BCP47 language tags	nl nl, en-gb;q=0.8, en;q=0.7
ORCID	urn:mace:dir:attribute-def:eduPersonORCID urn:oid: 1.3.6.1.4.1.5923.1.1.1.16	eduPerson (1)	URL registered with ORCID.org	http://orcid.org/0000-0002-1825-0097

Note that not all identity providers might make all attributes available.

(1) eduPerson Object Class Specification (201602): <http://software.internet2.edu/eduperson/internet2-mace-dir-eduperson-201602.html>

Minimum requirements for IdP's connecting to SURFconext

There is a minimum amount of attributes to supply when you connect your IdP to SURFconext. Not supplying the attributes **urn:mace:dir:attribute-def:uid** and **urn:mace:terena.org:attribute-def:schacHomeOrganization** will cause a fatal error because those are needed to generate the NameID. Your IdP cannot be connected to SURFconext without these. Not supplying the attributes **urn:mace:dir:attribute-def:displayName** and **urn:mace:dir:attribute-def:mail** will cause a warning. A lot of services depend on these. The above mentioned are the bare minimum and will probably result in services not being able to connect to your institution. As a rule of thumb, supply the attributes as depicted on this page or those depicted in the configuration manuals on the page (Dutch) 'Handleidingen en Richtlijnen'.

Deprecated Attributes

SURFconext considers the attributes **nIEduPersonOrgUnit**, **nIEduPersonStudyBranch** and **nIStudielinkNummer** deprecated. When you register a new IdP or SP at SURFconext, these attributes will not be allowed for use with SURFconext. Existing IdP's and SP can use these attributes until further notice.

Detailed attribute descriptions

ID

See [User identifiers](#).

Surname

urn:mace	urn:mace:dir:attribute-def:sn
urn:oid	urn:oid:2.5.4.4
Multiplicity	single-valued
Data type	UTF8 string (unbounded)
Description	The surname of a person (including any words such as "van", "de", "von" etc.) used for Personalization; this can be a combination of existing attributes.
Examples	Vermeegen
Notes	

Given name

urn:mace	urn:mace:dir:attribute-def:givenName
urn:oid	urn:oid:2.5.4.42

Multiplicity	single-valued
Data type	UTF8 string (unbounded)
Description	Given name, also known as a first name, forename or Christian name / "name known by"; combinations of title, initials, and "name known by" are possible.
Examples	Jan Klaassen Mërgim K. Lukáš Þrúður
Notes	

Common name

urn:mace	urn:mace:dir:attribute-def:cn
urn:oid	urn:oid:2.5.4.3
Multiplicity	multi-valued
Data type	UTF8 string (unbounded)
Description	Full name.
Examples	Prof.dr. Mërgim Lukáš Vermeegen , PhD.
Notes	For example, a typical name of a person in an English-speaking country comprises a personal title (e.g. Mr., Ms., Rd, Professor, Sir, Lord), a first name, middle name(s), last name, generation qualifier (if any, e.g. Jr.) and decorations and awards (if any, e.g. CBE).

Display name

urn:mace	urn:mace:dir:attribute-def:displayName
urn:oid	urn:oid:2.16.840.1.113730.3.1.241
Multiplicity	single-valued
Data type	UTF8 string (unbounded)
Description	Name as displayed in applications
Examples	Prof.dr. Mërgim Lukáš Vermeegen , PhD.
Notes	<ul style="list-style-type: none"> This attribute can typically be changed by the end-users themselves, and is therefore not very suitable for identification.

Email address

urn:mace	urn:mace:dir:attribute-def:mail
urn:oid	urn:oid:0.9.2342.19200300.100.1.3
Multiplicity	multi-valued
Data type	RFC-5322 address (max 256 chars)
Description	e-mail address; syntax in accordance with RFC 5322

Examples	m.l.vermeegen@university.example.org "very.unusual.@.unusual.com"@example.com mlv@[IPv6:2001:db8::1234:4321]; the
Notes	<ul style="list-style-type: none"> • Multiple email addresses are allowed. However, there's no clear strategy for SP's on how to interpret multiple addresses (use both? pick one? ask user to pick one?); the SP should devise a strategy that makes sense within the context of the application. As an IdP, in the interest of interoperability, it's advisable to avoid sending multiple addresses where possible. • An email address is not necessarily the email address of this person at the institution. • Do not use this attribute to uniquely identify a user. Use the <code>NameId</code> instead. • A user's email address may change over time, or an IdP may allow a user to change this value themselves. This makes that attribute unsuitable for authentication and authorization purposes.

