dig(1) - Linux man page

Name

dig - DNS lookup utility

Synopsis

dig [@server] [**-b** *address*] [**-c** *class*] [**-f** *filename*] [**-k** *filename*] [**-m**] [**-p** *port#*] [**-q** *name*] [**-t** *type*] [**-x** *addr*] [**-y** *[hmac:]name:key*] [**-4**] [**-6**] [name] [type] [class] [queryopt...]

dig [**-h**]
dig [global-queryopt...] [query...]

Description

dig (domain information groper) is a flexible tool for interrogating DNS name servers. It performs DNS lookups and displays the answers that are returned from the name **server**(s) that were queried. Most DNS administrators use **dig** to troubleshoot DNS problems because of its flexibility, ease of use and clarity of output. Other lookup tools tend to have less functionality than **dig**.

Although **dig** is normally used with command-line arguments, it also has a batch mode of operation for reading lookup requests from a file. A brief summary of its command-line arguments and options is printed when the **-h** option is given. Unlike earlier versions, the BIND 9 implementation of **dig** allows multiple lookups to be issued from the command line.

Unless it is told to query a specific name server, **dig** will try each of the servers listed in /etc/resolv.conf.

When no command line arguments or options are given, **dig** will perform an NS query for "." (the root).

It is possible to set per-user defaults for **dig** via ${HOME}/.digrc. This file is read and any options in it are applied before the command line arguments.

The IN and CH class names overlap with the IN and CH top level domains names. Either use the **-t** and **-c** options to specify the type and class, use the **-q** the specify the domain name, or use "IN." and "CH." when looking up these top level domains.

Simple Usage

A typical invocation of **dig** looks like:

```
dig @server name type
```

where:

server

is the name or IP address of the name server to query. This can be an IPv4 address in dotted-decimal notation or an IPv6 address in colon-delimited notation. When the supplied *server* argument is a hostname, **dig** resolves that name before querying that name server. If no *server* argument is provided, **dig** consults /etc/resolv.conf and queries the name servers listed there. The reply from the name server that responds is displayed.

name

is the name of the resource record that is to be looked up.

type

indicates what type of query is required - ANY, A, MX, SIG, etc. *type* can be any valid query type. If no *type* argument is supplied, **dig** will perform a lookup for an A record.

Options

The **-b** option sets the source IP address of the query to *address*. This must be a valid address on one of the host's network interfaces or "0.0.0.0" or "::". An optional port may be specified by appending "#<port>"

The default query class (IN for internet) is overridden by the **-c** option. *class* is any valid class, such as HS for Hesiod records or CH for Chaosnet records.

The **-f** option makes **dig** operate in batch mode by reading a list of lookup requests to process from the file *filename*. The file contains a number of queries, one per line. Each entry in the file should be organized in the same way they would be presented as queries to **dig** using the command-line interface.

The **-m** option enables memory usage debugging.

If a non-standard port number is to be queried, the **-p** option is used. *port#* is the port number that **dig** will send its queries instead of the standard DNS port number 53. This option would be used to test a name server that has been configured to listen for queries on a non-standard port number.

The **-4** option forces **dig** to only use IPv4 query transport. The **-6** option forces **dig** to only use IPv6 query transport.

The **-t** option sets the query type to *type*. It can be any valid query type which is supported in BIND 9. The default query type is "A", unless the **-x** option is supplied to indicate a reverse lookup. A zone transfer can be requested by specifying a type of AXFR. When an incremental zone transfer (IXFR) is required, *type* is set to ixfr=N. The incremental zone transfer will contain the changes made to the zone since the serial number in the zone's SOA record was *N*.

The **-q** option sets the query name to *name*. This useful do distinguish the *name* from other arguments.

Reverse lookups - mapping addresses to names - are simplified by the **-x** option. *addr* is an IPv4 address in dotted-decimal notation, or a colon-delimited IPv6 address. When this option is used, there is no need to provide the *name*, *class* and *type* arguments. **dig** automatically performs a lookup for a name like 11.12.13.10.in-addr.arpa and sets the query type and class to PTR and IN respectively. By default, IPv6 addresses are looked up using nibble format under the IP6.ARPA domain. To use the older RFC1886 method using the IP6.INT domain specify the **-i** option. Bit string labels (RFC2874) are now experimental and are not attempted.

