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# Interface Specification for Whois / DAS


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This interface specification describes the external interfaces of the Norid Whois & DAS services.

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	2 (16)
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## Document History

Date	Revision	Author	Comment
2010-10-14	0e1	Richard Persson	Initial version
2011-02-16	1e1	Richard Persson	Changed presentation text for domain information due to the introduction of private person registrants. "Organization Handle" is replaced by "Domain Name Holder Handle".
2011-03-03	2e1	Richard Persson	Changed private_person_identity to anonymous_person_identifier in example text
2011-03-31	3e1	Richard Persson	Changed presentation text for domain information to "Domain Holder Handle". Ref. 1e1
2011-04-15	4e1	Richard Persson	Added contact information example for person registrant.
2011-11-04	5e1	Richard Persson	Added the '<domain> is not valid' DAS response.
2014-09-18	6e1	Trond Haugen	Added new section '3.2.4 Domain Information with DNSSEC data' to describe the presentation of DNSSEC information.
2017-08-08	7e1	Erik Østlyngen	Added new parameter 'Organization Name' for organization objects. Removed sections regarding organisation affiliations from person objects and role members on role objects which are both obsolete. Removed Fax number for domain contacts.
2017-11-29	8e1	Trond Haugen	Corrected examples according to new data model: Removed Legal-c and use only role contacts as Tech-c.
2018-04-13	9e1	Erik Østlyngen	Updated spec with interface changes needed for GDPR compliance. Updated response text for queries on domain holder handle
2018-08-10	10e1	Trond Haugen	Adjusted common pretext (ch. 3.2.1).

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	3 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## List of contents:

<b><u>1 Introduction.....</u></b>	<b><u>4</u></b>
<b><u>1.1 Scope.....</u></b>	<b><u>4</u></b>
<b><u>1.2 Related Documents.....</u></b>	<b><u>4</u></b>
<b><u>1.3 Glossary.....</u></b>	<b><u>4</u></b>
<b><u>2 Interfaces.....</u></b>	<b><u>5</u></b>
<b><u>2.1 Whois External Interface.....</u></b>	<b><u>5</u></b>
<b><u>2.2 DAS External Interface.....</u></b>	<b><u>6</u></b>
<b><u>3 External Interface.....</u></b>	<b><u>7</u></b>
<b><u>3.1 Whois Query Interface.....</u></b>	<b><u>7</u></b>
<b><u>3.2 Whois Responses.....</u></b>	<b><u>8</u></b>
3.2.1 Common Pretext.....	8
3.2.2 Domain Information.....	8
3.2.3 Domain Information with ACE Domain Name.....	9
3.2.4 Domain Information with DNSSEC data.....	10
3.2.5 Contact Information.....	12
3.2.6 Host Information.....	12
3.2.7 Host Information with Reduced Format.....	12
3.2.8 Registrar Information.....	13
<b><u>3.3 DAS Query Interface.....</u></b>	<b><u>14</u></b>
<b><u>3.4 DAS Responses.....</u></b>	<b><u>14</u></b>
3.4.1 Domain is not registered.....	14
3.4.2 Domain is already registered.....	14
3.4.3 Domain can not be registered.....	14
3.4.4 Invalid domain.....	14
<b><u>4 Exceptions and error responses.....</u></b>	<b><u>15</u></b>
<b><u>4.1 Whois.....</u></b>	<b><u>15</u></b>
<b><u>4.2 DAS.....</u></b>	<b><u>15</u></b>
<b><u>4.3 Common.....</u></b>	<b><u>15</u></b>
<b><u>4.4 Encoding exceptions.....</u></b>	<b><u>16</u></b>

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	4 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

# 1 INTRODUCTION

## 1.1 Scope


This document describes the external interfaces for the Whois service and the Domain Availability Service (DAS).

