

# Appendix

# Whois interface

## Appendix to the DRS5 Manual

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Appendix: Whois interface (version 2.6)

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# Chapter 1

## Introduction

This paper describes the interface for the 'Is' and 'Whois' functionality provided by SIDN.

RFC3912 describes the `whois` protocol. That standard describes how user applications automatically discover the right Whois server on internet: the server of the registry of the specified domain name. However, the standard does not prescribe the syntax of the output. Each domain registry has developed its own output format.

In a private extension to the Whois protocol, SIDN provides a way of querying the domain status only, without requesting any additional details. This 'Is' feature is much less demanding on the SIDN infrastructure, and therefore someone may use 'Is' much more often than the usual 'Whois' queries.

Anno 2010, domain registration has become of political importance. Privacy regulations required that much less information was available from the Whois by default. New 'Whois' services have been developed to provide SIDN registrars with additional information that is not available to others. The limits on 'Is' and 'Whois' query frequencies are much higher for registrars than for unregistered users (the general public).

In the new situation, four levels of `whois` output are defined. Requesters without special status (the general public) are limited to a much reduced number of data items. In addition, there are various groups of registered users.

1. Whois command line for public access;
2. Whois HTML output for public access;
3. Whois for registrars; and
4. Whois for special users.

The amount of data contained in the output varies between the levels, but the layout is kept as similar as possible. Especially the XML specification detailed in this document contains many detailed facts which you may never come across in a response.

At the moment the XML-interface has been made accessible only for the Whois and just for registrars and specific usage.

# Chapter 2

## Protocol

Registrars can send a request for more data from the `whois`. This is possible via the registrar Whois available at `rwhois.domain-registry.nl`. Only preregistered IP addresses can make these requests to the registrar Whois. The plain text output of the Whois is given at port 43 (standard Whois). If you address the registrar Whois via port 80, you can choose if you want to receive the output in plain text, HTML or XML. HTTP version 1.1 is supported, so multiple requests per connection are possible.

### 2.1 Requests via Whois-style plain text

RFC3912 describes the Whois protocol; the domain name is simply sent as byte-string to port 43 of the server. There are various ways to achieve that:

```
whois sidn.nl
echo "whois sidn.nl" | netcat whois.domain-registry.nl 43
echo "sidn.nl" | netcat whois.domain-registry.nl 43
echo "is sidn.nl" | netcat whois.domain-registry.nl 43
```

The first three commands will result in a plain text answer to a Whois request. The last one demonstrates the SIDN 'Is' extension, which can be used with a much higher frequency.

### 2.2 Requests via HTTP-GET

To simplify integration with web interfaces, SIDN's Whois implementation offers an HTTP/HTML service. Two examples:

```
http://rwhois.domain-registry.nl/whois?domain=sidn.nl
http://rwhois.domain-registry.nl/is?domain=sidn.nl
```

In time SIDN will also make the registrar Whois available via HTTPS. For access via HTTP, the default output format is HTML. There are a few tuneable parameters:

- **domain** is a required parameter: a top-level domain name in the .nl zone;
- **format** is output syntax: HTML (default), PLAIN or XML (only for Whois),
- **lang** is output language: EN (default) or NL.
- **css** contains the 'Cascading Style Sheet' link used by the HTML output. When this parameter is not provided, the global SIDN style sheet will be used.

The values of these parameters are case insensitive.

# Chapter 3

## HTML output

When the 'Is' or 'Whois' produces HTML, that output will contain `class` labels on the elements, which can be used in CSS (Cascading Style Sheets) to beautify the presentation. All possible labels are listed below.

When the HTML output is requested via HTTP, you may use the `css` parameter to have your private CSS included in the output document. By default, SIDN will insert its CSS.

Common labels		
class	element	purpose
lang_nl	BODY	output in Dutch
lang_en	BODY	output in English
status_active	TD	
status_requested	TD	
status_inactive	TD	
status_withdrawn	TD	
status_quarantine	TD	
status_excluded	TD	
status_free	TD	
error	TD	mistake in request

Labels specific to 'Is'		
class	element	purpose
is	BODY	page contains 'Is' answer
is_result	TABLE	the answer structure

Labels specific to 'Whois'		
class	element	purpose
whois	BODY	page contains 'Whois' answer
whois_adminc	TR	administrative contact
whois_copy_not	SPAN	copyright text header
whois_copy	TD	copyright text
whois_date_change	TR	date last change in facts
whois_date_reg	TR	date domain registration
whois_domain	TR	domain name
whois_domicile	TR	domicile text
whois_maint	TR	'registry maintained by'
whois_ns_host	TD	name server name
whois_ns_ip	TD	IP address of name server
whois_ns	TR	name server
whois_public	BODY	Whois public version
whois_reg	BODY	Whois for registered users
whois_registrant	TR	registrant information
whois_registrar	TR	registrar information
whois_result	TABLE	the answer structure
whois_techc	TR	technical contact
whois_update	TR	date of last change

# Chapter 4

## Whois in XML

The EPP server offers a way to access each component of the Whois output separately. However, the Whois output provides an SIDN-specific single overview of all the data relating to a domain. At the moment an XML request can only be made via HTTP with the URI `/whois?domain=sidn.nl&format=XML`. The XSD is available from `http://rxsd.domain-registry.nl/whois-drs50.xsd`

