



## Shared Registry System

# Detailed Requirements Specification

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# 1 INTRODUCTION

## 1.1 BACKGROUND

The Internet Society of New Zealand Incorporated (InternetNZ) has responsibility within New Zealand for the .nz domain name space and has decided to establish a shared registry system for the management of .nz domain name registrations and the operation of the Domain Name System (DNS).

The Shared Registry System (SRS) project involves the implementation of new software that enables authorised registrars to interface with the register through a secure means and exercise more autonomy in their business relationships with registrants.

Prior to commencement of the application development phase of the project, it is necessary to perform a detailed analysis of the system's requirements. The requirements are currently stated in a document entitled 'Framework and Business Rules for the Domain Name Shared Registry for .nz', which was approved by the InternetNZ Council in December 2001. They are presented in the form of high-level bullet-points that do not contain sufficient detail to begin systems design or program specification. The requirements therefore need to be fleshed out to the level of detail necessary to begin application development, and stated in a clear, non-technical manner to be understood and approved by business stakeholders.

It is intended that this document will complement the Technical Architecture document and the two combined will be the primary basis for the development of the detailed technical specifications.

## 1.2 PROJECT SCOPE

This document defines at a functional level the business activities that are encompassed by the system and the rules that apply to them. It also encompasses some of the key high-level technical requirements of the system required by InternetNZ.

It draws heavily on both the 'Proposed Framework and Business Rules' and the 'Technical Architecture' documents. The scope of the detailed analysis project phase specifies that this document will include:

- Classification of requirements according to their functional areas.

- A description of each function, or process, in the system, including their inputs, outputs, and data transformation rules.

- A data model, including an entity-relationship diagram and attribute/element descriptions - expanding on the model already developed for the technical architecture document.

- Identification of the operational processes required to maintain and to monitor the system.

- Data conversion rules, listing the data elements in the new system with an explanation against each element of where its initial value will be derived from, including default values, manual entry, system generation, and conversion rules from the DRS. These will be defined in a separate document.

The scope of the detailed analysis phase does not include technical specifications intended for developers. These specifications will be produced in the application development phase, based on the results of the detailed analysis.

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## 1.3 DOCUMENT OVERVIEW

This document is broken down into three major sections.

The first section 'SRS Users' identifies the key players involved in the SRS system, and explains their interest in the way the SRS will behave.

Next, the 'Business Requirements' section is the most significant part of the document. It identifies the business needs of the SRS users, in terms of what they actually require from the system, and of some of the constraints that this will place on the SRS. Because of the technical nature of the SRS, it then moves on to explain the services that the SRS will provide to meet these requirements.

The last major section 'Data Definitions' identifies the key data that will need to be handled by the SRS, on behalf of the users identified earlier.

## 1.4 CHANGE LOG

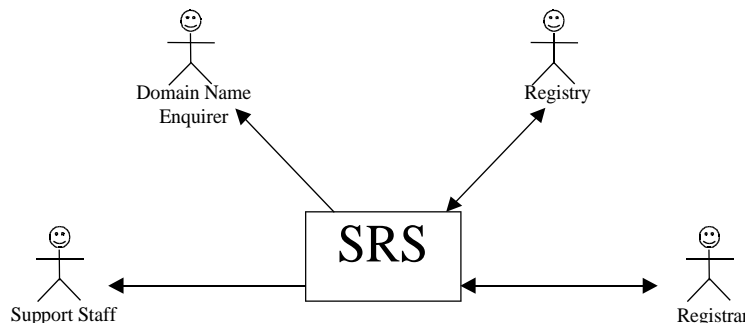
The following table shows all changes made to the document since version 2.0

Doc Version	Date	Description
	12. Jun. 2002	Add this change log
	12. Jun. 2002	Add a new transaction 'Verify UDAI'
	12. Jun. 2002	Add 'Transaction Date' to fields returned by Registrar Account query
	14. Jun. 2002	Add an 'Effective To' field to the Query Domain Data (and to the Data Dictionary)
	18. Jun. 2002	Add text to describe the 'changed by anyone else' request in Get Messages.
2.1	20. Jun. 2002	Explicitly state that the Validate UDAI transaction is not restricted to domains managed by the requesting Registrar.  Explicitly state that the UDAI is sent as a hash in the Validate UDAI transaction.  Explicitly state that the domain can't be specified using a wildcards in the Validate UDAI transaction.

## 2 SRS USERS

The following table identifies the four key **Groups** of SRS users and provides a brief overview of their roles.

Group	Description
Domain Enquirer	<p>This group is anyone seeking publicly available information about the current status of a particular domain.</p> <p>They may be doing this for a number of reasons including, preparation for registering a domain, finding out who is responsible for an existing domain, verifying the correctness of details held about them, or looking on behalf of someone else.</p> <p>This group may also include anyone from one of the other groups.</p>
Registrar	<p>A Registrar is the entity that registers domains with the Registry on behalf of Registrants.</p> <p>Registrars will be provided with a comprehensive set of processes to allow full management capabilities over the domains for which they are the Designated Registrar. Control of SRS processes will be through structured XML-based transactions.</p> <p>It is expected that many registrars will implement web-based systems for their customers and will use the SRS back-end protocol to deal with the SRS while the customer is on-line. This expectation imposes a significant component of timeliness onto the processing of requests by the SRS.</p>
Registry	<p>The Registry is the organisation holding and operating the register, including the creation and transfer of the zone files. This Group represents the SRS Registry staff authorised to use the system. At times they may be acting under instruction from the Domain Name Commissioner.</p> <p>When the Registry performs an action on any domain, they can be considered to be acting on behalf of that domain's Designated Registrar. The Designated Registrar will be notified of such changes via the Message Queue mechanism described in section Communications</p>
Support Staff	<p>This Group represents persons employed by the SRS Registry to provide technical support for the SRS. They will respond to any automated notifications from the SRS that indicate a problem and fix any problems as required.</p> <p>They will monitor the security of the SRS and perform any preventative maintenance that may be required. They are also likely to be required for any software upgrades.</p> <p>Changes made to the SRS by support staff using operating system tools are outside the scope of this document.</p>



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# 3 BUSINESS REQUIREMENTS

## 3.1 GENERAL

### 3.1.1 Communications

The SRS is intended to provide a business-to-business system supporting the registration of domains within the .nz namespace.

#### XML Requests

All transactions with the SRS will be made through an XML-based protocol, with the exception of the public 'WHOIS' server (see below).

XML (Extensible Markup Language) is a simple, flexible text format that is playing an increasingly important role in the exchange of a wide variety of data on the Web. Among other advantages, it allows industries to define platform-independent protocols for the exchange of data and delivers information in a form that allows automated processing after receipt using inexpensive software.

A single XML 'request' may contain one or more transactions.

Each XML request must contain the Registrar's own Registrar ID and must be correctly signed using the Registrar's private encryption key.

Transactions within a request will be processed in the same order as they were received. Each transaction will be applied to the database separately and the failure of one transaction will not directly affect the processing of any of the other transactions.

Once each of the transactions has been processed, a single XML response will be constructed, containing one answer for each transaction. This response will be sent back to the user.

All transactions will be checked to ensure that;

- All data is supplied in a valid format
- All update transactions contain a unique Action ID
- All mandatory fields are supplied

Although there is provision to send multiple units of work in a single XML transaction, an arbitrary limitation will be placed on the maximum XML transaction size. This limit will be large enough that it will not be reached in the day-to-day operation of the SRS. It will be configured as a system parameter to facilitate fine-tuning if necessary.

#### Privacy

All transactions requiring privacy will be conducted through the HTTPS secure protocol. HTTPS stands for HTTP (Hyper Text Transfer Protocol) via SSL (Secure Socket Layer). The more commonly used HTTP is an inherently insecure protocol as all information is sent in clear text between unauthenticated users over an insecure network (i.e. the Internet). HTTPS allows client and server-side authentication via digital certificates. HTTPS encrypts the data, allowing confidence that it can only be read by the intended recipient.

All transactions not requiring privacy can be conducted through either HTTPS or HTTP. The main impact of choosing HTTPS over HTTP is slower transaction processing times.

The Registry Security Policy will determine which transactions are allowed through the insecure HTTP. Any changes will be an operational decision and will not impact on the SRS architecture.

## Non Repudiation

The SRS will require that each XML request contains the Registrar's own Registrar ID and is correctly signed using the Registrar's private encryption key. The SRS will then verify the origin of the request, using the matching public encryption key.

Registrars will generate the key pairs (private and public) and send a signed paper copy of their public key to the Registry. This will provide the registry with undeniable evidence of the origin of a transaction (non-repudiation).

## Message Queues, and Polling for Messages

All update transactions will be coded with a unique Action ID, supplied by the Registrar effecting the change. After sending the transaction the Registrar should await a response from the register, confirming whether or not the transaction was successful. This response will be stored within the register so it can be retransmitted if necessary.

If registrars suspect that a response from the register has been lost, they can request that the response be resent using the 'Get Messages' transaction, referencing the Action ID.

Query transactions will not be coded with the Action ID, so the results aren't stored within the database and can't be requested later, except through repeating the query.