## 1.2 Related Documents

Ref	Title	Doc nr
	RFC 3912 Whois Protocol Specification	

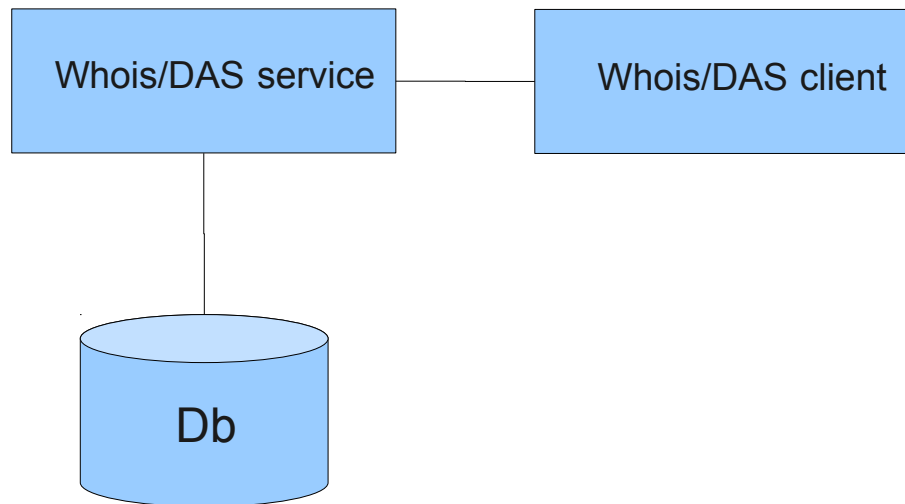
## 1.3 Glossary

Term	Description
DAS	Domain Availability Service

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	5 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 2 INTERFACES

The Whois/DAS service has got an external interface towards the Whois/DAS client. This document describes the content and layout of the results.



### 2.1 Whois External Interface

The Whois external interface is the Whois service interface towards Whois clients.

The Whois service is listening on port 43.

The external interface has got a Norid extension.


- Character encoding (UTF-8)

By adding a '-c utf-8' to the query string the query is interpreted as UTF-8 instead of Latin-1 that is the default. The result is returned in UTF-8 if the '-c utf-8' option is set.

Example:

```
> whois -c utf-8 øl.no
```

The -c utf-8 will tell the Whois service that the argument is coded in utf-8.

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	6 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 2.2 DAS External Interface

The DAS external interface is the same as the Whois external interface when it comes to the Norid extension for character encoding. Refer chapter 2.1.

The DAS service is listening on port 79.

Example with normal characters:

```
> whois -p 79 norid.no
norid.no is available (0)
```

Example with UTF-8 characters (response coded in UTF-8):


```
> whois -p 79 -c utf-8 tromsø.no
tromsø.no (xn--troms-zua.no) is delegated (0)
```

Example with ACE domain name (response coded in Latin1 as default):

```
> whois -p 79 xn--troms-zua.no
tromsø.no (xn--troms-zua.no) is delegated (0)
```

Example with a response that is unprintable in the current char set:

```
> whois -p 79 xn--porsgu-sta26f.no
UNPRINTABLE (xn--porsgu-sta26f.no) is delegated (0)
```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	7 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 3 EXTERNAL INTERFACE

### 3.1 Whois Query Interface

Whois should primarily be used for domain name and Norid handle lookups. Searches that might return multiple objects will only return a list of object- and registrar handles. The return type is presented within parentheses below.

It is possible to search for:


- complete domain name (complete object response)
- complete Norid handle (complete object response)
- complete name server name (list response)

A maximum of 50 hits are returned. If a search results in more than 50 hits an error message is returned. A more detailed search need to be performed.

When a domain or name server is searched by name, the Whois service must fetch both domain and host objects from the database since they can have the same name. It is not possible to identify and separate a domain name from a host name. If there exists a domain 'data.no' and multiple hosts named 'data.no' registered with multiple registrars, then the response consists of a domain object, an organization object and finally a list of host- and registrar handles.

A Norid handle is formatted as upper case letters followed by numbers a letter and finally -NORID.

Handle type	Regexp.	Example
Delegation handle	[A-Z]+\d+D-NORID	KAR12D-NORID
Role handle	[A-Z]+\d+R-NORID	NN212R-NORID
Host handle	[A-Z]+\d+H-NORID	NS1800H-NORID
Registrar handle	REG\d+-NORID	REG5-NORID

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	8 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 3.2 Whois Responses

### 3.2.1 Common Pretext

The following lines of text are printed on top of a result from Whois

```

-----[start]-----

% By looking up information in the domain registration directory
% service, you confirm that you accept the terms and conditions of the
% service:
% https://www.norid.no/en/domeneoppslag/vilkar/
%
% UNINETT Norid AS holds the copyright to the lookup service, content,
% layout and the underlying collections of information used in the
% service (cf. the Act on Intellectual Property of May 2, 1961, No.
% 2). Any commercial % use of information from the service, including
% targeted marketing, is prohibited. Using information from the domain
% registration directory service in % violation of the terms and
% conditions may result in legal prosecution.
%
% The whois service at port 43 is intended to contribute to resolving
% technical problems where individual domains threaten the
% functionality, security and stability of other domains or the
% internet as an infrastructure. It does not give any information
% about who the holder of a domain is. To find information about a
% domain holder, please visit our website:
% https://www.norid.no/en/domeneoppslag/
-----[end]-----

```

### 3.2.2 Domain Information

The Domain Information lookup returns two objects, the domain object and the domain holder object. The domain holder can be an organization or a person object.