uid

urn:mace	urn:mace:dir:attribute-def:uid
urn:oid	urn:oid:0.9.2342.19200300.100.1.1
Multiplicity	single-valued (multi-valued in the specification, but within SURFconext only 1 value is allowed)
Data type	UTF8 String (max 256 chars); use of spaces and @-characters is discouraged.
Description	The unique code for a person that is used as the login name within the institution.
Examples	s9603145 piet flåp@example.edu (See note below)
Notes	<ul style="list-style-type: none"> • The uid is <i>not</i> a unique identifier for SURFconext users. Uid values are at most unique for each IdP. • Ideally the uid is not only a login name/code but also an identifier that is guaranteed as being unique within the institution over the course of time. At the moment, there is no such guarantee. • Use the <code>NameId</code> for unique identifiers in SURFconext rather than uid. • Use the <code>eduPersonPrincipalName</code> attribute if a human-readable unique identifier is required • A uid may contain any unicode character. E.g., "org:surfnet.nl:joe von stühl" is a valid uid. • SURFconext translates @-characters in the uid to underscores before constructing the <code>NameId</code>. flåp@example.edu translates to flåp_example.edu.

Home organization

urn:mace	urn:mace:terena.org:attribute-def:schacHomeOrganization
urn:oid	urn:oid:1.3.6.1.4.1.25178.1.2.9
Multiplicity	single-valued
Data type	RFC-1035 domain string. The domain MUST be a secondary-level domain that is under control by the institution. Preferably, the institution's main domain name should be used.

Description	The user's organization using the organization's domain name; syntax in accordance with RFC 1035.
Examples	uniharderwijk.nl example.nl
Notes	<ul style="list-style-type: none"> • In the past, SURFconext used to send the home organization in the attribute urn:oid:1.3.6.1.4.1.1466.115.121.1.15, which was incorrect. Since 2013, the correct oid urn:oid:1.3.6.1.4.1.25178.1.2.9 is in use. For reasons of compatibility, the old (wrong) key is still sent. It should not be used in new implementations. • Matching values against this attribute should be case-insensitive, i. e. the values "uniharderwijk.nl" and "UniHarderwijk.nl" should be considered equal. For Interoperability reasons however we require lower-case values as specified above in SURFconext. • It is desirable to have the same value for all your users. • SURFconext will store the allowed value for your institution in our configuration so we can check that no illegal values are being sent.

Organization type

urn:mace	urn:mace:terena.org:attribute-def:schacHomeOrganizationType
urn:oid	urn:oid:1.3.6.1.4.1.25178.1.2.10
Multiplicity	single-value
Data type	RFC-2141 URN (see Schac standard)
Description	designation of the type of organization as defined on http://www.terena.org/registry/terena.org/schac/homeOrganizationType
Examples	urn:mace:terena.org:schac:homeOrganizationType:int:university urn:mace:terena.org:schac:homeOrganizationType:es:opi
Notes	<ul style="list-style-type: none"> • Attribute values are registered by Terena on http://www.terena.org/registry/terena.org/schac/homeOrganizationType • In practice, this attribute is not/hardly used by IdP's or SP's • Please contact support@surfconext.nl if you would like to use this attribute

Employee-student number

urn:mace	urn:schac:attribute-def:schacPersonalUniqueCode
urn:oid	urn:oid:1.3.6.1.4.1.25178.1.2.14
Multiplicity	multi-value
Data type	RFC-2141 URN (see SURFnet registry)
Description	The user's student, employee, and/or member id as used in the university's internal systems
Examples	urn:schac:personalUniqueCode:nl:local:example.edu:employeeid: x12-3456 urn:schac:personalUniqueCode:nl:local:example.nl:studentid: s1234567

Notes	<ul style="list-style-type: none"> • Attribute values are registered by SURFnet on https://wiki.surfnet.nl/x/xoTdAg • Please contact the SURFnet support team if you would like to use this attribute as an SP, or if you would like to provide it as an IdP. • This attribute's main use is for matching user accounts to the university's internal systems
-------	--