All transactions performed by the Registry that update the register will relate to domains managed by a Designated Registrar. As some updates may be initiated without the Registrar's prior knowledge, messages from these transactions will be also provided to the Designated Registrar. Registrars will therefore need to periodically 'poll' for any messages that they may be unaware of.

## 3.1.2 Security Constraints

### Database Access

There will be no external access to the database, except through the XML protocol. Registry Support Staff will have full database administration rights and Registry staff may have access to a copy of parts of the SRS database, for analysis purposes.

### Storage and transmission of UDAI

The UDAI (Unique Domain Authentication ID) will never be stored within the SRS; rather, a one way hash (encryption) of the UDAI will be stored.

In order that the SRS does not even store the UDAI in outgoing messages to Registrars, it will be encrypted using the Registrar's public encryption key before being sent. Only the Registrar will be able to decrypt it, using their private key.

Whenever the UDAI must be verified, the incoming UDAI will have been encrypted by the Registrar then decrypted and hashed by the Registry upon receipt. This hash value will be compared with the hash stored in the database.

This protocol for handling the UDAI means the Registry will never be able to discover a UDAI by looking in the SRS. They will only see the hashed value. If they require the UDAI for any reason, they will have to obtain it from the Registrant or Registrar by external means. There are no restrictions in the system that would require the Registry to know a UDAI.

## 3.1.3 Application Access

A 'role-based' security system will be implemented to control both the access to, and behaviour of individual processes for individual users. This will allow access to specific actions to be granted (or denied) for any specific user.

At this level, and throughout this document, a user is a single business entity, i.e. a Registrar.

## Scope

When an XML request is received, the user will be identified and the scope for that user will be looked up. This scope will define the overall view that that user will have of the SRS database.

If a user does not have one of the following role definitions, the entire request will be rejected.

Role	Allow access to
REGISTRAR	This role allows a user to have XML access to the SRS. All transactions will be scoped to only access data that relates directly to the user (i.e. They will only be able to query/update domains for which they are the Designated Registrar, and will only be able to query/update their own Registrar details).
REGISTRY	This role allows a user to have XML access to the SRS. Transactions will be scoped to encompass the entire register.

## Permission

The following list of roles will be required to provide access to various parts of the SRS. Sometimes a single transaction may require several roles to perform. If any of the required roles are not assigned to the user in question, then the entire transaction will be denied.

Role	Allow access to
WHOIS	Get Domain Details
QUERY	Query Domain Data Query Registrar Account Get Messages Query XML
CREATE DOMAIN	Create Domain
UPDATE DOMAIN	Update Domain (excluding the ability to transfer, cancel, and uncanceled)
TRANSFER DOMAIN	Update Domain (to transfer a domain)
CANCEL DOMAIN	Update Domain (to cancel a domain)
UNCANCEL DOMAIN	Update Domain (to uncanceled a domain)
UPDATE REGISTRAR	Update Registrar (excluding maintenance of the 2LD list, encryption keys, Accounting System Reference, Registrar Name, and the access role list)
ADMINISTER	Create Registrar Update System Parameter Query System Parameter Update Schedule Query Schedule Query Run-logs
SUPERVISOR	Update Registrar (any details)

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### **3.1.4 Registration Status**

When a Registrar registers a domain (through the Create Domain transaction) it is assigned a Registration Status of 'active'. If that domain is later cancelled its status becomes 'pending release'. It will remain in this state until a Pending Release Period has passed, after which time its status will become 'available'.

## 3.2 WHOIS SERVICES

### 3.2.1 WHOIS Server

An industry-standard 'WHOIS' server will be provided for the more technically minded public. This server will only accept complete domains (no wildcards). The WHOIS server allows a WHOIS query to be performed through an operating system command and returns only basically formatted results. Fields will be displayed in the same order as on the WHOIS web page.

The following details will be displayed

- Domain
- Registrant Contact Details
- Registration Status
- Locked Date
- Registration Date
- Billed Until Date
- Cancellation Date
- Delegate
- Name Server List (Name servers, and IP addresses)
- Designated Registrar's Public Contact Details
- Administrative Contact Details
- Technical Contact Details
- Last Changed Date

If the Registration Status is 'available' it will just display

- Domain
- Registration Status

### 3.2.2 WHOIS Web Page

A WHOIS query will be accessible through a user-friendly web page on the Domain Name Commissioner's web site. This query will only accept complete domains (no wildcards). Information is retrieved from the SRS database only – not the DNS, and so it will not be possible to get details of other top-level domains, such as '.com', '.co.uk', etc. The web page will make this clear.

The WHOIS query reflects the state of the domain at the current point in time.

The following details will be displayed:

- Domain
- Registrant Contact Details
- Registration Status
- Locked date
- Registration Date
- Billed Until Date
- Cancellation Date
- Delegate
- Name Server List (Name servers, and IP addresses)
- Designated Registrar's Public Contact Details
- Administrative Contact Details
- Technical Contact Details
- Last Changed Date

If the Registration Status is 'available' it will just display

- Domain

### Registration Status

If the WHOIS query returns an error (if the requested domain is not properly formed or if it is outside the scope of the SRS database), then an appropriate message will be displayed.

Where necessary the web page will contain descriptions of how to interpret the data returned.

## 3.3 BILLING PROCESS

<b>Process description</b>	<p>Several SRS transactions have an impact on billing. To ensure consistency, they will all invoke the same Billing Process, described here.</p> <p>As much billing functionality as possible will be delegated to the Registry accounting package, which is not considered part of the SRS. The SRS Billing Process will determine what billing action is required, if any, and make any required changes to the register and a file of Pending Billing Transactions (by inserting, modifying or deleting records). The pending transactions will be periodically exported to the Registry accounting system, probably daily.</p> <p>It is intended that these billing transactions will contain identifying and reference information only, leaving the accounting system with the task of calculating the amount to be billed.</p>
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	None
<b>Additional Uses</b>	The Billing Process is used by all SRS transactions that have billing implications.
<b>Business Rules (Create Domain or Renew Domains)</b>	<p>If the initiating transaction is <b>Create Domain</b> or <b>Renew Domains</b></p> <p>In the event that a domain was transferred one or more times during the Billing Period, the Designated Registrar at the start of the period will be billed. If the domain is being renewed in advance (by the Update Domain - Renew transaction), the current Registrar will always be billed.</p> <p>Create a Pending Billing Transaction for the domain.</p> <p>Calculate the Grace Period End Date (see below).</p> <p>The Transaction Type will be set to indicate either a 'new registration' or a 'renewal', depending on the initiating transaction.</p> <p>Set the Billing Term in the register to one month.</p> <p>Set the Billed Until Date in the register to the Billing Period End Date</p>

<p><b>Business Rules</b> <b>(Cancel Domain)</b></p>	<p>If the initiating transaction is <b>Update Domain - Cancel</b></p> <p>Process all Pending Billing Transactions for this domain where the Action Date/Time of the initiating transaction is earlier than the Grace Period End Date (see below). The most recent transactions will be processed first. Pending transactions marked as 'Exported' will be ignored.</p> <p>If a pending transaction was generated by the <b>Renew Domains</b> process</p> <p style="padding-left: 40px;">Reset the Billed Until Date in the register to what it was before the pending transaction was created.</p> <p style="padding-left: 40px;">Delete the Pending Billing Transaction.</p> <p>If a pending transaction was generated by the <b>Create Domain</b> process</p> <p style="padding-left: 40px;">Reset the Billed Until Date in the register to the Action Date/Time of the initiating transaction. Reset the Billing Period End Date in the pending transaction to the same value.</p> <p style="padding-left: 40px;">Change the Transaction Type in the pending transaction to indicate 'cancellation during registration grace period'.</p>
<p><b>Business Rules</b> <b>(Uncancel Domain)</b></p>	<p>If the initiating transaction is <b>Update Domain - Uncancel</b></p> <p style="padding-left: 40px;">If the Domain is within its <u>Registration</u> Grace Period</p> <p style="padding-left: 80px;">If there is a Pending Billing Transaction indicating 'cancellation during registration grace period', the transaction will be deleted.</p> <p style="padding-left: 80px;">The full Billing Process will then be re-performed, treating the domain as if it was in the process of being registered by a Create Domain transaction (see above). The Billing Period will start with the Registration Date. The original grace period will apply.</p> <p style="padding-left: 40px;">Otherwise</p> <p style="padding-left: 80px;">No action is required. Because the Registration Status is now 'active', the next renewal process will handle any billing implications.</p> <p>If the Billing Process was initiated by any other process, DO NOTHING.</p>
<p><b>Business Rules</b> <b>(Billing Period and Grace Period)</b></p>	<p><b><u>Determining the Billing Period</u></b></p> <p>The Billing Period is determined by adding the Billing Term to the current (old) Billed Until Date (if it is a Renew) or the Registration Date (if it is a Create).</p> <p><b><u>Determining the Grace Period</u></b></p> <p>The Grace Period is calculated by adding the Grace Period system parameter (in days) to the Grace Period Start Date.</p> <p>If the domain is being renewed in advance (by the Update Domain - Renew transaction), the Grace Period Start Date will be the Action Date/Time of the initiating transaction. Otherwise it will be the Billing Period Start Date. The Grace Period End Date is already present in existing Pending Billing Transactions.</p> <p>If the Grace Period Start Date and Registration Date are the same, it is the 'Registration Grace Period'. Otherwise it is the 'Renewal Grace Period'.</p>