### 4.1 Whois answer

#### **whois-response**

The top-level response object which answers a `Whois` query.

```
1 <element name="whois-response" type="whois:whoisResponseType" />
2
3 <complexType name="whoisResponseType">
4   <choice>
5     <element ref="whois:fault" />
6     <sequence>
7       <element ref="whois:domain" />
8       <element ref="whois:registrar"
9         minOccurs="0" />
10      <element ref="whois:contact"
11        minOccurs="0" maxOccurs="unbounded" />
12      <element ref="whois:nameserver"
13        minOccurs="0" maxOccurs="unbounded" />
14      <element ref="whois:signature" />
15    </sequence>
16  </choice>
17 </complexType>
```

#### **whoisObjectType**

All top-level elements in the responses are extensions of this type, so all report when the data was retrieved from the database.

```
1 <complexType name="whoisObjectType" abstract="true">
2   <sequence>
3     <element name="date" type="dateTime" />
4   </sequence>
5 </complexType>
```

### 4.2 Domain information

The domain structure mainly contains references to objects which are included in the same `whois` response structure.

## domain

The domain is described by a few specific fields and some references to objects which may be returned in the same `whois` response structure. The data is divided into objects, in the same way as for EPP communication: separate contact and name server objects are produced.

Every `contact` element defines one relationship. It is quite possible that the same contact is listed several times in different roles.

The `name server` elements each refer to a unique host name.

A date represents a day, in Central European Time (CET). Specimen values are 2010-01-22+01:00 (normal time) and 2010-05-05+02:00 (daylight saving time).

```

1 <element name="domain" type="whois:domainType" />
2
3 <complexType name="domainType">
4   <complexContent>
5     <extension base="whois:whoisObjectType">
6       <sequence>
7         <element ref="whois:status" />
8
9         <element name="registrar"
10            type="whois:registrarRefType"
11            minOccurs="0" />
12
13        <element name="contact"
14            type="whois:contactRefType"
15            minOccurs="0" maxOccurs="unbounded" />
16
17        <element ref="whois:dnssec" />
18
19        <element name="nameserver"
20            type="whois:nameserverRefType"
21            minOccurs="0" maxOccurs="unbounded" />
22
23        <element name="contact-details"
24            type="whois:contactDetailsType"
25            minOccurs="0" />
26        <element name="registered" type="date"
27            minOccurs="0" />
28        <element name="last-change" type="date"
29            minOccurs="0" />
30      </sequence>
31
32      <attribute name="name" type="whois:domainRefType"
33        use="required" />
34
35      <attribute name="view" type="whois:domainViewType"
36        use="required" />
37
38    </extension>
39  </complexContent>
40 </complexType>

```

### domainRefType

In `.nl`, there are no domain names consisting of a single character. For some years, there were personal domain names in use, for example `piet.123.nl`. These names do not exist anymore.

```
1 <simpleType name="domainRefType">
2   <restriction base="token">
3     <pattern value="[a-zA-Z0-9-]{2,63}.nl" />
4   </restriction>
5 </simpleType>
```

### domainViewType

It depends on your access rights how much detail is produced by the Whois server. The restrictions do influence the amount of content in the domain structure directly. The restrictions affect the other objects of the Whois response indirectly.

```
1 <simpleType name="domainViewType">
2   <restriction base="token">
3     <enumeration value="ca" />
4     <enumeration value="csi" />
5     <enumeration value="public" />
6     <enumeration value="isp" />
7   </restriction>
8 </simpleType>
```

### status

The status codes which are currently shown. Only domains with the status `VRJ` (free) are available for registration.

```
1 <element name="status" type="whois:statusType" />
2
3 <complexType name="statusType">
4   <sequence>
5     <element name="code" type="whois:statusCodeType" />
6     <element name="explain" type="whois:userTextType" />
7     <choice minOccurs="0">
8       <element name="domain-release-date" type="date" />
9     </choice>
10  </sequence>
11 </complexType>
```

### statusCodeType

```
1 <simpleType name="statusCodeType">
2   <restriction base="token">
3     <enumeration value="active" />
4     <enumeration value="requested" />
5     <enumeration value="inactive" />
6     <enumeration value="withdrawn" />
7     <enumeration value="quarantine"/>
8     <enumeration value="excluded" />
9     <enumeration value="free" />
10  </restriction>
11 </simpleType>
```

### contactDetailsType

The registrant may have opted out, in which case less information is included in the public Whois output. Some text which explains the situation is added, and should be shown to end users.

```

1 <complexType name="contactDetailsType">
2   <complexContent>
3     <extension base="whois:userTextType">
4       <attribute name="restriction"
5         type="whois:contactViewType" />
6     </extension>
7   </complexContent>
8 </complexType>

```

### signature

This structure contains some facts which are required to be displayed to people when (parts of) this Whois response are displayed.

```

1 <element name="signature" type="whois:signatureType" />
2
3 <complexType name="signatureType">
4   <sequence>
5     <element name="maintainer" type="whois:userTextType" />
6     <element name="copyright" type="whois:userTextType" />
7   </sequence>
8 </complexType>

