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            Operational Guidelines for "local" zones in the DNS
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Abstract

A large number of DNS queries regarding to the "local" zones are sent
over the Internet in every second. This memo describes operational
guidelines to reduce the unnecessary DNS traffic as well as the load of
the Root DNS Servers.

1. Introduction

While it has yet been described in a RFC, .local is used to provide a
local subspace of the DNS tree. Formal delegation process has not been
completed for this TLD. In spite of this informal status, .local has
been used in many installations regardless of the awareness of the
users. Usually, the local DNS servers are not authoritative to the
.local domain, they end up to send queries to the Root DNS Servers.

There are several other DNS zones which describe the "local"
information. .localhost has been used to describe the localhost for
more than a couple of decades and virtually all of the DNS servers are
configured authoritative for .localhost and its reverse zone .127.in-

addr.arpa. However, there are other "local" zones currently used in the Internet or Intranets connected to the Internet through NATs or similar devices.

At a DNS server of an university in Japan, half of the DNS queries sent to one of the 13 Root DNS Servers were regarding to the .local. At another DNS Server running in one of the Major ISPs in Japan, the 1/4 were .local. If those "local" queries are able to direct other DNS servers than Root, or they can be resolved locally, it contributes the reduction of the Root DNS Servers.

2. Rationale

Any DNS queries regarding to "local" names should not be sent to the DNS servers on the Internet.

3. Operational Guidelines

Those queries should be processed at the DNS servers internal to each site so that the severs respond with NXDOMAIN rather than sending queries to the DNS servers outside.

The "local" names have common DNS suffixes which are listed below:

3.1. Local host related zones:

Following two zones are described in [Barr, 1996] and .localhost is also defined in [Eastlake, 1999] .

      o .localhost
      o .127.in-addr.arpa

Following two zones are for the loopback address in IPv6 [Hinden, 1998] . While the TLD for IPv6 reverse lookup is .arpa as defined in [Bush, 2001] , the old TLD .int has been used for this purpose for years [Thomson, 1995] and many implementations still use .int. So it is suggested that both zones should be provided for each IPv6 reverse lookup zone for a while.

      o 1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.ip6.int
      o 1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.ip6.arpa

3.2. Locally created name space

While the use of .local has been proposed in several Internet-Drafts, it has not been described in any Internet documents with formal status. However, the amount of the queries for .local is much larger than others, it is suggested to resolve the following zone locally:

     o .local

[3.3](). **Private or site-local addresses**

The following IPv4 "private" addresses [Rekhter, 1996] and IPv6 site-
local addresses [Hinden, 1998] should be resolved locally:

     o 10.in-addr.arpa
     o 16.172.in-addr.arpa
     o 17.172.in-addr.arpa
     o 18.172.in-addr.arpa
     o 19.172.in-addr.arpa
     o 20.172.in-addr.arpa
     o 21.172.in-addr.arpa
     o 22.172.in-addr.arpa
     o 23.172.in-addr.arpa
     o 24.172.in-addr.arpa
     o 25.172.in-addr.arpa
     o 26.172.in-addr.arpa
     o 27.172.in-addr.arpa
     o 28.172.in-addr.arpa
     o 29.172.in-addr.arpa
     o 30.172.in-addr.arpa
     o 31.172.in-addr.arpa
     o 168.192.in-addr.arpa
     o c.e.f.ip6.int
     o d.e.f.ip6.int
     o e.e.f.ip6.int
     o f.e.f.ip6.int
     o c.e.f.ip6.arpa
     o d.e.f.ip6.arpa
     o e.e.f.ip6.arpa
     o f.e.f.ip6.arpa

[3.4](). **Link-local addresses**

The link-local address blocks for IPv4 [IANA, 2002] and IPv6 [Hinden,
1998] should be resolved locally:

     o 254.169.in-addr.arpa
     o 8.e.f.ip6.int
     o 9.e.f.ip6.int
     o a.e.f.ip6.int
     o b.e.f.ip6.int
     o 8.e.f.ip6.arpa
     o 9.e.f.ip6.arpa
     o a.e.f.ip6.arpa

o b.e.f.ip6.arpa

[4](#). **Suggestions to developers**

[4.1](#). **Suggestions to DNS software implementors**

In order to avoid unnecessary traffic, it is suggested that DNS software
implementors provide configuration templates or default configurations
so that the names described in the previous section are resolved locally
rather than sent to other DNS servers in the Internet.

[4.2](#). **Suggestions to developers of NATs or similar devices**

There are many NAT or similar devices available in the market.
Regardless of the availability of DNS Servers in those devices, it is
suggested that those devices are able to filter the DNS traffic or
respond to the DNS traffic related to "local" zones by configuration
regardless of its ability of DNS service. It is suggested that this
functionality is activated by default.

[5](#). **IANA Consideration**

While .local TLD has yet defined officially, there are substantial
queries to the Root DNS Servers as of writing. About 1/4 to 1/2% of the
traffic sent to the Root DNS Servers are related to the .local zone.
Therefore, while it is not formally defined, it is suggested that IANA
delegates .local TLD to an organization.

The AS112 Project [Vixie,] serves authoritative DNS service for [RFC1918](#)
address and the link-local address. It has several DNS server instances
around the world by using BGP Anycast [Hardie, 2002] . So the AS112
Project is one of the candidates to host the .local TLD.

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