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<b>Inputs</b>	Action Type (e.g. Create, Renew, etc) Action Date/Time Domain
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## 3.4 SRS TRANSACTIONS

### 3.4.1 Get Domain Details

<b>Process description</b>	A query will be provided to enable any person to enquire about a particular domain.  This query provides minimal functionality, in order to service a large volume of transactions in a timely fashion.
<b>Registrar Uses</b>	To enquire about a domain.
<b>Registry Uses</b>	As for a Registrar
<b>Additional Uses</b>	This Query will provide data for the WHOIS public server.  It will also provide the data for the query on the Domain Name Commissioner's web site.
<b>Business Rules</b>	The user will supply a single, complete domain (no wildcards).  While this query is open to anyone to use, and is even provided through an Internet standard access method (WHOIS), information is retrieved from the SRS database only – not the DNS, and so it will not be possible to get details of other top-level domains, such as '.com', '.co.uk', etc.
<b>Inputs</b>	Domain                      Required
<b>Validation</b>	Ensure that the requested domain complies with the ccTLD formatting rules (that it is in a valid domain format, and that it can be registered in the SRS database).
<b>SRS Response</b>	The following details will be returned (from the register – not the DNS): Domain Registration Status Locked date Cancellation Date Delegate Name Server List (Name servers, and IP addresses) Designated Registrar's Public Contact Details Registrant Contact Details Administrative Contact Details Technical Contact Details Registration Date Billed Until Effective Date  When the Registration Status is 'available', other details (except, of course, the Domain) will be left blank.

### 3.4.2 Query Domain Data

<b>Process description</b>	<p>A query will be provided to enable SRS users to perform more powerful enquiries about domains within the SRS database rather than the public Get Domain Details transaction.</p> <p>Query Domain Data provides the functionality and flexibility for a variety of different uses. It will allow partial field matching, date dependencies, and control over which data fields are returned.</p>
<b>Registrar Uses</b>	To retrieve a list of domain details matching the criteria supplied.
<b>Registry Uses</b>	As for the Registrars.
<b>Additional Uses</b>	

**Business Rules**

This query will only return domains where the status is either 'active', or 'pending release'.

Registrars will only get results relating to domains for which they are currently the Designated Registrar. Registrars requiring information about domains that they previously administered will need to source it from their own records.

The Designated Registrar of a domain will not be able to see any potentially sensitive data relating to the time when another Registrar managed the domain. In this instance, they will only be returned the fields that are normally available through the WHOIS server.

History for a domain will not precede the current Registration Date, even if it had previously been registered.

The query will allow partial matching of character field values using '\*' as a wildcard to represent any number of characters, and '?' as a wildcard to represent any one character.

Any of the date fields will be searchable by date range, by providing either a 'from' or 'to' date (or both) as required.

Search criteria for any number of fields can be combined in a single query. Multiple criteria will be AND'ed together.

It will be possible to supply multiple Domain values for this query, which will be ANDed with all other criteria but ORed with each other.

It will be possible to supply multiple Name Server or IP Address values for this query, which will be ANDed with all other criteria but ORed with each other.

Specifying a Search Date range will allow the user to search for domains based on conditions that existed at some stage in the past.

Specifying a Results Date range will expand the scope of the query to include multiple sets of the results for each domain. Each set will reflect the state of the domain in the register at the time that a change occurred during the Results Date period.

It will be possible to nominate, in each individual query, which fields are to be returned in the query results. This will enable users to tailor the amount of information being transferred to suit their requirements. The system will default to providing just the Domain and Registration Status.

The UDAI will not be returned.

The query will allow the user to specify the maximum number of records returned, and a number of records to skip when returning results. This will allow the user to request large lists of data in small manageable chunks. It should be noted that this calculation is performed each time the query is executed, and if the database changes between executions, it will be possible to miss (or duplicate) results.

<b>Inputs</b>	<table border="0"> <tr> <td>Domain</td> <td>Optional</td> <td></td> </tr> <tr> <td>Designated Registrar ID</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registration Status</td> <td>Optional</td> <td>Default = active + pending release</td> </tr> <tr> <td>Locked Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Locked Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Delegate</td> <td>Optional</td> <td></td> </tr> <tr> <td>Name Server List</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registrant Customer Reference</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registrant Contact details</td> <td>Optional</td> <td></td> </tr> <tr> <td>Administrative Contact Details</td> <td>Optional</td> <td></td> </tr> <tr> <td>Technical Contact Details</td> <td>Optional</td> <td></td> </tr> <tr> <td>Billing Term</td> <td>Optional</td> <td></td> </tr> <tr> <td>Billed Until (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Billed Until (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registration Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registration Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Cancellation Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Cancellation Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Search Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Search Date (Start)</td> <td>Optional</td> <td>Default = current date</td> </tr> <tr> <td>Results Date (Start)</td> <td>Optional</td> <td>Default = current date</td> </tr> <tr> <td>Results Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Maximum Results</td> <td>Optional</td> <td>Default = 100</td> </tr> <tr> <td>Skip Results</td> <td>Optional</td> <td></td> </tr> <tr> <td>Return Field List</td> <td>Optional</td> <td></td> </tr> </table>	Domain	Optional		Designated Registrar ID	Optional		Registration Status	Optional	Default = active + pending release	Locked Date (Start)	Optional		Locked Date (End)	Optional		Delegate	Optional		Name Server List	Optional		Registrant Customer Reference	Optional		Registrant Contact details	Optional		Administrative Contact Details	Optional		Technical Contact Details	Optional		Billing Term	Optional		Billed Until (Start)	Optional		Billed Until (End)	Optional		Registration Date (Start)	Optional		Registration Date (End)	Optional		Cancellation Date (Start)	Optional		Cancellation Date (End)	Optional		Search Date (End)	Optional		Search Date (Start)	Optional	Default = current date	Results Date (Start)	Optional	Default = current date	Results Date (End)	Optional		Maximum Results	Optional	Default = 100	Skip Results	Optional		Return Field List	Optional	
Domain	Optional																																																																											
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Search Date (End)	Optional																																																																											
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Return Field List	Optional																																																																											
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).																																																																											
<b>SRS Response</b>	<p>The query will return the query parameters, and the date and time of the query. Results will always be sorted by Domain (ascending) and Effective Date (descending).</p> <p>The following list of fields will be returned if requested.</p> <ul style="list-style-type: none"> <li>Domain</li> <li>Designated Registrar ID</li> <li>Designated Registrar Name</li> <li>Registration Status</li> <li>Locked Date</li> <li>Cancellation Date</li> <li>Delegate</li> <li>Name Server List</li> <li>Registrant Customer Reference</li> <li>Registrant Contact Details</li> <li>Administrative Contact Details</li> <li>Technical Contact Details</li> <li>Billing Term</li> <li>Effective Date</li> <li>Effective To</li> <li>Billed Until Date</li> <li>Registration Date</li> <li>Action ID (of the transaction that effected the last change).</li> <li>Audit Text</li> <li>Changed By Registrar</li> </ul>																																																																											

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### 3.4.3 Create Domain

<b>Process description</b>	The SRS will allow users to register a new domain.		
<b>Registrar Uses</b>	To register a domain.		
<b>Registry Uses</b>	As for the Registrars. The Registry will specify the Designated Registrar, which will not be the Registry itself.		
<b>Additional Uses</b>			
<b>Business Rules</b>	<p>The domain must be available.</p> <p>The Registry may only register domains on behalf of other Registrars.</p> <p>Immediately that a domain is registered, the domain is assigned a registration status of 'active', meaning it will be included in the next DNS export. The Billing Process will also be invoked immediately.</p> <p>The creating user will be the 'Designated Registrar for the new domain (unless it is the Registry).</p>		
<b>Inputs</b>	Domain	Required	
	Name Server List	Optional	
	Registrar ID	Required	
	Registrant Contact details	Required	
	Registrant Customer Reference	Optional	
	Administrative Contact Details	Optional	Default = Registrant Contact Details
	Technical Contact Details	Optional	Default = Registrar Tech Details
	Delegate	Optional	Default = YES
	Billing Term	Required	
	Audit Text	Optional	
	Action ID	Required	
<b>Validation</b>	<p>Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).</p> <p>Check that the domain is available.</p> <p>Check that the domain belongs to a valid 2LD, and that the Registrar is allowed to register domains in that 2LD (e.g. if that 2LD is moderated).</p> <p>The minimum Billing Term will be 1 (month). The maximum will be defined by the system parameter 'Maximum Billing Term' (initially set to 120).</p> <p>The Registrar ID must not be that of the Registry.</p> <p>There must not be more Name Servers than are defined by the Maximum Name Servers system parameter.</p>		
<b>SRS Response</b>	A full copy of the domain record will be returned to the registrar as confirmation, including the UDAI.		