```

An example of the `whois:domain` structure. Be aware that this fragment can only be used inside a larger `whois:whois` response object, never separately.

```

1 <domain name="sidn.nl" view="isp">
2   <date>2010-02-04T13:03:25.04191Z</date>
3   <status>
4     <code>active</code>
5     <explain lang="en-UK">actief</explain>
6   </status>
7   <registrar>AAA123456-SIDN2</registrar>
8   <contact role="registrant">STI044010-SIDN2</contact>
9   <contact role="admin">HAM003802-SIDN2</contact>
10  <contact role="tech">PIJ001675-SIDN2</contact>
11  <nameserver in-zone="true">ns1.sidn.nl</nameserver>
12  <nameserver in-zone="false">open.nlnetlabs.nl</nameserver>
13  <nameserver in-zone="true">ns2.sidn.nl</nameserver>
14  <registered>1999-11-18+01:00</registered>
15  <last-change>2009-09-14+02:00</last-change>
16 </domain>

```

Another example, but now showing only minimal information about the domain:

```

1 <domain name="hidden.nl" view="public">
2   <date>2010-02-04T13:03:25.06445Z</date>
3   <status>
4     <code>quarantine</code>
5     <explain lang="en-UK">in quarantaine</explain>
6     <domain-release-date>2010-12-12+01:00</domain-release-date>
7   </status>
8   <registrar>AAA123456-SIDN2</registrar>
9   <contact-details lang="en-UK" restriction="optout">
10  At the request of the registrant and in accordance with SIDN's opt out regulations,
11  the personal details of the registrant and the administrative contact
12  are not disclosed. Only the registrar information is shown.
13 </contact-details>
14 <registered>2000-02-03+01:00</registered>
15 <last-change>2009-06-15+02:00</last-change>
16 </domain>

```

### dnssec

A domain name has a DNSSEC status of 'yes' or 'no'. An explanation of the status has been added in the selected language.

```

1 <element name="dnssec" type="whois:dnssecType" />
2
3 <complexType name="dnssecType">
4   <sequence>
5     <element name="code" type="whois:dnssecCodeType" />
6     <element name="explain" type="whois:userTextType" />
7   </sequence>
8 </complexType>

```

### dnssecCodeType

```

1 <simpleType name="dnssecCodeType">
2   <restriction base="token">
3     <enumeration value="yes" />
4     <enumeration value="no" />
5   </restriction>
6 </simpleType>

```

## 4.3 Registrar information

### registrarRefType

Refers to a registrar.

```

1 <simpleType name="registrarRefType">
2   <restriction base="token" />
3 </simpleType>

```

### countryCodeType

An ISO 3166 standardised country code. Only the two-character codes are used.

```

1 <simpleType name="countryCodeType">
2   <restriction base="token">
3     <pattern value="[A-Z]{2}" />
4   </restriction>
5 </simpleType>

```

## registrar

Describes a registrar, an organisation that can register domain names on behalf of a registrant.

```

1 <element name="registrar" type="whois:registrarType" />
2
3 <complexType name="registrarType">
4   <complexContent>
5     <extension base="whois:whoisObjectType">
6       <sequence>
7         <element name="name" type="string" />
8         <element name="address" type="whois:addressType" />
9       </sequence>
10    </extension>
11  </complexContent>
12 </complexType>

```

## addressType

The address is a detailed description of a personal or company address. All address lines are language independent, except the country name.

For historical reasons, addresses of foreign registrars do not contain separate city and postal code information; those are included in the `street` lines.

```

1 <complexType name="addressType">
2   <sequence>
3     <element name="street" type="string" maxOccurs="3" />
4     <element name="postal-code" type="string" minOccurs="0" />
5     <element name="city" type="string" minOccurs="0" />
6     <element name="country-code" type="whois:countryCodeType"/>
7     <element name="country" type="whois:userTextType" />
8   </sequence>
9   <attribute name="format" type="whois:textFormatType"
10     fixed="plain" />
11 </complexType>

```

```

1 <registrar >
2   <date>2010-02-04T13:03:25.06606Z</date>
3   <name>St. Internet Domeinregistratie Nederland</name>
4   <address>
5     <street>Utrechtseweg 310</street>
6     <postal-code>6812AR</postal-code>
7     <city>Arnhem</city>
8     <country-code>NL</country-code>
9     <country lang="nl-NL">Nederland</country>
10  </address>
11 </registrar>

```

```

1 <registrar >
2   <date>2010-02-04T13:03:25.07803Z</date>
3   <name>EuroDNS S.A.</name>
4   <address>
5     <street>2, rue Leon Laval</street>
6     <street>L-3372</street>
7     <street>LEUDELANGE</street>
8     <country-code>LU</country-code>
9     <country lang="en-UK">Luxembourg</country>
10  </address>
11 </registrar>

```

## 4.4 Contact information

The following data structures describe a contact person, company or organisation.

### contactRefType

Refer to a contact person and his/her responsibility with respect to the domain. It is very well possible that the same person has more than one role. In that case, the same contact id will appear multiple times in the domain structure.

```

1 <complexType name="contactRefType">
2   <simpleContent>
3     <extension base="whois:contactLabelType">
4       <attribute name="role" type="whois:contactRoleType"
5         use="required" />
6     </extension>
7   </simpleContent>
8 </complexType>

```

### contact

Refers to a 'contact', which can either be a company/organisation or a private person. If the company or organisation is located in the Netherlands, you may find additional information attached.