To sign the DNS queries sent by **dig** and their responses using transaction signatures (TSIG), specify a TSIG key file using the **-k** option. You can also specify the TSIG key itself on the command line using the **-y** option; *hmac* is the type of the TSIG, default HMAC-MD5, *name* is the name of the TSIG key and *key* is the actual key. The key is a base-64 encoded string, typically generated by **dnssec-keygen**(8). Caution should be taken when using the **-y** option on multi-user systems as the key can be visible in the output from **ps**(1) or in the shell's history file. When using TSIG authentication with **dig**, the name server that is queried needs to know the key and algorithm that is being used. In BIND, this is done by providing appropriate **key** and **server** statements in named.conf.

Query Options

dig provides a number of query options which affect the way in which lookups are made and the results displayed. Some of these set or reset flag bits in the query header, some determine which sections of the answer get printed, and others determine the timeout and retry strategies.

Each query option is identified by a keyword preceded by a plus sign (+). Some keywords set or reset an option. These may be preceded by the string no to negate the meaning of that keyword. Other keywords assign values to options like the timeout interval. They have the form **+keyword=value**. The query options are:

+[no]tcp

Use [do not use] TCP when querying name servers. The default behavior is to use UDP unless an AXFR or IXFR query is requested, in which case a TCP connection is used.

+[no]vc

Use [do not use] TCP when querying name servers. This alternate syntax to *+[no]tcp* is provided for backwards compatibility. The "vc" stands for "virtual circuit".

+[no]ignore

Ignore truncation in UDP responses instead of retrying with TCP. By default, TCP retries are performed.

+domain=somename

Set the search list to contain the single domain *somename*, as if specified in a **domain** directive in /etc/resolv.conf, and enable search list processing as if the *+search* option were given.

+[no]search

Use [do not use] the search list defined by the searchlist or domain directive in resolv.conf (if any). The search list is not used by default.

+[no]showsearch

Perform [do not perform] a search showing intermediate results.

+[no]defname

Deprecated, treated as a synonym for *+[no]search*

+[no]aaonly

Sets the "aa" flag in the query.

+[no]aaflag

A synonym for *+[no]aaonly*.

+[no]adflag

Set [do not set] the AD (authentic data) bit in the query. This requests the server to return whether all of the answer and authority sections have all been validated as secure according to the security policy of the server. AD=1 indicates that all records have been validated as secure and the answer is not from a OPT-OUT range. AD=0 indicate that some part of the answer was insecure or not validated.

+[no]cdflag

Set [do not set] the CD (checking disabled) bit in the query. This requests the server to not perform DNSSEC validation of responses.

+[no]cl

Display [do not display] the CLASS when printing the record.

+[no]ttlid

Display [do not display] the TTL when printing the record.

+[no]recurse

Toggle the setting of the RD (recursion desired) bit in the query. This bit is set by

default, which means **dig** normally sends recursive queries. Recursion is automatically disabled when the *+nssearch* or *+trace* query options are used.

+[no]nssearch
When this option is set, **dig** attempts to find the authoritative name servers for the zone containing the name being looked up and display the SOA record that each name server has for the zone.

+[no]trace
Toggle tracing of the delegation path from the root name servers for the name being looked up. Tracing is disabled by default. When tracing is enabled, **dig** makes iterative queries to resolve the name being looked up. It will follow referrals from the root servers, showing the answer from each server that was used to resolve the lookup.

+[no]cmd
Toggles the printing of the initial comment in the output identifying the version of **dig** and the query options that have been applied. This comment is printed by default.

+[no]short
Provide a terse answer. The default is to print the answer in a verbose form.

+[no]identify
Show [or do not show] the IP address and port number that supplied the answer when the *+short* option is enabled. If short form answers are requested, the default is not to show the source address and port number of the server that provided the answer.

+[no]comments
Toggle the display of comment lines in the output. The default is to print comments.

+[no]stats
This query option toggles the printing of statistics: when the query was made, the size of the reply and so on. The default behavior is to print the query statistics.

+[no]qr
Print [do not print] the query as it is sent. By default, the query is not printed.

+[no]question
Print [do not print] the question section of a query when an answer is returned. The default is to print the question section as a comment.

+[no]answer
Display [do not display] the answer section of a reply. The default is to display it.

+[no]authority
Display [do not display] the authority section of a reply. The default is to display it.

+[no]additional

Display [do not display] the additional section of a reply. The default is to display it.

+[no]all

Set or clear all display flags.