### 3.4.4 Update Domain

(includes Transfer/Cancel/Uncancel/Lock/Unlock/Renew)

<b>Process description</b>	Each Registrar will be required to maintain the details of the domains for which they are the Designated Registrar.
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<b>Registrar Uses</b>	<p>Registrars can update the details of any of the domains they administer.</p> <p>Registrars can Cancel or Uncancel a domain by updating the Cancel Domain Request indicator.</p> <p>Registrars can request a new UDAI be generated by sending the New UDAI Request indicator.</p> <p>Registrars can request that a domain be renewed now, rather than waiting for the current billing period to end, by setting the Renew Now Request indicator.</p> <p>Registrars can transfer the management of a domain to themselves by updating the Registrar ID, and providing the correct UDAI. Other domain details may be changed in the same transaction.</p>
<b>Registry Uses</b>	<p>As for the Registrars, plus</p> <p>The Registry can transfer the management of a domain to another Registrar, without providing the UDAI.</p> <p>The Registry, and only the Registry, can Lock or Unlock a domain by setting the Lock Request indicator to 'true' or 'false'.</p>
<b>Additional Uses</b>	

**Business Rules****General Information**

This process will update the details of one or more domains. To update specific domains, the transaction will contain a list of the domains to be updated. The same update will be applied to all domains in the list.

A Registrar can update all the domains they currently manage, by specifying the domain 'all'. This functionality will work differently for the Registry, who must provide the Registrar ID of the Registrar they are acting on behalf of.

A field is updated simply by supplying its new value.

All name servers must be supplied for any changes to the Name Server List.

If a domain is transferred, the 'Registrant Name' is changed, or a new UDAI is requested, a new UDAI will be generated.

The Billing Process will be invoked after every update, to ensure that any billing implications of the update are correctly handled.

Locked domains cannot be updated, except by the Registry.

Registrars can update only domains with a Registration Status of 'active'. The exception is the Cancel Domain Request, which is updated to Uncancel a domain (see below). The Registry can update all domains.

The Audit Text should default to blank, so that in cases where it is not provided, previous values are not carried forward.

**Transfer**

Domains are transferred by changing their Registrar ID.

Domains cannot be transferred during their Registration Grace Period, except by the Registry.

Registrars must provide the UDAI for each domain to be transferred, so they may only transfer one domain per transaction.

If a domain is transferred, a new UDAI will be generated.

The old Registrant Customer Reference will be cleared, and the Billing Term will be set to one month (unless a new Billing Term was specified as part of the transaction).

**Cancel / Uncancel**

Updating the Cancel Domain Request indicator will perform cancelling and Uncancelling.

**Renew**

Registrars can request that a domain be renewed now, rather than waiting for the current billing period to end, by setting the Renew Now Request indicator.

Renewal will be performed by invoking the Billing Process.

**Lock / Unlock**

The Registry can Lock or Unlock a domain by setting the Lock Request indicator to 'true' or 'false' respectively.

Locking a domain causes the Locked Date to be set to the current Date/Time.

Unlocking it clears the Locked Date.

<b>Inputs</b>	Domain Required Registrar ID Required Name Server List Optional Registrant Contact details Optional Registrant Customer Reference Optional Administrative Contact Details Optional Technical Contact Details Optional Billing Term Optional Lock Request Optional Renew Now Request Optional New UDAI Request Optional Cancel Domain Request Optional UDAI Optional Delegate Optional Audit Text Optional Action ID Required
<b>Validation</b>	<p>Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).</p> <p>If the UDAI has been provided, ensure that it is correct.</p> <p>If the domain is being renewed in advance (by the Renew Now Request indicator), do not accept the transaction if the new Billing Period End Date would be more than the maximum Billing Term (system parameter) in advance of the current Date/Time.</p> <p>The Registry can't transfer domains to their own management.</p>
<b>Response</b>	<p>A full copy of the updated domain details will be returned (including the UDAI if a new one was generated).</p> <p>If the Registrar ID has changed, the old Registrar will be immediately notified by being sent the Domain and the new Registrar Name. The notification message will be placed in the old Registrar's message queue, waiting to be received the next time it is polled.</p>

### 3.4.5 Query Registrar Data

<b>Process description</b>	Query the details held about a registrar.
<b>Registrar Uses</b>	To verify their record is correct.
<b>Registry Uses</b>	To enquire about any Registrar's details.
<b>Additional Uses</b>	
<b>Business Rules</b>	<p>Only the Registry will be able to query data relating to other users (registrars).</p> <p>The Results Date will be searchable by date range, by providing either a 'from' or 'to' date (or both) as required. The query will return history beginning at the start date, plus all changes that occurred before the end date.</p>
<b>Inputs</b>	Registrar ID Optional Registrar Name Optional Default = all Results Date (Start) Optional Default = current date Results Date (End) Optional
<b>Validation</b>	

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<b>SRS Response</b>	<p>For the Registry, the query will encompass all registrars, otherwise it will only return the Registrar's own details.</p> <ul style="list-style-type: none"> <li>Registrar ID</li> <li>Registrar Name</li> <li>Registrar Public Contact Details</li> <li>Registrar SRS Contact Details</li> <li>Default Technical Contact Details</li> <li>URL</li> <li>Registrar Accounting Reference</li> <li>Public Encryption Key</li> <li>Allowed 2LD List</li> <li>Access Role List</li> <li>Effective Date</li> <li>Audit Text</li> <li>Changed By Registrar</li> </ul>
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### 3.4.6 Create Registrar

<b>Process description</b>	Create a new Registrar within the SRS.																						
<b>Registrar Uses</b>	None																						
<b>Registry Uses</b>	To create a new Registrar.																						
<b>Additional Uses</b>																							
<b>Business Rules</b>	This process will only be available to the Registry.																						
<b>Inputs</b>	<table> <tr> <td>Registrar Name</td> <td>Required</td> </tr> <tr> <td>Registrar Public Contact Details</td> <td>Required</td> </tr> <tr> <td>Registrar SRS Contact Details</td> <td>Required</td> </tr> <tr> <td>Default Technical Contact Details</td> <td>Required</td> </tr> <tr> <td>URL</td> <td>Optional</td> </tr> <tr> <td>Registrar Accounting Reference</td> <td>Required</td> </tr> <tr> <td>Public Encryption Key</td> <td>Required</td> </tr> <tr> <td>Allowed 2LD list</td> <td>Optional</td> </tr> <tr> <td>Access Role List</td> <td>Optional</td> </tr> <tr> <td>Audit Text</td> <td>Optional</td> </tr> <tr> <td>Action ID</td> <td>Required</td> </tr> </table>	Registrar Name	Required	Registrar Public Contact Details	Required	Registrar SRS Contact Details	Required	Default Technical Contact Details	Required	URL	Optional	Registrar Accounting Reference	Required	Public Encryption Key	Required	Allowed 2LD list	Optional	Access Role List	Optional	Audit Text	Optional	Action ID	Required
Registrar Name	Required																						
Registrar Public Contact Details	Required																						
Registrar SRS Contact Details	Required																						
Default Technical Contact Details	Required																						
URL	Optional																						
Registrar Accounting Reference	Required																						
Public Encryption Key	Required																						
Allowed 2LD list	Optional																						
Access Role List	Optional																						
Audit Text	Optional																						
Action ID	Required																						
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).																						
<b>SRS Response</b>	The SRS will return the full details of the Registrar.																						

### 3.4.7 Update Registrar

<b>Process description</b>	Registrars will be provided with a facility enabling them to alter the contact details held about them by the Registry.
<b>Registrar Uses</b>	Modify their details, except 2LD's, public key, the access role list, the Registrar Name, or the Registrar Accounting Reference.
<b>Registry Uses</b>	<p>Modify details of any registrar.</p> <p>The Registry will authorise a Registrar to access the SRS by assigning them the REGISTRAR role.</p>
<b>Additional Uses</b>	

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<b>Business Rules</b>	<p>Only the Registry will be able to update details of other users.</p> <p>The Audit Text should default to blank, so that in cases where it is not provided, previous values are not carried forward.</p> <p>All 2LD's must be supplied for any changes to the Allowed 2LD List. All access roles must be supplied for any changes to the Access Role List.</p> <p>Only the SUPERVISOR role will be able to maintain the public encryption key, Registrar Accounting Reference, 2LD list, Registrar Name, and access roles.</p>																								
<b>Inputs</b>	<table> <tr><td>Registrar ID</td><td>Required</td></tr> <tr><td>Registrar Name</td><td>Optional</td></tr> <tr><td>Registrar Public Contact Details</td><td>Optional</td></tr> <tr><td>Registrar SRS Contact Details</td><td>Optional</td></tr> <tr><td>Default Technical Contact Details</td><td>Optional</td></tr> <tr><td>URL</td><td>Optional</td></tr> <tr><td>Registrar Accounting Reference</td><td>Optional</td></tr> <tr><td>Public Encryption Key</td><td>Optional</td></tr> <tr><td>Allowed 2LD list</td><td>Optional</td></tr> <tr><td>Access Role List</td><td>Optional</td></tr> <tr><td>Audit Text</td><td>Optional</td></tr> <tr><td>Action ID</td><td>Required</td></tr> </table>	Registrar ID	Required	Registrar Name	Optional	Registrar Public Contact Details	Optional	Registrar SRS Contact Details	Optional	Default Technical Contact Details	Optional	URL	Optional	Registrar Accounting Reference	Optional	Public Encryption Key	Optional	Allowed 2LD list	Optional	Access Role List	Optional	Audit Text	Optional	Action ID	Required
Registrar ID	Required																								
Registrar Name	Optional																								
Registrar Public Contact Details	Optional																								
Registrar SRS Contact Details	Optional																								
Default Technical Contact Details	Optional																								
URL	Optional																								
Registrar Accounting Reference	Optional																								
Public Encryption Key	Optional																								
Allowed 2LD list	Optional																								
Access Role List	Optional																								
Audit Text	Optional																								
Action ID	Required																								
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).																								
<b>SRS Response</b>	On successful completion, a full copy of the Registrar details will be returned																								