The information presented here is strongly influenced by the restrictions which apply to your accessor class, whether the registrant has opted out and SIDN's company rules.

```

1 <element name="contact" type="whois:contactType" />
2
3 <complexType name="contactType">
4   <complexContent>
5     <extension base="whois:whoisObjectType">
6       <sequence>
7         <element name="name" type="string" />
8         <element name="email" type="string"
9           minOccurs="0" />
10        <element name="voice" type="whois:phoneNumberType"
11          minOccurs="0" />
12        <element name="address" type="whois:addressType"
13          minOccurs="0" />
14        <element name="company" type="whois:companyType"
15          minOccurs="0" />
16        <element name="domicile-sidn" type="whois:userTextType"
17          minOccurs="0" />
18      </sequence>
19      <attribute name="id" type="whois:contactLabelType"
20        use="required" />
21      <attribute name="view" type="whois:contactViewType"
22        default="no" />
23    </extension>
24  </complexContent>
25 </complexType>

```

### contactLabelType

Describes how the unique identifiers for contacts are formatted in DRS.

```

1 <simpleType name="contactLabelType">
2   <restriction base="token">
3     <pattern value="[A-Z]{3}[0-9]{6}-[A-Z0-9]{5}" />
4   </restriction>
5 </simpleType>

```

### contactRoleType

The role of the `contact` with respect to the domain in question.

```
1 <simpleType name="contactRoleType">
2   <restriction base="token">
3     <enumeration value="registrant" />
4     <enumeration value="admin" />
5     <enumeration value="tech" />
6   </restriction>
7 </simpleType>
```

### contactViewType

Explains the restrictions applied to the `contact` information. Information about the same contact but for a different domain may show less or more information.

```
1 <simpleType name="contactViewType">
2   <restriction base="token">
3     <enumeration value="no" />
4     <enumeration value="all" />
5     <enumeration value="csi" />
6     <enumeration value="public" />
7     <enumeration value="optout" />
8   </restriction>
9 </simpleType>
```

### phoneNumberType

The telephone number is in e164 notation, for instance +31.26123456. Blanks, dashes and other typical phone number mark-up are not allowed. This e164 notation may cause confusion for non-technical end users.

```
1 <simpleType name="phoneNumberType">
2   <restriction base="token">
3     <pattern value="\+[0-9]{1,3}\.[0-9]{1,14}" />
4   </restriction>
5 </simpleType>
```

### companyType

If the registrant is a Dutch company or organisation, there may be additional information about its type and its Dutch Chamber of Commerce Trade Register number.

```
1 <complexType name="companyType">
2   <sequence>
3     <element name="type-of-business"
4       type="whois:businessTypeType" />
5     <element name="trade-register-number" type="string" />
6   </sequence>
7 </complexType>
```

### businessClassType

The category of the business, as defined by DRS. These fields mainly follow Dutch Chamber of Commerce classifications, but there are some extensions.

```

1 <simpleType name="businessClassType">
2   <restriction base="token">
3     <enumeration value="ANDERS"      />
4     <enumeration value="BGG"        />
5     <enumeration value="BRO"        />
6     <enumeration value="BV"         />
7     <enumeration value="BVI/O"      />
8     <enumeration value="COOP"       />
9     <enumeration value="CV"         />
10    <enumeration value="EENMANSZAAK" />
11    <enumeration value="EESV"       />
12    <enumeration value="KERK"       />
13    <enumeration value="MAATSCHAP"  />
14    <enumeration value="NV"         />
15    <enumeration value="OWM"        />
16    <enumeration value="PERSOON"    />
17    <enumeration value="REDR"       />
18    <enumeration value="STICHTING"  />
19    <enumeration value="VERENIGING" />
20    <enumeration value="VOF"        />
21  </restriction>
22 </simpleType>

```

### businessTypeType

The "type of business" is defined by an internal DRS code and en string which translates the code into the selected language and format.

```

1 <complexType name="businessTypeType">
2   <simpleContent>
3     <extension base="string">
4       <attribute name="class" type="whois:businessClassType" />
5       <attribute name="lang" type="language" />
6       <attribute name="format" type="whois:textFormatType"
7         fixed="plain" />
8     </extension>
9   </simpleContent>
10 </complexType>

```

Example of the `whois:contact` structure, for a person living in the Netherlands.

```

1 <contact id="PIJ001675-SIDN2">
2   <date>2010-02-04T13:03:25.0792Z</date>
3   <name>Jan van Pijkeren</name>
4   <email>support@sidn.nl</email>
5   <voice>+31.263525555</voice>
6 </contact>

```

Example of a `whois:contact` structure for a company.

```

1 <contact id="STI044010-SIDN2">
2   <date>2010-02-04T13:03:25.10334Z</date>
3   <name>St. SIDN</name>
4   <email>support@sidn.nl</email>
5   <voice>+31.263525555</voice>
6   <company>
7     <type-of-business class="STICHTING" lang="en-UK">
8       Foundation
9     </type-of-business>
10    <trade-register-number>232902771786</trade-register-number>
11  </company>
12 </contact>

