                Whois and Network Information Lookup Service
                                 Whois++

Status of this Memo

I. Introduction

   As currently defined, NICNAME/WHOIS [HARR85] service is a TCP
   transaction based query/response server, running on a few specific
   central machines, that provides netwide directory service to Internet
   users. The Network Information Center (NIC) maintains the central
   NICNAME database and server, defined in RFC 954, providing online
   look-up of individuals, network organizations, key host machines, and
   other information of interest to users of the Internet. The
   usefulness of this service has lead to the development of other
   distributed directory information servers and information retrieval
   tools and it is anticipated more will be created. Many sites now
   maintain local directory servers with information about individuals,
   departments and services at that specific site.

   Typically these directory servers are network accessible. Local
   development of these services has resulted in wide variations in the
   type of data stored, access methods, search schemes, and user
   interfaces. The purpose of the Whois and Network Information Lookup
   Service Working Group (WNILS) is to expand and define the standard
   for WHOIS types of services, to resolve issues associated with the
   variations in access and provide a consistent and predictable service
   across the network. This memo describes new features for WHOIS to
   meet these goals.

II. Architecture

   The WHOIS service should be provided in a client/server model. There
   are no restrictions on the design of the client, provided it is
   capable of passing queries to the server in the proper format, and
   capturing the server's response in some useful format. Existing
   WHOIS specifications call for clients to display responses in human-
   readable form. This more general proposal does not impose that

   restriction.

   This paper acknowledges the existence of many distributed information
   servers, and anticipates the creation of many more. To help users
   locate WHOIS servers, each server should have a nameserver entry in
   the form "whois.domain", i.e. whois.internic.net.

III. Client Design and Behavior

   The client provides the user interface to the WHOIS system and a
   mechanism for query generation and display of the response. The
   client is responsible for providing support for paging of long output
   from the server. All clients must provide this service. The server
   will not include any special characters, or make any efforts to
   control output to a screen.

   Special search criteria may be specified by the use of keywords or
   special characters, some of which are defined in RFC 954. Clients
   should be designed to make support for quoted strings unnecessary.

IV. Server Design and Behavior

   The server should return the same information in response to a given
   query consistently, regardless of the client software or the hardware
   used to originate the query. Queries should be evaluated on a case-
   insensitive basis. Spaces should not be considered in searches. A
   search for "La Russo" should return both "LaRusso" and "La Russo" as
   matches.

   There are three types of data records supported in this proposal:
   records for people, hosts, and domains.

   Individual records

   Name   Name of the individual   required

   Organization   Name of the organization   required

   Organization-type   Type of organization   optional
                           (university, commercial research)

   Work-telephone   Work telephone number   optional

   Fax-telephone   Fax telephone number   optional

   Work-address   Work postal address   optional

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   Title                   Working title or position     optional
                           within an organization

   Department              Department                    optional

   Email-address           Email address in RFC 822      optional
                           format for this individual

   Handle                  A unique identifier for this  required
                           record on the local server

   Last-record-update      Date this record was last     required
                           updated

   Home-telephone          Home telephone number         optional

   Home-address            Home postal address           optional


   Host records

   Hostname                Full domain name              required
   IPAddress               Address                       required
   Sysadmin-name           System administrator name     optional
   Sysadmin-phone          System administrator telephone optional
   Sysadmin-address        System administrator address  optional
   Sysadmin-email          System admin. e-mail address  optional
   Machine-type            Type of machine               optional
   OS                      Operating system              optional
   MX                      Mail exchanger                optional
   Last-update             Last update                   optional
   Info                    Location of additional        optional
                           information (i.e. anonymous FTP)


   Domain records

   Domain-name             Domain name registered with   required
                           the Network Information Center
                           (NIC)

   Network-address         Network address associated    required
                           with this domain name

   Admin-name              Name of the Administrative    required
                           Contact for this domain
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Admin-address	Postal address of the Admintistrative Contact for this domain	required
Admin-telephone	Telephone number of the Admintistrative Contact for this domain	required
Admin-email	Electronic mail address in RFC 1822 format for the Administrative Contact for this domain	required
Tech-name	Name of the Technical Contact for this domain	required
Tech-address	Postal address of the Administrative Contact for this domain	required
Tech-telephone	Telephone number of the Technical Contact for this domain	required
Tech-email	Electronic mail address in RFC 822 format for the Administrative Contact for this domain	required
Nameservers	Primary domain nameservers for this domain	optional
Last-update	Last date this record was updated	required