This example shows a domain with an organization domain holder.

```


-----[start]-----
Domain Information

NORID Handle.....: NOR18456D-NORID
Domain Name.....: norid.no
Registrar Handle.....: REG2-NORID
Tech-c Handle.....: UT128R-NORID
Tech-c Handle.....: UH9R-NORID
Name Server Handle.....: BIFF2H-NORID
Name Server Handle.....: NAC2H-NORID
Name Server Handle.....: NN14H-NORID
Name Server Handle.....: SERV41H-NORID

Additional information:
Created:          1999-11-15
Last updated:    1999-11-15
-----[end]-----

```



	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	9 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.2.3 Domain Information with ACE Domain Name


This example shows how an ACE Domain Name is present in the result when the domain name contains non standard ASCII characters.

```

-----[start]-----
  Domain Information

  NORID Handle.....: TR03836D-NORID
  Domain Name.....: tromsø.no
  ACE Domain Name...: xn--troms-zua.no
  Registrar Handle...: REG1-NORID
  Tech-c Handle.....: UT128R-NORID
  Tech-c Handle.....: NH55R-NORID
  Name Server Handle.....: X11H-NORID
  Name Server Handle.....: Y1H-NORID
  Name Server Handle.....: Z6H-NORID
  ...etc.
-----[end]-----

```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	10 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.2.4 Domain Information with DNSSEC data

DNSSEC data are displayed only if DNSSEC data is registered on the domain.

DS data is mandatory, whilst key information can optionally be registered along with the corresponding DS data. The Whois will present all registered DNSSEC data.

Note that the digest and public key values are presented on one long line by the Whois, and not line wrapped as shown below.

#### 3.2.4.1 Domain with DS data only


This example shows how DNSSEC data is presented for a domain with two registered DS records, numbered 1 and 2.

```

-----[start]-----
Domain Information

NORID Handle.....: EXA177D-NORID
Domain Name.....: example.no
Registrar Handle.....: REG9094-NORID
Tech-c Handle.....: UT128R-NORID
Name Server Handle.....: NSEX145H-NORID
Name Server Handle.....: NSEX146H-NORID
DNSSEC.....: Signed
DS Key Tag      1.....: 24007
Algorithm      1.....: 8
Digest Type    1.....: 2
Digest         1.....: 1d3523529917ae31f3d99d00339a4622b60
4e7dab54421b1b0632b4c2733bc18
DS Key Tag      2.....: 24379
Algorithm      2.....: 5
Digest Type    2.....: 1
Digest         2.....: 43b670827d979202c297ec6e958c9653d8f
14328
...etc.
-----[end]-----

```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	11 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.2.4.2 Domain with both DS and key data


This example shows how DNSSEC data is presented for a domain with two registered DS records, numbered 1 and 2, and where DS number 2 also has registered corresponding key data.

```

-----[start]-----
Domain Information

NORID Handle.....: EXA177D-NORID
Domain Name.....: example.no
Registrar Handle.....: REG9094-NORID
Tech-c Handle.....: UT128R-NORID
Name Server Handle.....: NSEX145H-NORID
Name Server Handle.....: NSEX146H-NORID
DNSSEC.....: Signed
DS Key Tag      1.....: 24007
Algorithm      1.....: 8
Digest Type    1.....: 2
Digest         1.....: 1d3523529917ae31f3d99d00339a4622b60
4e7dab54421b1b0632b4c2733bc18
DS Key Tag      2.....: 24379
Algorithm      2.....: 5
Digest Type    2.....: 1
Digest         2.....: 43b670827d979202c297ec6e958c9653d8f
14328
Key Flags      2.....: 257
Key Protocol   2.....: 3
Key Algorithm  2.....: 5
Key Public     2.....: AwEAAfENT8LjD8ZdyVk59UhpzQqVyfIUwkGP
ImZr6lriB23GJw+S9taerp9/EMfONfnT+IVRW89BuUw16M/TWBkQBv0=
...etc.
-----[end]-----

```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	12 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.2.5 Contact Information

The Contact Information lookup returns a role object.