```

Example of a company which represents a registrant located outside the Netherlands. The 'domicile-sidn' message will appear only if the contact is used as the domain name's registrant.

```

1 <contact id="XAS123456-ABCD2">
2   <date>2010-02-04T13:03:25.10456Z</date>
3   <name>Internet Provider</name>
4   <email>support@abcd.de</email>
5   <voice>+32.123456789</voice>
6   <domicile-sidn lang="en-UK" format="html">
7     &lt;p&gt;As the registrant's address is not in the Netherlands, the registrant
8     is obliged by the General Terms and Conditions for .nl Registrants to use
9     SIDN's registered office address as a domicile address. More information
10    on the use of a domicile address may be found at
11    &lt;a href="http://www.sidn.nl"&gt;www.sidn.nl&lt;/a&gt;. &lt;/p&gt;
12  </domicile-sidn>
13 </contact>

```

## 4.5 Name server information

The following structures describe a name server. The same name servers may be used with different domains. For each domain, these records will display the same details.

### nameserverRefType

Refers to a name server. This reference is used in a domain, hence there is an `in-zone` relationship which may be useful in XSLT transformations of the Whois output.

```

1 <complexType name="nameserverRefType">
2   <simpleContent>
3     <extension base="whois:hostRefType">
4       <attribute name="in-zone" type="boolean" use="required" />
5     </extension>
6   </simpleContent>
7 </complexType>

```

### nameserver

The name server object contains between 1 and 13 IP addresses, where the order has no special significance (but always sorted alphabetically, to give a reproducible result).

```

1 <element name="nameserver" type="whois:nameserverType" />
2
3 <complexType name="nameserverType">
4   <complexContent>
5     <extension base="whois:whoisObjectType">
6       <choice minOccurs="1" maxOccurs="13">
7         <element name="ipv4-address"
8           type="whois:ipv4AddressType" />
9         <element name="ipv6-address"
10          type="whois:ipv6AddressType" />
11       </choice>
12       <attribute name="host" type="whois:hostRefType"
13         use="required" />
14     </extension>
15   </complexContent>
16 </complexType>

```

### hostRefType

Refers to a system (a host). Currently used only to refer to name servers.

```

1 <simpleType name="hostRefType">
2   <restriction base="token">
3     <pattern value="[a-z0-9.]+\.[a-z]{2,}" />
4   </restriction>
5 </simpleType>

```

### ipv4AddressType

Represents an IPv4 address.

```

1 <simpleType name="ipv4AddressType">
2   <restriction base="token">
3     <pattern value="[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}" />
4   </restriction>
5 </simpleType>

```

### ipv6AddressType

Represents an IPv6 address. There are many notations for IPv6 addresses, therefore the field is only restricted to the characters which appear in such address. DRS may have reformatted (normalised) the IPv6 addresses which were provided via EPP.

```

1 <simpleType name="ipv6AddressType">
2   <restriction base="token">
3     <pattern value="[0-9a-f:]{3,39}" />
4   </restriction>
5 </simpleType>

```

Two examples of name server specifications:

```

1 <nameserver host="ns1.sidn.nl">
2   <date>2010-02-04T13:03:25.10561Z</date>
3   <ipv4-address>94.198.152.68</ipv4-address>
4   <ipv6-address>2a00:d78:0:147:94:198:152:68</ipv6-address>
5 </nameserver>

```

```
1 <nameserver host="open.nlnetlabs.nl">
2   <date>2010-02-04T13:03:25.10563Z</date>
3   <ipv6-address>2001:7b8:206:1::53</ipv6-address>
4   <ipv4-address>213.154.224.1</ipv4-address>
5 </nameserver>
```

## 4.6 Schema wrapper

The schema initiation.

```
1 <schema
2   xmlns="http://www.w3.org/2001/XMLSchema"
3   xmlns:whois="http://rxd.domain-registry.nl/sidn-whois-drs50"
4   targetNamespace="http://rxd.domain-registry.nl/sidn-whois-drs50"
5   elementFormDefault="qualified"
6   version="2010-01-29"
7 >
```

The end of the schema.

```
1 </schema>
```

## 4.7 Whois example

All the specimen fragments put together, posing an 'arbitrary' question with a realistic answer.

The question:

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <whois-query xmlns="http://rxsd.domain-registry.nl/sidn-whois-drs50">
3   <lang>en-UK</lang>
4   <usertext-format>html</usertext-format>
5   <domain>sidn.nl</domain>
6 </whois-query>

```

And the answer:

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <whois-response xmlns="http://rxsd.domain-registry.nl/sidn-whois-drs50">
3   <domain name="sidn.nl" view="isp">
4     <date>2010-02-04T13:03:25.04191Z</date>
5     <status>
6       <code>active</code>
7       <explain lang="en-UK">actief</explain>
8     </status>
9     <registrar>AAA123456-SIDN2</registrar>
10    <contact role="registrant">STI044010-SIDN2</contact>
11    <contact role="admin">HAM003802-SIDN2</contact>
12    <contact role="tech">PIJ001675-SIDN2</contact>
13    <dnssec>
14      <code>yes</code>
15      <explain lang="en-UK" format="plain">DnsKey exists for domain</explain>
16    </dnssec>
17    <nameserver in-zone="true">ns1.sidn.nl</nameserver>
18    <nameserver in-zone="false">open.nlnetlabs.nl</nameserver>
19    <nameserver in-zone="true">ns2.sidn.nl</nameserver>
20    <registered>1999-11-18+01:00</registered>
21    <last-change>2009-09-14+02:00</last-change>
22  </domain>
23  <registrar>
24    <date>2010-02-04T13:03:25.06606Z</date>
25    <name>St. Internet Domeinregistratie Nederland</name>
26    <address>
27      <street>Utrechtseweg 310</street>
28      <postal-code>6812AR</postal-code>
29      <city>Arnhem</city>
30      <country-code>NL</country-code>
31      <country lang="nl-NL">Nederland</country>
32    </address>
33  </registrar>
34  <contact id="STI044010-SIDN2">
35    <date>2010-02-04T13:03:25.10334Z</date>
36    <name>St. SIDN</name>
37    <email>support@sidn.nl</email>
38    <voice>+31.263525555</voice>
39    <company>
40      <type-of-business class="STICHTING" lang="en-UK">
41        Foundation
42      </type-of-business>
43      <trade-register-number>232902771786</trade-register-number>
44    </company>
45  </contact>
46  <contact id="HAM003802-SIDN2">
47    <date>2010-02-04T13:03:25.10239Z</date>

