

Linked Records

A Smarter Alternative to CNAME and ALIAS Records

SOLUTION BRIEF

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Enterprises looking to shave time off of DNS lookups are hampered by the speed and reliability of additional, latency inducing CNAME lookups. NS1 addresses this problem with our unique Linked Record feature. Linked Records act like a CNAME, but resolve faster and can use all the intelligence and rich data associated with advanced records.

Traditional Approaches to Canonical Names

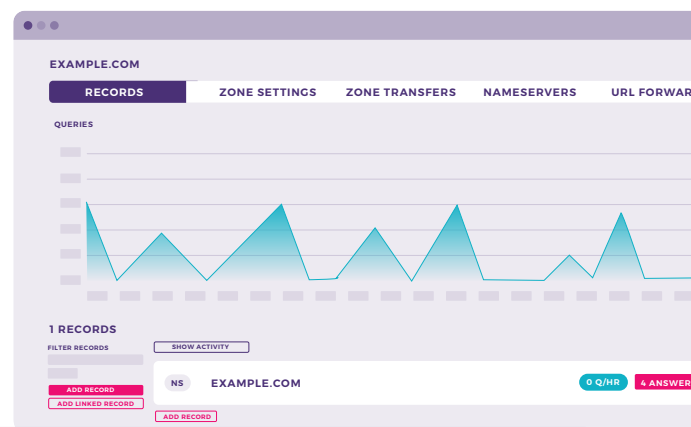
Since the inception of the DNS, the notion of a canonical name lookup, or CNAME, has been part and parcel of the experience. While the CNAME affords the ability to forward a lookup to another named resource, there are limitations.

- The CNAME resource record cannot exist with any other record on a given host label.
- The CNAME resource record cannot exist at the apex of a zone, necessitating the ALIAS record type.
- The CNAME resource record is unable to pass along additional information about the lookup.

A New Approach

NS1's Linked Records combine the forwarding ability traditionally associated with CNAME or ALIAS records, with the ingenuity of the NS1 platform. This functionality is analogous to the concept of a symlink in a UNIX operating system - a direct link to the named resource, unlike a traditional CNAME or ALIAS lookup which only returns the answer after all the authoritative lookups have been returned to the resolver.

Linked Records may only point to other records in NS1's authority: they never point to records outside of NS1. However, they can point to any record of any type that's configured in the NS1 platform, spanning zones and even crossing customer boundaries. This allows for the NS1 edge to treat the Linked Record just like its target, natively. This effectively eliminates extra DNS lookups, recursion, and provides full support for the NS1 Filter Chain, Data Feeds, and other industry exclusive features.



Linked records reduce management overhead and eliminate DNS round trips



Inter-zone, Cross-client Linking

Linked Records must point to zones hosted by NS1, but they can point to zones not under the ownership of the entity owning the Linked Record itself. Thus, for example, an enterprise can set up Linked Records to point to a CDN that hosts their DNS with NS1, or perhaps to the traffic managed domain for an advertising exchange.

There are benefits to the company using the Linked Record in place of the CNAME/ALIAS in cutting out an additional DNS lookup, and there are benefits of the owner of the target in the form of control and instantaneous propagation. When the configuration for a target record is changed by the owner of the record – new answers added, metadata updated, etc. – the changes immediately take effect across all Linked Records pointing to the target.



Application Optimization

Configuring an application like a CDN on standard DNS platforms requires customers to configure a CNAME or ALIAS record pointing to the hostname provided by the CDN. This introduces an additional DNS lookup to the CDN's authoritative DNS server, which adds additional latency and often reliance on multiple providers. The result is a negative impact to user experience and availability for your online property. If both you and your CDN use NS1 as the authoritative DNS you can instead create a Linked Record pointing at the CDN's domain. Lookups to your domain will be resolved using just one query to the NS1 platform, and will benefit from your CDN provider's full global load balancing configuration and real-time updates to NS1.

About NS1

NS1 optimizes delivery of the world's most critical internet and enterprise applications. Only NS1's platform is built on a modern API-first architecture that acts on real-time data and grows more powerful in complex environments, transforming DNS, DHCP, and IP Address Management (IPAM) into an intelligent, efficient, and automated system. NS1's technology drives dramatic gains in IT efficiency and application performance, reliability, and security for the largest global enterprises.



Privacy and Control

Another useful attribute of Linked Records is they can point to a target record that is not published on the internet - even domains that are invalid for external use such as client-record.company-name. Information that would otherwise be available via whois, dig and other tools is not exposed, and companies need to be explicitly made aware of the existence of the target in order to create a Linked Record pointing to it. This allows customers to maintain a higher level of privacy regarding the topology and other attributes of their delivery networks. Owners of link targets can also create customer-specific targets, allowing for additional control and flexibility in how the target can be configured.



Ease Of Implementation

Linked Record functionality is included in every NS1 account. The ability to create, update, and remove Linked Records exists in NS1's REST API and portal.

Compare

CNAME

Allows linking to external hostnames in a DNS zone (except at apex). Requires additional external lookups by resolving server.

ALIAS

Allows linking to external hostnames in a DNS zone, including from zone apex. Requires additional external lookups by NS1.

Linked Record

Allows linking to any resource within the NS1 platform, either within the same account or another account. Internally, the CNAME process is short-circuited - lookups are made in one pass within the NS1 system and the answer returned to the resolving server is an RFC compliant answer. Can be used with ALL record types.