Search Options

   A unique handle must be provided for every record in the server
   database to target specific records for display. For example, if
   there are three individuals named, respectively, A. La Russo, B.
   LaRusso, and C. Larusso, then a search for "LA RUSSO" would return
   all three as matches. However, each record would have a unique
   handle, i.e. LARUSSO1, LARUSSO2, and LARUSSO3. A search for any one
   of these handles would return a single match for that particular
   individual. This is consistent with the RFC 954 query, "whois
   !SMITH1"

Other search options which should be supported are:

whois smith   exact match on last name

whois smith,j   exact match on last name, first name
whois "smith,j"   begins with "J"
whois j. Smith
whois "j. Smith"

whois smith, john   exact match on last and first names
whois "smith, john"
whois john Smith
whois "john Smith"
whois .john Smith
whois "smith..."   all last names beginning
whois smith*   with Smith
whois begins smith

whois smith??   all last names beginning with
                       "Smith" and containing up to two
                       letters after "Smith", i.e. "Smith",
                       "Smithy", "Smithey" and "Smithie"

whois ends smith   all last names ending in "smith"

whois exact A Martinez exact match for "A Martinez"

whois fuzzy paulson   all last names that sound like or
                       are spelled like "Paulson"

whois first Kazuko   exact match on first name "Kazuko"

whois first begins Art all first names beginning with "Art"

whois first fuzzy Kasuko all first names that sound like or are
                          spelled like "Kasuko"

whois hamlet.ucdavis.edu IP address and other information
whois system hamlet.ucdavis.edu on the computer called
                           hamlet.ucdavis.edu.Could be served
                           by a domain name service querytype
                           (QTYPE) *

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     whois system hamlet      IP address and other
                              information on the computer called
                              hamlet with the default domain
                              appended.  Could be served by a
                              domain name service querytype
                              (QTYPE) *

     whois 128.120.2.9        domain name and other
     whois system 128.120.2.9  information on the computer at
                                specified IP address.  Could be served
                                by a domain name service querytype
                                (QTYPE) PTR.

     whois !ucdavis-dom               site contacts and other
     whois domain ucdavis.edu         information on the site ucdavis
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   If any keywords are specified in the query, the server will complete
   that specific query and return the results, even if 0 matches are
   found. If no keywords are specified, the server will interpret the
   query based upon the rules above. Optionally, the server may be
   configured so that if a search yields no matches, the query will
   automatically be run again, but with the keyword begin inserted.

   Servers must support multiple levels of detail in response to
   queries. A query yielding multiple matches should return a short-
   form record for each match. A query yielding a single match should
   return a long-form record. A query yielding no matches should return
   context-sensitive help on expanding the search criteria.

On-line Help

   The client should return a minimal (two line) help message for every
   query sent to the server. That message should identify the database
   being searched and provide instructions for the user to obtain more
   detailed help screens.

   Additional help should be provided in special situations. The server
   should recognize queries that return zero matches, and provide a
   brief help message explaining how to broaden a search. If a search
   returns more than 50 matches, the server should take two actions.
   First, the user should get a message explaining how to narrow
   searches. Second, the user should be offered the option of re-
   specifying the search, or receiving all matching responses. When
   multiple matches are found and returned to the client, the server
   should add a brief help message explaining how to use handles to
   narrow the search to a single record.

If the client queries for "help" or "?" then the server should return
a complete help file. The help file should contain information in
sufficient detail for the user to understand and access all the
features of WHOIS service.

V. Extensibility

This RFC defines a limited set of data records and fields for
reliable whois queries.   Mechanisms exist for whois clients to
discover extended data records and query for fields not defined in
this memo. It is recommended that Whois clients and servers include
this functionality to maximize the extensibility and usefulness of
this service.

VI. References

[Harr85] Harrenstein, K., Stahl, M., and E. Feinler, E.,
         "NICNAME/WHOIS", RFC 954, SRI, October 1985.

VII. Security Considerations

Security issues are not discussed in this memo.

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