### 3.4.8 Query Registrar Account

<b>Process description</b>	Registrars will be able to query all transactions in their account in the Registry accounting system.
<b>Registrar Uses</b>	Retrieve details of billing transactions.
<b>Registry Uses</b>	As for Registrars, but all Registrar accounts can be accessed.
<b>Additional Uses</b>	This will allow Registrars to monitor their financial commitment to the Registry on a regular basis

<b>Business Rules</b>	<p>The primary source for this query is the data imported from the Registry accounting system. All transactions will have been imported – even transactions originating in the accounting system that were not generated by the SRS. The results will also include Pending Billing Transactions (those that have not yet been confirmed by the accounting system). Pending transactions might still be subject to change.</p> <p>The query will calculate the likely value of pending transactions, using the pricing information imported from the accounting system.</p> <p>Invoiced transactions will contain sufficient information from the accounting system for reconciliation (e.g. invoice number, item number, reference number). The exact nature of this information will not be decided until the Registry accounting system has been selected and configured.</p> <p>By providing search criteria, the Registrar will be able to filter results so they only get the information they are interested in receiving. They can query all details for a specific invoice, all transactions in a date range, all details relating to a specific domain, all details relating to a single customer of the Registrar (identified by the Registrant Customer Reference), or any combination of the above.</p> <p>The query will allow the user to specify the maximum number of records returned, and a number of records to skip when returning results. This will allow the user to request large lists of data in small manageable chunks. It should be noted that this calculation is performed each time the query is executed, and if the database changes between executions, it will be possible to miss (or duplicate) results.</p> <p>Registrars can only query billing details that relate to their own account details.</p>																														
<b>Inputs</b>	<table border="0"> <tr> <td>Registrar ID</td> <td>Required</td> <td></td> </tr> <tr> <td>Domain</td> <td>Optional</td> <td></td> </tr> <tr> <td>Registrant Customer Reference</td> <td>Optional</td> <td></td> </tr> <tr> <td>Transaction Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Transaction Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Invoice Number</td> <td>Optional</td> <td></td> </tr> <tr> <td>Invoice Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Invoice Date (End)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Maximum Results</td> <td>Optional</td> <td>Default = 100</td> </tr> <tr> <td>Skip Results</td> <td>Optional</td> <td></td> </tr> </table>	Registrar ID	Required		Domain	Optional		Registrant Customer Reference	Optional		Transaction Date (Start)	Optional		Transaction Date (End)	Optional		Invoice Number	Optional		Invoice Date (Start)	Optional		Invoice Date (End)	Optional		Maximum Results	Optional	Default = 100	Skip Results	Optional	
Registrar ID	Required																														
Domain	Optional																														
Registrant Customer Reference	Optional																														
Transaction Date (Start)	Optional																														
Transaction Date (End)	Optional																														
Invoice Number	Optional																														
Invoice Date (Start)	Optional																														
Invoice Date (End)	Optional																														
Maximum Results	Optional	Default = 100																													
Skip Results	Optional																														
<b>Validation</b>	<p>Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).</p>																														
<b>SRS Response</b>	<p>On successful completion, all billing details matching the supplied criteria will be returned.</p> <p>Repeating Groups of Data:</p> <ul style="list-style-type: none"> <li>Transaction Type</li> <li>Transaction Status (Pending or Confirmed)</li> <li>Registrar ID</li> <li>Transaction Date</li> <li>Domain</li> <li>Registration/Renewal term</li> <li>Invoice Number</li> <li>Invoice Date</li> <li>Registrant Customer Reference</li> <li>Months Billed (Billing term)</li> <li>Amount</li> </ul>																														



### 3.4.11 Query XML

<b>Process description</b>	Find the requested XML transaction.
<b>Registrar Uses</b>	To retrieve the XML request that includes the transaction identified by Action ID
<b>Registry Uses</b>	As for the Registrars.
<b>Additional Uses</b>	
<b>Business Rules</b>	Registrars will only be returned transactions performed by them, or performed by the Registry on their behalf.
<b>Inputs</b>	Action ID Required Registrar ID Required  <u>Note</u> Action IDs are discoverable through both the Query Domain Data and Get Messages transactions, providing a link to the originating XML through this query, if required.
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).
<b>SRS Response</b>	Returns the raw XML , with the digital signature for the request and response of the supplied Action ID XML Request XML Request signature XML Response XML Response signature

### 3.4.12 Query System Parameters

<b>Process description</b>	Query the SRS configurable parameters.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Allows the Registry to verify the system parameters.
<b>Additional Uses</b>	
<b>Business Rules</b>	This transaction is only available to the Registry. All system parameters will be returned by the query.
<b>Inputs</b>	None
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).
<b>SRS Response</b>	Returns the details of all system parameters. Parameter Name Parameter Value Audit Text Action ID

### 3.4.13 Update System Parameter

<b>Process description</b>	Changes the value of system parameters.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Allows the Registry to change the value of system parameters.
<b>Additional Uses</b>	

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<b>Business Rules</b>	This transaction is only available to the Registry. The Audit Text should default to blank, so that in cases where it is not provided, previous values are not carried forward.								
<b>Inputs</b>	<table> <tr> <td>Parameter Name</td> <td>Required</td> </tr> <tr> <td>Parameter Value</td> <td>Required</td> </tr> <tr> <td>Audit Text</td> <td>Optional</td> </tr> <tr> <td>Action ID</td> <td>Required</td> </tr> </table>	Parameter Name	Required	Parameter Value	Required	Audit Text	Optional	Action ID	Required
Parameter Name	Required								
Parameter Value	Required								
Audit Text	Optional								
Action ID	Required								
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).								
<b>SRS Response</b>	Return the full details of the new parameter settings (name & value)								

### 3.4.14 Query Run-logs

<b>Process description</b>	There will be a facility to view the run-logs from SRS batch processes. This will allow users to know exactly what has been running in the SRS, the completion status of batch processes, and any control information logged by a batch process.									
<b>Registrar Uses</b>	None									
<b>Registry Uses</b>	The Registry can view the run-logs from past system processes									
<b>Additional Uses</b>										
<b>Business Rules</b>	This transaction is only available to the Registry. If a Start Date/Time is provided, all processes with Run Dates occurring after that time will be returned, unless they are delimited by an End Date/Time. The converse also applies. If no parameters are supplied, the query will return the 100 most recent processes.									
<b>Inputs</b>	<table> <tr> <td>Process Name</td> <td>Optional</td> <td>Default = all</td> </tr> <tr> <td>Process Date (Start)</td> <td>Optional</td> <td></td> </tr> <tr> <td>Process Date (End)</td> <td>Optional</td> <td>Default = current date</td> </tr> </table>	Process Name	Optional	Default = all	Process Date (Start)	Optional		Process Date (End)	Optional	Default = current date
Process Name	Optional	Default = all								
Process Date (Start)	Optional									
Process Date (End)	Optional	Default = current date								
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).									
<b>SRS Response</b>	Returns the requested Run-Log information Process Name Status Run Date/Time Control Information Detailed Information									

### 3.4.15 Create Run-logs

<b>Process description</b>	This process writes summary information into the database describing the run of a batch process on the SRS
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Each batch process will invoke this transaction to record details of processing.
<b>Additional Uses</b>	
<b>Business Rules</b>	

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<b>Inputs</b>	Process Name Status Run Date Control Information Detailed Information Action ID	Required Required Required Optional Optional Required
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).	
<b>SRS Response</b>	Returns the full details of the newly created run-log record.	

### 3.4.16 Query Schedule

<b>Process description</b>	Query the details of the SRS batch schedule.		
<b>Registrar Uses</b>	None		
<b>Registry Uses</b>	Allows the Registry to view details of when batch processes are, or were scheduled to run on the SRS.		
<b>Additional Uses</b>			
<b>Business Rules</b>	This transaction is only available to the Registry.		
<b>Inputs</b>	Process Name Active On	Optional Optional	Default = all Default = now
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).		
<b>SRS Response</b>	Returns the schedule details of the specified process, or all processes if none are specified.  Repeating groups of Process Name Frequency First Run Date Cancel Date Command Create Audit Text Create Action ID Cancel Audit Text Cancel Action ID		

### 3.4.17 Create Schedule

<b>Process description</b>	Allow the user to schedule batch processes to run within the SRS.		
<b>Registrar Uses</b>	None		
<b>Registry Uses</b>	Allows the Registry to change the schedule of SRS batch processes.		
<b>Additional Uses</b>			
<b>Business Rules</b>	This transaction is only available to the Registry.		
<b>Inputs</b>	Process Name Frequency First Run Date Command Audit Text Action ID	Required Required Required Required Optional Required	

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<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).
<b>SRS Response</b>	Returns the schedule details of the specified process.