+time=T

Sets the timeout for a query to *T* seconds. The default timeout is 5 seconds. An attempt to set *T* to less than 1 will result in a query timeout of 1 second being applied.

+tries=T

Sets the number of times to try UDP queries to server to *T* instead of the default, 3. If *T* is less than or equal to zero, the number of tries is silently rounded up to 1.

+retry=T

Sets the number of times to retry UDP queries to server to *T* instead of the default, 2. Unlike +*tries*, this does not include the initial query.

+ndots=D

Set the number of dots that have to appear in *name* to *D* for it to be considered absolute. The default value is that defined using the ndots statement in /etc/resolv.conf, or 1 if no ndots statement is present. Names with fewer dots are interpreted as relative names and will be searched for in the domains listed in the **search** or **domain** directive in /etc/resolv.conf.

+bufsize=B

Set the UDP message buffer size advertised using EDNS0 to *B* bytes. The maximum and minimum sizes of this buffer are 65535 and 0 respectively. Values outside this range are rounded up or down appropriately. Values other than zero will cause a EDNS query to be sent.

+edns=#

Specify the EDNS version to query with. Valid values are 0 to 255. Setting the EDNS version will cause a EDNS query to be sent. **+noedns** clears the remembered EDNS version.

+[no]multiline

Print records like the SOA records in a verbose multi-line format with human-readable comments. The default is to print each record on a single line, to facilitate machine parsing of the **dig** output.

+[no]onesoa

Print only one (starting) SOA record when performing an AXFR. The default is to print both the starting and ending SOA records.

+[no]fail

Do not try the next server if you receive a SERVFAIL. The default is to not try the next server which is the reverse of normal stub resolver behavior.

+[no]besteffort

Attempt to display the contents of messages which are malformed. The default is to not display malformed answers.

+[no]dnssec
Requests DNSSEC records be sent by setting the DNSSEC OK bit (DO) in the OPT record in the additional section of the query.

+[no]sigchase
Chase DNSSEC signature chains. Requires dig be compiled with -DDIG_SIGCHASE.

+trusted-key=####
Specifies a file containing trusted keys to be used with **+sigchase**. Each DNSKEY record must be on its own line.

If not specified, **dig** will look for /etc/trusted-key.key then trusted-key.key in the current directory.

Requires dig be compiled with -DDIG_SIGCHASE.

+[no]topdown
When chasing DNSSEC signature chains perform a top-down validation. Requires dig be compiled with -DDIG_SIGCHASE.

+[no]nsid
Include an EDNS name server ID request when sending a query.

Multiple Queries

The BIND 9 implementation of **dig** supports specifying multiple queries on the command line (in addition to supporting the **-f** batch file option). Each of those queries can be supplied with its own set of flags, options and query options.

In this case, each *query* argument represent an individual query in the command-line syntax described above. Each consists of any of the standard options and flags, the name to be looked up, an optional query type and class and any query options that should be applied to that query.

A global set of query options, which should be applied to all queries, can also be supplied. These global query options must precede the first tuple of name, class, type, options, flags, and query options supplied on the command line. Any global query options (except the **+[no]cmd** option) can be overridden by a query-specific set of query options. For example:

```
dig +qr www.isc.org any -x 127.0.0.1 isc.org ns +noqr
```

shows how **dig** could be used from the command line to make three lookups: an ANY

query for www.isc.org, a reverse lookup of 127.0.0.1 and a query for the NS records of isc.org. A global query option of *+qr* is applied, so that **dig** shows the initial query it made for each lookup. The final query has a local query option of *+noqr* which means that **dig** will not print the initial query when it looks up the NS records for isc.org.

Idn Support

If **dig** has been built with IDN (internationalized domain name) support, it can accept and display non-ASCII domain names. **dig** appropriately converts character encoding of domain name before sending a request to DNS server or displaying a reply from the server. If you'd like to turn off the IDN support for some reason, defines the **IDN_DISABLE** environment variable. The IDN support is disabled if the variable is set when **dig** runs.

Return Codes

Dig return codes are:

0: Everything went well, including things like NXDOMAIN
1: Usage error
8: Couldn't open batch file
9: No reply from server
10: Internal error

Files

/etc/resolv.conf

${HOME}/.digrc

See Also

host(1), **named**(8), **dnssec-keygen**(8), RFC1035.

Bugs

There are probably too many query options.

Copyright

Referenced By

dnsget(1), **dnstracer**(8), **drill**(1), **nslookup**(1), **strobe**(1), **zonecheck**(1)