```

```
48     <name>G.J. van den Ham</name>
49     <email>support@sidn.nl</email>
50     <voice>+31.263525555</voice>
51 </contact>
52 <contact id="PIJ001675-SIDN2">
53     <date>2010-02-04T13:03:25.0792Z</date>
54     <name>Jan van Pijkeren</name>
55     <email>support@sidn.nl</email>
56     <voice>+31.263525555</voice>
57 </contact>
58 <nameserver host="ns1.sidn.nl">
59     <date>2010-02-04T13:03:25.10561Z</date>
60     <ipv4-address>94.198.152.68</ipv4-address>
61     <ipv6-address>2a00:d78:0:147:94:198:152:68</ipv6-address>
62 </nameserver>
63 <nameserver host="open.nlnetlabs.nl">
64     <date>2010-02-04T13:03:25.10563Z</date>
65     <ipv6-address>2001:7b8:206:1::53</ipv6-address>
66     <ipv4-address>213.154.224.1</ipv4-address>
67 </nameserver>
68 <nameserver host="ns3.sidn.nl">
69     <date>2010-02-04T13:03:25.10564Z</date>
70     <ipv4-address>194.171.17.5</ipv4-address>
71     <ipv4-address>194.171.17.6</ipv4-address>
72 </nameserver>
73 <signature>
74     <maintainer lang="en-UK" format="plain">
75         NL Domain Registry
76     </maintainer>
77     <copyright lang="en-UK" format="html">
78 &lt;p&gt;&lt;span class="copy"&gt;Copyright notice&lt;/span&gt;&lt;br&gt;
79 No part of this publication may be reproduced, published, stored in a
80 retrieval system, or transmitted, in any form or by any means,
81 electronic, mechanical, recording, or otherwise, without prior
82 perm [etc...]
83     </copyright>
84 </signature>
85 </whois-response>
```

# Chapter 5

## Complete schema

```
1 <schema
2   xmlns="http://www.w3.org/2001/XMLSchema"
3   xmlns:whois="http://rxsd.domain-registry.nl/sidn-whois-drs50"
4   targetNamespace="http://rxsd.domain-registry.nl/sidn-whois-drs50"
5   elementFormDefault="qualified"
6   version="2010-01-29"
7 >
8
9 <!-- please read the document which explains this schema, available from
10   http://rxsd.domain-registry.nl/
11   -->
12
13 <complexType name="addressType">
14   <sequence>
15     <element name="street" type="string" maxOccurs="3" />
16     <element name="postal-code" type="string" minOccurs="0" />
17     <element name="city" type="string" minOccurs="0" />
18     <element name="country-code" type="whois:countryCodeType"/>
19     <element name="country" type="whois:userTextType" />
20   </sequence>
21   <attribute name="format" type="whois:textFormatType"
22     fixed="plain" />
23 </complexType>
24
25 <complexType name="anyQueryType">
26   <sequence>
27     <element name="lang" type="language" default="en-UK" />
28     <element name="output-format" type="whois:outputFormatType"
29       default="xml" />
30     <element name="usertext-format" type="whois:textFormatType"
31       default="plain" />
32   </sequence>
33 </complexType>
34
35 <simpleType name="businessClassType">
36   <restriction base="token">
37     <enumeration value="ANDERS" />
38     <enumeration value="BGG" />
39     <enumeration value="BRO" />
40     <enumeration value="BV" />
41     <enumeration value="BVI/O" />
42     <enumeration value="COOP" />
43     <enumeration value="CV" />
44     <enumeration value="EENMANSZAAK" />
45     <enumeration value="EESV" />
46     <enumeration value="KERK" />
47     <enumeration value="MAATSCHAP" />
48     <enumeration value="NV" />
49     <enumeration value="OWM" />
50     <enumeration value="PERSOON" />
51     <enumeration value="REDR" />
52     <enumeration value="STICHTING" />
53     <enumeration value="VERENIGING" />
54     <enumeration value="VOF" />
```

```

55     </restriction>
56 </simpleType>
57
58 <complexType name="businessTypeType">
59   <simpleContent>
60     <extension base="string">
61       <attribute name="class" type="whois:businessClassType" />
62       <attribute name="lang" type="language" />
63       <attribute name="format" type="whois:textFormatType"
64         fixed="plain" />
65     </extension>
66   </simpleContent>
67 </complexType>
68
69 <complexType name="companyType">
70   <sequence>
71     <element name="type-of-business"
72       type="whois:businessTypeType" />
73     <element name="trade-register-number" type="string" />
74   </sequence>
75 </complexType>
76
77 <element name="contact" type="whois:contactType" />
78
79 <complexType name="contactType">
80   <complexContent>
81     <extension base="whois:whoisObjectType">
82       <sequence>
83         <element name="name" type="string" />
84         <element name="email" type="string"
85           minOccurs="0" />
86         <element name="voice" type="whois:phoneNumberType"
87           minOccurs="0" />
88         <element name="address" type="whois:addressType"
89           minOccurs="0" />
90         <element name="company" type="whois:companyType"
91           minOccurs="0" />
92         <element name="domicile-sidn" type="whois:userTextType"
93           minOccurs="0" />
94       </sequence>
95       <attribute name="id" type="whois:contactLabelType"
96         use="required" />
97       <attribute name="view" type="whois:contactViewType"
98         default="no" />
99     </extension>
100   </complexContent>
101 </complexType>
102
103 <complexType name="contactDetailsType">
104   <complexContent>
105     <extension base="whois:userTextType">
106       <attribute name="restriction"
107         type="whois:contactViewType" />
108     </extension>
109   </complexContent>
110 </complexType>
111
112 <simpleType name="contactLabelType">
113   <restriction base="token">
114     <pattern value="[A-Z]{3}[0-9]{6}-[A-Z0-9]{5}" />
115   </restriction>
116 </simpleType>
117
118 <complexType name="contactRefType">
119   <simpleContent>