Affiliation

urn:mace	urn:mace:dir:attribute-def:eduPersonAffiliation
urn:oid	urn:oid:1.3.6.1.4.1.5923.1.1.1.1
Multiplicity	multi-valued
Data type	UTF8 String (only the values enumerated below are allowed)
Description	<p>Indicates the relationship between the user and his home organization (institution). The following values are permitted within SURFconext:</p> <ul style="list-style-type: none"> • <code>student</code> — A person enrolled at an institution, an external student or course participant. • <code>employee</code> — A person with a position at or labor agreement with an institution. • <code>staff</code> — All academic staff and teachers. (<i>deprecated</i>, do not use in new deployments) • <code>faculty</code> — A person whose primary role is teaching or research. (Commonly called WP at Dutch universities. Please note, PhD <i>students</i> are also perfectly allowed to carry this value.) • <code>member</code> — Anyone that holds at least one of the above affiliations is also a member. • <code>pre-student</code> — A person who has registered to start studying, but is not yet a full student. See this page (Dutch only) for more information about pre-students and the terms and conditions under which such users are allowed access. Pre-students will never be allowed access to service providers without prior consent from the service provider. • <code>affiliate</code> — A person who is authorized by the Institution, pursuant to the lenience model concluded by the Institution, to use the Service. <p>Use the above mentioned definitions to determine which affiliation a user gets. If the definitions are not sufficient, please use common sense.</p>
Examples	see above
Notes	<ul style="list-style-type: none"> • Any user who has the affiliation <code>student</code>, <code>employee</code>, or <code>faculty</code>, should also have the value <code>member</code>. • Identity Providers might internally use additional values for the affiliation attribute, such as <code>alum</code>. Per SURFconext policy, the IdP may not allow such users to access SURFconext. Other values mentioned in the eduPerson specification include <code>library-walk-in</code>. This value is not currently used within SURFconext. • According to the eduPerson specification, the values of this attribute are case insensitive; for Interoperability reasons however, we require lower-case values as specified above in SURFconext. • The document REFEDS eduPerson(Scoped)Affiliation usage comparison is useful to determine the usefulness of values in an international context.

Scoped Affiliation

urn:mace	urn:mace:dir:attribute-def:eduPersonScopedAffiliation
urn:oid	urn:oid:1.3.6.1.4.1.1466.115.121.1.15
Multiplicity	multi-valued
Data type	UTF8 String of the form affiliation@domain (see below)
Description	<p>Indicates the relationship between the user and the domain of his home organization. The affiliation part must be one of the allowed values of the eduPersonAffiliation attribute (see definition right above).</p> <p>The value is the role of the user and the domain name of the organisation. eduPersonScopedAffiliation can hence be defined as: <eduPersonAffiliation> "@" <schacHomeOrganization>. Just like eduPersonScopedAffiliation, this is a multi valued attribute.</p> <p>The domain part must be the schacHomeOrganization of the user (or a subdomain thereof).</p>
Examples	<pre>student@uniharderwijk.nl faculty@uniharderwijk.nl</pre>
Notes	<ul style="list-style-type: none"> • This attribute is primarily a different way to convey the same information as is contained in eduPersonAffiliation and schacHomeOrganization. It's recommended to release this attribute next to eduPersonAffiliation and schacHomeOrganization, because some SP's ask for this attribute instead of the two separate ones. • If desired, this attribute can be used to describe the role of the user within a specific faculty, field, study or department that the user is part of. Because the attribute is multi-valued, a user can be a student at one and an employee at another department.

Entitlements

urn:mace	urn:mace:dir:attribute-def:eduPersonEntitlement
urn:oid	urn:oid:1.3.6.1.4.1.5923.1.1.1.7
Multiplicity	multi-value
Data type	RFC-2141 URN
Description	entitlement; custom URI (URL or URN) that indicates an entitlement to something.
Examples	<pre>urn:mace:terena.org:tcs:personal-admin urn:x-surfnet:surfdomeinen.nl:role:dnsadmin</pre>
Notes	<ul style="list-style-type: none"> • This attribute can be used to communicate entitlements, roles, etc, from identity providers to services, which can be used, for example, for authorization. • The values of this attribute are scoped to the identity provider that is authoritative for the attribute. • Formatting rules apply: See also the SURFconext entitlement name-spacing policy.