### 3.4.18 Cancel Schedule

<b>Process description</b>	Cancel a scheduled batch job.								
<b>Registrar Uses</b>	None								
<b>Registry Uses</b>	Allows the user to cancel a previously scheduled batch SRS process.								
<b>Additional Uses</b>									
<b>Business Rules</b>	This transaction is only available to the Registry.								
<b>Inputs</b>	<table> <tr> <td>Process Name</td> <td>Required</td> </tr> <tr> <td>First Run Date</td> <td>Required</td> </tr> <tr> <td>Audit Text</td> <td>Optional</td> </tr> <tr> <td>Action ID</td> <td>Required</td> </tr> </table>	Process Name	Required	First Run Date	Required	Audit Text	Optional	Action ID	Required
Process Name	Required								
First Run Date	Required								
Audit Text	Optional								
Action ID	Required								
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).								
<b>SRS Response</b>	Returns the schedule details of the cancelled process.								

### 3.4.19 Build DNS Zone Files

<b>Process description</b>	Build the same 'Zone' and 'Configuration' files as the current system.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Scheduled Task
<b>Additional Uses</b>	
<b>Business Rules</b>	<p>This transaction is only available to the Registry. It will be scheduled on a regular basis, currently twice daily.</p> <p>Only one copy of this process will be allowed to run at any point in time.</p> <p>Only domains with a Registration Status of 'active' will be exported.</p> <p>Domains with less than two domain name servers will be exported as comment records.</p> <p>Domains whose Registrar has specified they should not be delegated (through the Delegate field in the register) will be exported as comment records.</p> <p>Locked domains will be treated identically to unlocked domains.</p>
<b>Inputs</b>	
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).

<b>SRS Response</b>	<p>This process will write run statistics into a run-log within the database.</p> <ul style="list-style-type: none"> <li>Process Name</li> <li>Status</li> <li>Run date / time</li> <li>Control Information (broken down by 2LD) <ul style="list-style-type: none"> <li>Count of domains exported and delegated</li> <li>Count of domains exported as comment records due to Delegate field</li> <li>Count of domains exported as comment records due to less than two name servers</li> <li>Total number of records exported</li> </ul> </li> </ul>
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### 3.4.20 Export Billing Data

<b>Process description</b>	Creates an export file of Pending Billing Transactions for later import into the Registry accounting system.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Scheduled Task
<b>Additional Uses</b>	
<b>Business Rules</b>	<p>This transaction is only available to the Registry. It will be scheduled on a regular basis, probably daily.</p> <p>Only one copy of this process will be allowed to run at any point in time.</p> <p>Pending Transactions for locked domains will not be exported.</p> <p>Only pending transactions that have a Grace Period End Date earlier than the current system Date/Time will be exported. If a transaction has no Grace Period End Date, this requirement will be ignored.</p> <p>Pending transactions will be marked as 'Exported' when extracted.</p>
<b>Inputs</b>	None
<b>Outputs</b>	<ul style="list-style-type: none"> <li>Action ID</li> <li>Domain</li> <li>Registrar ID</li> <li>Registrar Accounting Reference</li> <li>Registrant Customer Reference</li> <li>Bill Period Start</li> <li>Bill Period End</li> <li>Number Of Months Billed (Billing Term)</li> <li>Transaction Type</li> </ul>
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).

<b>SRS Response</b>	<p>This process will write run statistics into a run-log within the database.</p> <ul style="list-style-type: none"> <li>Process Name</li> <li>Status</li> <li>Run date / time</li> <li>Control Information <ul style="list-style-type: none"> <li>By Transaction Type <ul style="list-style-type: none"> <li>Total number of transactions extracted</li> <li>Total Number Of Months Billed</li> <li>Total estimated value based on Number Of Months Billed</li> </ul> </li> </ul> </li> <li>Grand Totals <ul style="list-style-type: none"> <li>Total transactions not extracted – Locked</li> <li>Total transactions not extracted – Registration Grace</li> <li>Total transactions not extracted – Renewal Grace</li> </ul> </li> </ul>
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### 3.4.21 Registrar Account Import

<b>Process description</b>	Information will be imported from the Registry accounting system for the Query Registrar Account process. This information will include a list of prices for each Transaction Type, including price history, as well as all transactions from Registrar accounts.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Scheduled Task
<b>Additional Uses</b>	
<b>Business Rules</b>	<p>This transaction is only available to the Registry and will be scheduled on a regular basis, probably daily.</p> <p>Only one copy of this process will be allowed to run at any point in time.</p> <p>The import will process whatever transactions it is given. If a transaction already exists in the SRS (i.e. it was imported by a previous run), the old version will be replaced by the new. Otherwise a new record will be inserted.</p> <p>There will be no facility for deleting transactions that were previously imported.</p> <p>Any transactions that originated within the SRS could still exist as Pending Billing Transactions ('exported' but not 'confirmed'). These transactions will be identified using the unique combination of Action ID and Domain, and removed from the Pending Billing Transactions.</p>
<b>Inputs</b>	The primary input will be a file of Registrar account transactions containing the necessary information, created by the Registry accounting system. Another file from the accounting system will contain the pricing information. The technical specification of these files will be determined when the accounting system has been selected and configured.
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).

<b>SRS Response</b>	<p>This process will write run statistics into a run-log within the database.</p> <ul style="list-style-type: none"> <li>Process Name</li> <li>Status</li> <li>Run date / time</li> <li>Control Information <ul style="list-style-type: none"> <li>By Transaction Type <ul style="list-style-type: none"> <li>Total number of transactions imported</li> <li>Total value of transactions imported</li> <li>Total number of transactions deleted from pending</li> <li>Total value of transactions deleted from pending</li> </ul> </li> </ul> </li> <li>Grand Totals</li> </ul>
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### 3.4.22 Renew Domains

<b>Process description</b>	This process identifies and renews domains that have passed their current billing period.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Scheduled Task
<b>Additional Uses</b>	
<b>Business Rules</b>	<p>This transaction is only available to the Registry and will be scheduled on a regular basis, probably daily.</p> <p>Only one copy of this process will be allowed to run at any point in time.</p> <p>Domains are renewed as at midnight on the end of the day indicated by the Billed Until Date. If this Date/Time is earlier than the current system Date/Time, the domain will be renewed.</p> <p>Only domains with a Registration Status of 'active' will be renewed.</p> <p>Locked domains will not be renewed.</p> <p>The Billing Process will be invoked immediately for each renewed domain.</p>
<b>Inputs</b>	None
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).
<b>SRS Response</b>	<p>This process will write run statistics into a run-log within the database.</p> <ul style="list-style-type: none"> <li>Process Name</li> <li>Status</li> <li>Run date / time</li> <li>Control Information <ul style="list-style-type: none"> <li>Total number of domains renewed</li> <li>Total number of months renewed (using Billing Term)</li> </ul> </li> </ul>

### 3.4.23 Release Domains

<b>Process description</b>	This process releases domains that are beyond their Pending Release Period, or which have been cancelled within their Registration Grace Period.
<b>Registrar Uses</b>	None
<b>Registry Uses</b>	Scheduled Task
<b>Additional Uses</b>	

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<b>Business Rules</b>	<p>This transaction is only available to the Registry and will be scheduled on a regular basis, probably daily.</p> <p>Only one copy of this process will be allowed to run at any point in time.</p> <p>Locked domains will not be released.</p> <p>Domains will be released if their status is 'pending release' AND</p> <p style="padding-left: 40px;">EITHER the Cancellation Date is within it's Registration Grace Period</p> <p style="padding-left: 40px;">OR the current system Date/Time &gt; Cancellation Date + Pending Release Period</p> <p>Releasing a domain involves changing its Registration Status to 'available' and clearing all details except the domain name. The domain record itself is not deleted, nor is any of its history. It is effectively, but not physically, removed from the register.</p>
<b>Inputs</b>	
<b>Validation</b>	Ensure that the user is associated with sufficient roles to access this transaction type (see Application Access).
<b>SRS Response</b>	<p>This process will write run statistics into a run-log within the database.</p> <p style="padding-left: 40px;">Process Name</p> <p style="padding-left: 40px;">Status</p> <p style="padding-left: 40px;">Run date / time</p> <p style="padding-left: 40px;">Control Information</p> <p style="padding-left: 80px;">Total domains Pending Release</p> <p style="padding-left: 80px;">Total domains released while in Registration Grace Period</p> <p style="padding-left: 80px;">Total domains released due to Release Period expiry</p>

## 3.5 ERRORS

When an error is detected within a request an error code and an error message will be returned.

If the error is detected within a transaction only that transaction will be rejected, and the error will be reported in place of the data that would have otherwise been returned.

If the error is detected at a request level then the error will be returned in place of the response that would otherwise have been returned. All transactions within the request will have been implicitly rejected.

## 3.6 AVAILABILITY

The target of 99.9% availability of the SRS has been set (less than 45 minutes downtime / month).

### 3.6.1 Redundancy

There will be several levels of redundancy built into the SRS, so that it will still be able to operate in the event of a catastrophic failure at one particular geographical location. Initially, two additional, fully replicated, versions of the SRS are required. One will be at the same site as the primary system and the other at a remote geographical location. The system architecture will allow fine-tuning of this replication architecture, easily allowing additional replication sites to be added if required.