If the contact is an organization object, all domains that the organization has registered is dumped

```
-----[start]-----
Contact Information

NORID Handle.....: UH9R-NORID
Name.....: UNINETT Hostmaster
Registrar Handle.....: REG2-NORID
Country.....: NO
Phone Number.....: +47.73557900
Email Address.....: hostmaster@uninett.no

Additional information:
Created:      2010-10-01
Last updated: 2010-10-01
-----[end]-----
```

### 3.2.6 Host Information

The host information dumps the host object

```
-----[start]-----
Host Information

NORID Handle.....: BIFF2H-NORID
Name Server Hostname.....: biff.uninett.no
Name Server IP-address.....: 158.38.180.21
Name Server IP-address.....: 2001:0700:0000:0526:0000:0000:0000:
aa53
Tech-c Handle.....: UH9R-NORID
Registrar Handle.....: REG2-NORID

Additional information:
Created:      2010-10-01
Last updated: 2010-10-01
-----[end]-----
```

### 3.2.7 Host Information with Reduced Format

It is possible to get multiple response objects if the search for hosts is done using:


- complete name server name

The host- and registrar handles are dumped as below for each response object even if there is only one response object.

```
-----[start]-----
Hosts matching the search parameter

NORID Handle.....: NS13353H-NORID
Registrar Handle.....: REG9090-NORID

NORID Handle.....: NS13354H-NORID
Registrar Handle.....: REG9091-NORID
-----[end]-----
```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	13 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.2.8 Registrar Information


The registrar information dumps properties from the registrar object

```

-----[start]-----
Registrar Information

Registrar Handle.....: REG2-NORID
Registrar Name.....: UNINETT AS
Address.....: Abels gate 5
Address.....: 7465 TRONDHEIM
Address.....: NO-7030
Address.....: Trondheim
Address.....: NO
Phone Number.....: +47.73557900
Email Address.....: info@uninett.no
Web Address.....: http://www.uninett.no
-----[end]-----

```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	14 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

### 3.3 DAS Query Interface

It is only possible to search for complete domain names.

### 3.4 DAS Responses

The result of the DAS query depends on the domain being registered or not as well as current registry policy. If a domain name contains invalid characters or is located in a DNS zone not administered by Norid, an error message is returned.

DAS response messages:

M1	<domain> is available (<DAS service number>)
M2	<domain> is delegated (<DAS service number>)
M3	This domain can currently not be registered (<DAS service number>)
M4	<domain> is not valid (<DAS service number>)

#### 3.4.1 Domain is not registered

This response means that the domain is not registered.

```
-----[start]-----
      data4711.no is available (0)
-----[end]-----
```

Note that this does not necessary imply that the domain can be registered, because only limited syntax and policy checks are performed.

#### 3.4.2 Domain is already registered

This response means that the domain is already registered.

```
-----[start]-----
      data.no is delegated (0)
-----[end]-----
```

#### 3.4.3 Domain can not be registered


This response means that the domain can not be registered for the moment due to registry policies.

```
-----[start]-----
      This domain can currently not be registered (0)
-----[end]-----
```

#### 3.4.4 Invalid domain

This response means that the domain name is invalid or that the DNS zone is not administered by Norid.

```
-----[start]-----
      Domain is not valid (0)
-----[end]-----
```

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	15 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 4 EXCEPTIONS AND ERROR RESPONSES

### 4.1 Whois

Error message	Comment
"% No match"	No objects matched the query
"% You have tried to look up a domain holder handle, which is not supported. % To find more information about a holder, please visit our website: % www.norid.no/en/domeneoppslag/"	Query on person handle or organization handle.


### 4.2 DAS

DAS has no service specific exceptions, only the common exceptions.

### 4.3 Common

The following exceptions are common for the Whois and DAS services.

Error message	Comment
"% Quota exceeded"	Queries are temporary denied from that IP address. There is a per day and a per hour quota.
"% Access denied"	Access is denied from that IP address.
"% Referral denied"	A referral query is not allowed from that IP address.
"% ERROR - Malformed UTF-8 characters in input"	Error in input characters when input is UTF-8.
"% ERROR - Database timeout"	
"% ERROR - Transient error"	
"% ERROR - Network error"	
"% ERROR - Request too large"	
"% ERROR - Timeout"	
"% ERROR - Invalid request"	

	EXTERNAL Spec	Document Number: UN2010-Spec-043	Status Approved	16 (16)
	Author: Richard Persson	Resp: Jarle Greipsland	Date: 2018-08-10	Rev: 10e1

## 4.4 Encoding exceptions

In this case the character conversion should fail, the special string 'UNPRINTABLE' in upper case should be used in the result-field instead, along with the following warning message at the end of the Whois output:

"Warning: The result could not be represented correctly in the ISO8859-1 character set. Please perform another lookup using UTF-8."

```
-----[start]-----
Domain Information

Domain Name.....: UNPRINTABLE
ACE Domain Name.....: xn--porsgu-sta26f.no
Registrar Handle.....: REG1-NORID
Tech-c Handle.....: NS2R-NORID
Name Server Handle.....: TREL1H-NORID
Name Server Handle.....: SLAV8H-NORID
Name Server Handle.....: NIX1H-NORID

...etc.
```

Warning: The result could not be represented correctly in the ISO8859-1 character set. Please perform another lookup using UTF-8.

```
-----[end]-----
```