```

```

120     <extension base="whois:contactLabelType">
121         <attribute name="role" type="whois:contactRoleType"
122             use="required" />
123     </extension>
124 </simpleContent>
125 </complexType>
126
127 <simpleType name="contactRoleType">
128     <restriction base="token">
129         <enumeration value="registrant" />
130         <enumeration value="admin" />
131         <enumeration value="tech" />
132     </restriction>
133 </simpleType>
134
135 <simpleType name="contactViewType">
136     <restriction base="token">
137         <enumeration value="no" />
138         <enumeration value="all" />
139         <enumeration value="csi" />
140         <enumeration value="public" />
141         <enumeration value="optout" />
142     </restriction>
143 </simpleType>
144
145 <simpleType name="countryCodeType">
146     <restriction base="token">
147         <pattern value="[A-Z]{2}" />
148     </restriction>
149 </simpleType>
150
151 <element name="domain" type="whois:domainType" />
152
153 <complexType name="domainType">
154     <complexContent>
155         <extension base="whois:whoisObjectType">
156             <sequence>
157                 <element ref="whois:status" />
158
159                 <element name="registrar"
160                     type="whois:registrarRefType"
161                     minOccurs="0" />
162
163                 <element name="contact"
164                     type="whois:contactRefType"
165                     minOccurs="0" maxOccurs="unbounded" />
166
167                 <element name="nameserver"
168                     type="whois:nameserverRefType"
169                     minOccurs="0" maxOccurs="unbounded" />
170
171                 <element name="contact-details"
172                     type="whois:contactDetailsType"
173                     minOccurs="0" />
174                 <element name="registered" type="date"
175                     minOccurs="0" />
176                 <element name="last-change" type="date"
177                     minOccurs="0" />
178             </sequence>
179
180             <attribute name="name" type="whois:domainRefType"
181                 use="required" />
182
183             <attribute name="view" type="whois:domainViewType"
184                 use="required" />

```

```

185
186     </extension>
187 </complexContent>
188 </complexType>
189
190 <simpleType name="domainRefType">
191   <restriction base="token">
192     <pattern value="[a-zA-Z0-9-]{2,63}.nl" />
193   </restriction>
194 </simpleType>
195
196 <simpleType name="domainViewType">
197   <restriction base="token">
198     <enumeration value="ca" />
199     <enumeration value="csi" />
200     <enumeration value="public" />
201     <enumeration value="isp" />
202   </restriction>
203 </simpleType>
204
205 <element name="fault" type="whois:faultType" />
206
207 <complexType name="faultType">
208   <complexContent>
209     <extension base="whois:whoisObjectType">
210       <sequence>
211         <element name="code" type="unsignedShort" />
212         <element name="explain"
213           type="whois:userTextType" />
214       </sequence>
215     </extension>
216   </complexContent>
217 </complexType>
218
219 <simpleType name="hostRefType">
220   <restriction base="token">
221     <pattern value="[a-z0-9.]+\.[a-z]{2,}" />
222   </restriction>
223 </simpleType>
224
225 <simpleType name="ipv4AddressType">
226   <restriction base="token">
227     <pattern value="[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}" />
228   </restriction>
229 </simpleType>
230
231 <simpleType name="ipv6AddressType">
232   <restriction base="token">
233     <pattern value="[0-9a-f:]{3,39}" />
234   </restriction>
235 </simpleType>
236
237 <element name="is-query" type="whois:isQueryType" />
238
239 <complexType name="isQueryType">
240   <complexContent>
241     <extension base="whois:anyQueryType">
242       <sequence>
243         <element name="domain" type="whois:domainRefType" />
244       </sequence>
245     </extension>
246   </complexContent>
247 </complexType>
248
249 <element name="is-response" type="whois:isResponseType" />