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The SRS will only continue accepting transactions that update the SRS database if there is at least one other replicating site fully operational.

In the event that no replicating site is operational, the SRS will continue operating in read-only mode.

### 3.6.2 Automatic Fault Detection

The SRS server should be self aware, to the point that it can automatically detect most problems, and notify support staff of the issue.

If any of the following events are detected, the SRS will contact the SRS support staff;

- Any of the automatically scheduled tasks fail (Billing Export, DNS Export, Accounting Import, Release Domains, Renew Domains)

- An error is detected in the network

- An error is detected in one of the SRS servers

The exact mechanism for notification will be agreed with the Registry Manager (e.g. pager, e-mail, text message, etc).

## 3.7 LOGGING AND AUDITING

All XML transactions containing an update component received by the register will be time-stamped, and captured in their native XML format, along with their electronic signature. Any changes made to the domain data will be traceable back to the original (signed) XML transaction.

A 'before image' of all changes made to the domain data will be captured into history tables. This will satisfy the requirement to be able to provide a complete history of activity on each domain.

A 'before image' of all changes made to the registrar data will be captured into history tables. This will satisfy the requirement to be able to provide a complete history of activity on each registrar.

All transaction formats will have an optional field, Audit Text, for registrars to record whatever information is relevant to them for their audit purposes (e.g. a registrar may want to record the staff-id to identify the staff member who issued the transaction).

All history/audit information will be accessible through the standard query transactions, described above.

## 3.8 STATISTICS

All SRS transactions will write statistics into an operating system text file. These statistics will be stored in a comma-delimited format for ease of loading into an external database for analysis.

WHOIS transactions will be included in this file.

The following information will be recorded.

- Transaction Type
- Transaction Initiator
- Transaction Start Date/Time
- Transaction End Date/Time

## **3.9 SYSTEM PARAMETERS**

### **3.9.1 Registration Grace Period**

Initially set to 5 (days), this is the period after initial registration that a Registrar may cancel a domain and only be billed for a discounted portion of the original Billing Term.

It is also the period during which a Registrant may not transfer the management of a domain to another Registrar after initial registration.

### **3.9.2 Renewal Grace Period**

Initially set to 5 (days), this is the period after a domain is renewed that a Registrar may cancel a domain without being billed for the renewal period.

### **3.9.3 Pending Release Period**

Initially set to 90 (days), this parameter defines how long a domain remains unavailable after it has been cancelled.

### **3.9.4 Maximum Billing Term**

Initially set to 120 (months), this is the maximum number of months that a domain can be billed for.

### **3.9.5 Request Timeout**

Initially set to 90 (seconds), this parameter defines the maximum length of time the SRS will spend processing a request before returning a timeout response.

It is likely that the best value for this parameter will not be known until after some trial and error.

### **3.9.6 Maximum XML Response Size**

Initially set to 1024 (kilobytes) this parameter defines the maximum size of a single XML response that the SRS will attempt to process.

It is likely that the best value for this parameter will not be known until after some trial and error.

### **3.9.7 Maximum Domain Name Servers**

Initially set to 10, this is the maximum number of Domain Name Servers that can be defined for a single domain.

# 4 DATA DEFINITIONS

## 4.1 DATA DICTIONARY

Whenever a date is mentioned in the Data Dictionary it will include a time component, accurate to the nearest second.

### 4.1.1 Domain

Data Element	Required	Description
Domain	Yes	The unique identifier for the domain. The domain must be well formed (Refer to RFC1034 & RFC1035).
Designated Registrar ID	Yes	Identifies the Designated Registrar of the domain.
Registration Status	Yes	The current status of the domain (Available / Active / Pending Release)
Locked Date	No	Indicates that the domain is locked, and when it was locked. This field is cleared when a domain is unlocked.
Delegate	Yes	A 'True' value indicates that the Registrar has requested that the domain should be delegated in the DNS system. A 'False' value will place it in the DNS as a comment only.
Name Server List	No	A list of Name servers that the domain is delegated to (Name Servers, and IP addresses). Both the Name Servers and the IP addresses must be well formed.  The IP address is optional. The Name Server List must not contain an IP address without an associated Name Server.
Billing Term	Yes	The number of months to bill when the domain is registered or renewed. Must be between one month, and the Maximum Billing Term system parameter.
Billed Until Date	Yes	The Date and Time the domain has been billed until.
Registration Date	Yes	The Date and Time when the domain was registered. This field will remain unchanged until a domain is released.
Registrant Contact Details	Yes	Sufficient contact details to enable the registry to contact the registrant, should the need arise.
Technical Contact Details	Yes	The individual, role or organisation that maintains the domain name server(s) for the domain.
Administrative Contact Details	Yes	An individual, role or organisation authorised to interact with the registry or registrar on behalf of the registrant.
Registrant Customer Reference	No	Means of identification by which the Registrant is known in the Registrar's system.
Effective Date	Yes	Last modified date.

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Effective To	No	The date that this record was replaced.
Unique Domain Authentication Identifier (UDAI)	Yes	System-generated ID to validate authority to transfer a domain.
Cancellation Date	No	The date on which a domain was cancelled. This field is cleared if a domain is uncanceled.
Audit Text	No	This field provides an optional reference to the User's audit trail. It performs no direct function in the SRS, and is only stored for informational use.
Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).
Changed By Registrar	Yes	The Registrar ID of the Registrar that updated this record.

### 4.1.2 Registrar

Data Element	Required	Description
Registrar ID	Yes	A unique identifier assigned by the SRS.
Registrar Name	Yes	The business name of the Registrar, as known by the Registry.
Registrar Accounting Reference	Yes	Reference that identifies the Registrar in the Accounting System
Registrar Public Encryption Key	Yes	Encryption key used to verify communications with the Registrar.
Registrar Public Contact Details	Yes	The contact information about a Registrar that will be displayed in public (WHOIS) queries.
Registrar SRS Contact Details	Yes	Contact details used by the Registry staff to communicate with the Registrar.
Default Technical Contact Details	Yes	Contact details for the Registrar that will be used as a default when domain technical contact details are not supplied.
URL	No	The Registrar's Web address
Allowed 2LD list	No	The list of 2LD's that this Registrar can maintain.
Access Role List	No	The list of access roles associated with this Registrar.
Effective Date	Yes	Last modified date.
Changed By Registrar	Yes	The Registrar ID of the Registrar that updated this record.
Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).
Audit Text	No	This field provides an optional reference to the User's audit trail. It performs no direct function in the SRS, and is only stored for informational use.

### 4.1.3 Contact Details

Data Element	Required	Description
Name	Yes	The name of this contact (must be a minimum of two characters).
Address (line 1)	Yes	The first line of the address (must be a minimum of two characters).
Address (line 2)	No	The second line of the address.
City	Yes	The city of town (must be a minimum of two characters).

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Province	No	The state or province.
Country Code	Yes	A two character alphabetic code, conforming to ISO3166-1 indicating the country name.
Postcode	No	The postal code or zip code.
Phone country code	Yes	The country code (New Zealand is 64). This number will be validated against a list.
Phone area code	Yes	The area within the country (Auckland is 9). Minimum field length will be verified, based on the country code, and will be 0 for some countries.
Phone local number	Yes	The local telephone number. Minimum field length will be verified, based on the country code.
Fax country code	No	The country code (New Zealand is 64). If present, it will be validated against a list. If the Fax Area Code or the Fax Local Number is not provided, this field must not be supplied.
Fax area code	No	The area within the country (Auckland is 9). Minimum field length will be verified, based on the Fax Country Code. If the Fax Country Code or the Fax Local Number is not provided, this field must not be supplied.
Fax local number	No	The local telephone number. Minimum field length will be verified, based on the Fax Country Code. If the Fax Country Code or the Fax Area Code is not provided, this field must not be supplied.
Email Address	Yes	An email address with a format as specified by 'Addr-spec' in the RFC2822 standard (i.e. local-part@domain). It must contain one or more characters to the left of a '@' character, followed by a well formed domain.

#### 4.1.4 Registrar Account Transaction

Data Element	Required	Description
Transaction Type	Yes	Identifies the type of the transaction, both to provide clarity in billing queries and to enable the Registry accounting system to process the transaction appropriately.
Transaction Status	Yes	The current status of the transaction (Pending or Confirmed). Confirmed transactions are those that have been processed by the Registry accounting system.
Transaction Date	Yes	Date the transaction was effective.
Registrant Customer Reference	Yes	Means of identification by which the Registrant is known in the Registrar's system.
Period Start	No	The beginning of the period being billed.
Period End	No	The end of the period being billed.
Months Billed	No	The number of months billed by this transaction.
Invoice Number	No	The invoice number associated with this transaction
Invoice Date	No	The invoice date associated with this transaction
Domain	No	The domain associated with this transaction
Registrar ID	No	The Registrar billed for this transaction
Amount	Yes	The amount of the transaction (may be estimated).
Registration Renewal Term	No	The term of renewal applying to this transaction.

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Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).
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#### 4.1.5 XML

Data Element	Required	Description
Registrar ID	Yes	Identifies the Registrar who initiated this XML
Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).
Process Date	Yes	Indicates exactly when this XML was processed.
XML Request	Yes	The actual XML request
XML Response	Yes	The XML response sent back the Registrar.
Digital Signature	Yes	The Digital Signature will provide non-repudiation for the XML transaction.

