RECURSIVE AND INTERATIVE QUERIES/INVERSE QUERIES

Recursive queries When a client system sends a recursive query to a local name server, that local name server must return the IP address for the friendly name entered, indicate that it can't find an address, or return an error saying that the requested address does not exist.

Name servers do not refer the client system requesting a recursive query to other DNS servers. When answering recursive queries, the originating client does not receive address information directly from any DNS server other than the local name server.

Typically, the local name server will first check DNS data from its own boot file, cache, database, or reverse lookup file. If the server is unsuccessful in obtaining the answer from those local sources, it may contact other DNS servers for assistance using iterative queries and then pass the information it receives back to the client that originated the name resolution request.

Iterative queries In iterative queries, name servers return the best information they have. Although a DNS server may not know the IP address for a given friendly name, it might know the IP address of another name server likely to have the IP address being sought, so it sends that information back. The response to an iterative query can be likened to a DNS server saying, "I don't have the IP address you seek, but the name server at 10.1.2.3 can tell you."

The process is straightforward. Here's one example in which a local name server uses iterative queries to resolve an address for a client: The local name server receives a name resolution request from a client system for a friendly name (such as www.techrepublic.com). The local name server checks its records. If it finds the address, it returns it to the client. If no address is found, the local name server proceeds to the next step. The local name server sends an iterative request to the root (the "." in .com) name server. The root name server provides the local name server with the address for the top-level domain (.com, .net, etc.) server. The local name server sends an iterative query to the top-level domain server. The top-level domain server replies with the IP address of the name server that manages the friendly name's domain (such as techrepublic.com). The local name server sends an iterative request to the friendly name's domain name server. The friendly name's domain name server provides the IP address for the friendly name (www.techrepublic.com) being sought. The local name server passes that IP address to the client.

It seems complicated, but the process completes in a matter of moments. Or, if an address isn't found, a 404 error message is returned to the client.

INVERSE QUERY

An inverse query is the opposite of the usual DNS query—that is, given a host's fully qualified domain name (FQDN), it determines the host's IP address. A special domain called in-addr.arpa exists for reverse name lookups.

Inverse queries use pointer (PTR) records. Instead of supplying a name and then asking for an IP address, the client first provides the IP address and then asks for the name.

The domain name **arpa** is a [top-level domain](#) (TLD) in the [Domain Name System](#) of the [Internet](#). It [now stands for](#) **Address and Routing Parameter Area.**