```

```

250
251 <complexType name="isResponseType">
252   <choice>
253     <element ref="whois:fault" />
254     <element ref="whois:is-status" />
255   </choice>
256 </complexType>
257
258 <element name="is-status" type="whois:isStatusType" />
259
260 <complexType name="isStatusType">
261   <complexContent>
262     <extension base="whois:whoisObjectType">
263       <sequence>
264         <element name="available" type="boolean" />
265         <element name="code" type="whois:statusCodeType"/>
266         <element name="explain" type="whois:userTextType" />
267       </sequence>
268       <attribute name="domain" type="whois:domainRefType" />
269     </extension>
270   </complexContent>
271 </complexType>
272
273 <element name="nameserver" type="whois:nameserverType" />
274
275 <complexType name="nameserverType">
276   <complexContent>
277     <extension base="whois:whoisObjectType">
278       <choice minOccurs="1" maxOccurs="13">
279         <element name="ipv4-address"
280           type="whois:ipv4AddressType" />
281         <element name="ipv6-address"
282           type="whois:ipv6AddressType" />
283       </choice>
284       <attribute name="host" type="whois:hostRefType"
285         use="required" />
286     </extension>
287   </complexContent>
288 </complexType>
289
290 <complexType name="nameserverRefType">
291   <simpleContent>
292     <extension base="whois:hostRefType">
293       <attribute name="in-zone" type="boolean" use="required" />
294     </extension>
295   </simpleContent>
296 </complexType>
297
298 <simpleType name="outputFormatType">
299   <restriction base="token">
300     <enumeration value="plain" />
301     <enumeration value="html" />
302     <enumeration value="xml" />
303   </restriction>
304 </simpleType>
305
306 <simpleType name="phoneNumberType">
307   <restriction base="token">
308     <pattern value="\+[0-9]{1,3}\.[0-9]{1,14}" />
309   </restriction>
310 </simpleType>
311
312 <element name="registrar" type="whois:registrarType" />
313
314 <complexType name="registrarType">

```

```

315     <complexContent>
316       <extension base="whois:whoisObjectType">
317         <sequence>
318           <element name="name" type="string" />
319           <element name="address" type="whois:addressType" />
320         </sequence>
321       </extension>
322     </complexContent>
323 </complexType>
324
325 <simpleType name="registrarRefType">
326   <restriction base="token" />
327 </simpleType>
328
329 <element name="signature" type="whois:signatureType" />
330
331 <complexType name="signatureType">
332   <sequence>
333     <element name="maintainer" type="whois:userTextType" />
334     <element name="copyright" type="whois:userTextType" />
335   </sequence>
336 </complexType>
337
338 <element name="status" type="whois:statusType" />
339
340 <complexType name="statusType">
341   <sequence>
342     <element name="code" type="whois:statusCodeType" />
343     <element name="explain" type="whois:userTextType" />
344     <choice minOccurs="0">
345       <element name="domain-release-date" type="date" />
346     </choice>
347   </sequence>
348 </complexType>
349
350 <simpleType name="statusCodeType">
351   <restriction base="token">
352     <enumeration value="active" />
353     <enumeration value="requested" />
354     <enumeration value="inactive" />
355     <enumeration value="withdrawn" />
356     <enumeration value="quarantine"/>
357     <enumeration value="excluded" />
358     <enumeration value="free" />
359   </restriction>
360 </simpleType>
361
362 <simpleType name="textFormatType">
363   <restriction base="token">
364     <enumeration value="plain" />
365     <enumeration value="html" />
366   </restriction>
367 </simpleType>
368
369 <complexType name="userTextType">
370   <simpleContent>
371     <extension base="string">
372       <attribute name="lang" type="language"
373         use="required" />
374       <attribute name="format" type="whois:textFormatType"
375         default="plain" />
376     </extension>
377   </simpleContent>
378 </complexType>
379

```

```
380     </simpleContent>
381 </complexType>
382
383 <element name="whois-query" type="whois:whoisQueryType" />
384
385 <complexType name="whoisQueryType">
386   <complexContent>
387     <extension base="whois:anyQueryType">
388       <sequence>
389         <element name="domain" type="whois:domainRefType" />
390       </sequence>
391     </extension>
392   </complexContent>
393 </complexType>
394
395 <element name="whois-response" type="whois:whoisResponseType" />
396
397 <complexType name="whoisResponseType">
398   <choice>
399     <element ref="whois:fault" />
400     <sequence>
401       <element ref="whois:domain" />
402       <element ref="whois:registrar"
403         minOccurs="0" />
404       <element ref="whois:contact"
405         minOccurs="0" maxOccurs="unbounded" />
406       <element ref="whois:nameserver"
407         minOccurs="0" maxOccurs="unbounded" />
408       <element ref="whois:signature" />
409     </sequence>
410   </choice>
411 </complexType>
412
413 <complexType name="whoisObjectType" abstract="true">
414   <sequence>
415     <element name="date" type="dateTime" />
416   </sequence>
417 </complexType>
418
419</schema>
```

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