#### 4.1.6 System Parameters

Data Element	Required	Description
Parameter Name	Yes	Parameter Name
Parameter Value	Yes	Parameter Value
Audit Text	No	This field provides an optional reference to the User's audit trail. It performs no direct function in the SRS, and is only stored for informational use.
Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).

#### 4.1.7 Run Log

Data Element	Required	Description
Process Name	Yes	Name of the batch process being logged.
Process Status	Yes	Status of the process run.
Run Date	Yes	Time and date of the process run.
Control Information	Yes	Control information written by the batch process.
Detailed Information	No	Any additional output from the batch process.
Action ID	Yes	The unique, user-generated, identifier for the underlying transaction (includes the Registrar ID to make it truly unique across the entire SRS).

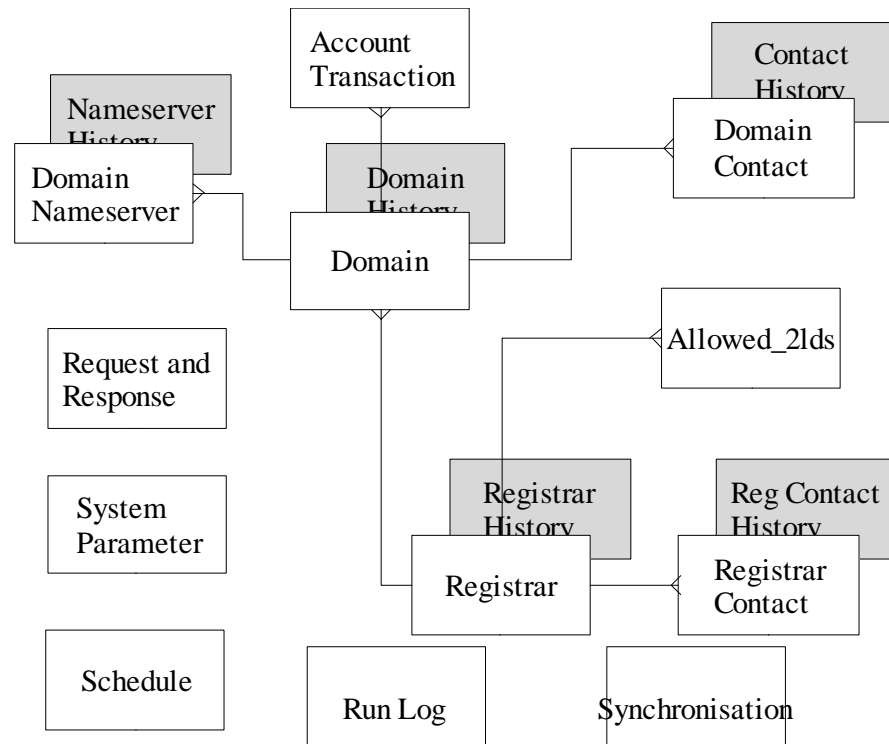
#### 4.1.8 Schedule

Data Element	Required	Description
Process Name	Yes	Name of the batch process.
Cancel Date	No	The date a scheduled process was cancelled.
Frequency	Yes	Made up of two parts, the frequency type (Seconds, Months, or Once), and the frequency units (any number).
First Run Date	Yes	Date and Time of first scheduled run.
Command	Yes	Command to be executed.
Create Audit Text	No	This field provides an optional reference to the User's audit trail. It performs no direct function in the SRS, and is only stored for informational use.

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Create Action ID	Yes	The unique, user-generated, identifier for the underlying create transaction (includes the Registrar ID to make it truly unique across the entire SRS).
Cancel Audit Text	No	This field provides an optional reference to the User's audit trail. It performs no direct function in the SRS, and is only stored for informational use.
Cancel Action ID	Yes	The unique, user-generated, identifier for the underlying cancel transaction (includes the Registrar ID to make it truly unique across the entire SRS).

## 4.2 ENTITY RELATIONSHIP DIAGRAM



## 5 DISTRIBUTION LIST

Draft copies of this document will be distributed to the following people for review and comment. Although it does not contain sensitive information, it is preferred that it not be distributed beyond this group during the draft stage.

.NZ Oversight Committee

Domain Name Commissioner

SRS Technical Project Manager;

Selected Domainz employees;

Selected Catalyst employees;

InternetNZ Technical Committee;

Contracted QA reviewer.

After sign-off, the document will be published on the InternetNZ web site. Potential registrars (.nz providers) will be advised when it becomes available.

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# 6 SIGN-OFF

*Signed for and on behalf of **InternetNZ** by*

*Dated*

\_\_\_\_\_

\_\_\_\_\_

*Signed for and on behalf of **Catalyst** by*

*Dated*

\_\_\_\_\_

\_\_\_\_\_

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# 7 APPENDICES

## 7.1 GLOSSARY

### 2LD

A Second Level Domain (2LD) is a grouping of domains under the top level .nz namespace. As an example, 'bigcompany.co.nz' and 'littlecompany.co.nz' are both part of the 2LD of '.co.nz'. A 2LD may be moderated (requiring external authorisation by a moderator) prior to registering a new domain.

### Domain

A domain is a textual representation that uniquely identifies a computer on the Internet. The SRS will provide management of domains within the .nz name space. In this document, the term 'Domain' is preferred to the commonly used 'Domain Name'.

### Domain Name Commissioner

The Domain Name Commissioner (DNC) is appointed by the .nz Oversight Committee of InternetNZ and is responsible for overseeing all aspects of the .nz namespace. The DNC is the business owner of the SRS.

### DNS

The Domain Name System (DNS) is the system used by the Internet to translate domains (such as dnc.org.nz) into network addresses that allow one computer to connect to another. The DNS for the .nz top-level (country code) domain is managed by the Registry, under contract to InternetNZ.

### Designated Registrar

Each domain will have a Designated Registrar who will be fully and exclusively responsible for managing the domain on behalf of the Registrant. The Designated Registrar will be billed by the Registry for this privilege.

### Pending Billing Transactions

The SRS generates Pending Billing Transactions immediately when a billing event occurs (e.g. a domain is renewed). Pending Billing Transactions are defined as 'transactions that have not yet been confirmed by the accounting system'.

Pending Billing Transactions are to be considered subject to change at all times. The SRS may elect to modify, or even delete them, without warning. They are the sole source of information provided by the SRS to the Registry accounting system. They also provide billing queries from the SRS with information about what is likely to be billed, allowing Registrars to see a more complete picture of their financial commitment to the Registry.

### Pending Release Period

A period of time (currently 90 days) after a domain is cancelled during which the domain will not be made available for others to register. The Registrant will retain the right to re-instate their rights to the domain during this period.

## Register

The register is the key component of the SRS. It is the authoritative source of information regarding the domains included within the .nz namespace and the rights to use and administer them. The register is the sole source of information determining which domains are included in the DNS.

## Registrant

A Registrant is an entity that holds the right to use a domain. Their right to a domain is recorded in the register and is granted on a 'first in, first served' basis. Registrants must transact all business with the Registry through a Registrar. In the current system operating at Domainz (the DRS), the Registrant is known as the Name Holder.

## Registrar

A business entity that registers domains with the Registry, and manages them, on behalf of Registrants.

## Registration Grace Period

A period of time (currently five days) after a new domain has been registered during which the Designated Registrar may cancel the domain and incur a reduced charge for the initial registration.

During this period, a Registrant may not transfer the management of their domain to another Registrar.

## Registry

The Registry is the incorporated company known as the New Zealand Domain Name Registry Limited. It operates the SRS under contract to its sole shareholder, InternetNZ. As well as managing all technical aspects of the SRS, the Registry manages the financial relationship with Registrars, which primarily involves billing on a per domain basis. The Registry also manages and operates the DNS.

## Registry Accounting System

The Registry accounting system is a general purpose accounting package operated by the registry to perform all their accounting requirements. This includes full management of Registrar accounts with the Registry and all associated billing functions. Though information is traded with the SRS, it is not considered part of the SRS.

## Renewal Grace Period

A period of time (currently five days) after a domain is renewed during which a Registrar may cancel a domain without incurring a charge for the renewal period.

## SRS

The Shared Registry System will provide the Registry and the Registrars with the capability to manage the domains under the .nz top level domain.

## UDAI

A Unique Domain Authentication Identifier (UDAI) is a system-generated, unique code associated with a domain. Its sole purpose is for use as a 'password' to verify a Registrant's identity when transferring their domain from one Registrar to another.

## XML

Most interactions with the SRS will be through use of an XML protocol. XML (Extensible Markup Language) is a simple, flexible text format that is playing an increasingly important role in the exchange of a wide variety of data on the Web. Among other advantages, it allows industries to define platform-independent protocols for the

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exchange of data and delivers information in a form that allows automated processing after receipt using inexpensive software.

### **XML Request**

An XML request is a distinct transmission to the SRS, usually from a Registrar. It will contain one or more XML transactions, each of which will be processed independently.

### **XML Transaction**

An XML transaction initiates a single process (or business transaction) on the SRS. A single transaction may affect one or more data records (e.g. domains).