Principal name

urn:mace	urn:mace:dir:attribute-def:eduPersonPrincipalName
----------	---

urn:oid	urn:oid:1.3.6.1.4.1.5923.1.1.1.6
Multiplicity	single-valued
Data type	UTF8 String of the form <code>user@scope</code>
Description	Unique identifier for a user.
Examples	piet.jønsen@example.e not.a@vålfid.émail.adreß
Notes	<ul style="list-style-type: none"> • This is a scoped identifier for a person. It should be represented as <code>user@scope</code>, where <code>user</code> is a name-based identifier for a person. The <code>scope</code> part of the attribute must be part of an administrative domain of the identity system where the identifier was created and assigned. An IdP can have multiple scopes, e.g. piet@studenthartingcollege.nl or piet@hartingcollege.nl. These Piet's are different persons and are scoped under the administrative domain of e.g. hartingcollege.nl were the scope was defined. • It is common that <code>schacHomeOrganization</code> is used for the scope, if no other scopes are defined. • Although this value resembles an email address, it MUST NOT be used as an email address. In many cases mail cannot be delivered to this "address". • Even though this value uniquely identifies a user, it is not guaranteed that it is persistent over sessions (even though it usually is). • It is preferred to not use this to uniquely identify users. Use the <code>Named</code> instead. • SURFconext will store the allowed domain part for your institution in our configuration so we can check that no illegal values are being sent.

isMemberOf

urn:mace	urn:mace:dir:attribute-def:isMemberOf
urn:oid	urn:oid:1.3.6.1.4.1.5923.1.5.1.1
Multiplicity	multi-valued
Data type	RFC-2141 URN
Description	Lists the collaborative organizations the user is a member of.
Examples	<code>urn:collab:org:surf.nl</code>
Notes	<ul style="list-style-type: none"> • Attribute values are URIs (URN or URL) • The only currently supported value is <code>urn:collab:org:surf.nl</code>, which indicated that the user's home institution is a member of SURFnet • In the future, this can be used to determine membership of non-institutional collaborative organizations. • This attribute is generated by SURFconext and is available to SP's; it should not be set by IdP's.

Preferred Language

urn:mace	urn:mace:dir:attribute-def:preferredLanguage
urn:oid	urn:oid:2.16.840.1.113730.3.1.39
Multiplicity	single-valued

Data type	RFC2798 BCP47
Description	a two-letter abbreviation for the preferred language according to the ISO 639 language abbreviation code table; no subcodes.
Examples	nl en
Notes	Used to indicate an individual's preferred written or spoken language. This is useful for international correspondence or human-computer interaction. Values for this attribute type MUST conform to the definition of the Accept-Language header field defined in RFC 2068 with the exception that the value " : " should be omitted.

EduPersonTargetedID

urn:mace	urn:mace:dir:attribute-def:eduPersonTargetedID
urn:oid	urn:oid:1.3.6.1.4.1.5923.1.1.1.10
Multiplicity	single-valued
Data type	UTF8 string (unbounded)
Description	The attribute eduPersonTargetedID is a copy of the Subject -> NameID which is generated by SURFconext itself. When an Identity Provider provides the eduPersonTargetedID itself, it is always overwritten by SURFconext.
Examples	bd09168cf0c2e675b2def0ade6f50b7d4bb4aae
Notes	This attribute is created because the Subject -> NameID itself is not part of the SAML v2.0 response and therefore only is available for application if the local SAML implementation explicitly support this. Within SURFconext the Subject -> NameID is explicitly copied into the eduPersonTargetedID attribute, in order for the identifier to be used like any other attribute.

eduPersonORCID

urn:mace	urn:mace:dir:attribute-def:eduPersonOrcid
urn:oid	urn:oid:1.3.6.1.4.1.5923.1.1.1.16
Multiplicity	multi-valued (see remark below)
Data type	URL, registered with ORCID.org
Description	The ORCID is a persistent digital identifier that distinguishes the account holder from every other researcher. Through integration in research workflows such as manuscript and grant submission, the ORCID identifier supports automated linkages between the account holder and his/her professional activities ensuring that the account holder's work is recognized. Values MUST be valid ORCID identifiers in the ORCID preferred URL representation, i.e. http://orcid.org/0000-0002-1825-0097
Examples	http://orcid.org/0000-0002-1825-0097 http://orcid.org/0000-0001-9351-8252
Notes	For more information see https://www.surf.nl/en/news/2016/02/global-author-identifier-service-orcid-now-available-through-surfconext-and-edugain.html Although the attribute is in theory multi-valued, in practice it probably makes sense that it has no more than one value.

