A Basic Guideline for Listing ISPs that Run IPv6
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Abstract

There are many web sites that give listings of IPv6 enabled service providers, or rate ISPs according to their IPv6 enabledness. This document intends to gather information about currently known sites and their methods of checking an ISPs enabledness. This document also summarizes a basic guideline that these listings may consider when checking an ISPs IPv6 enabledness.

Status of this Memo

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1. Introduction

There are many web sites that give listings of IPv6 enabled service providers, or rate ISPs according to their IPv6 enabledness. The following are few examples of currently known programs.

> IPv6 Enabled Program http://ipv6forum.org/ipv6_enabled/
>
> IPv6 Ripeness http://labs.ripe.net/content/ipv6-ripeness/
>
> SixXS http://www.sixxs.net/wiki/IPv6_Enabled_Service_Providers
>
> IPv6 to Standard http://ipv6-to-standard.org/
>
> Hurricane Electric Free IPv6 Certification http://ipv6.he.net/certification/

There are several motivations for these listings which benefit both the ISPs and the users. It gives ISPs a goal to work for in turning up IPv6. It also can be used by ISPs for publicity (in telling the world that their service is ready for IPv4 address exhaustion). Listings can also be a guide for users when they choose their ISP.
This document intends to gather information about currently known listings, and to summarize a basic guideline that can be used when starting a new program of the like. There are many reason (such as localization) that a new listing is started albeit the fact that there already is one. A presence of a guideline would help those that intend to start such programs. It may also help in keeping one listing or rating guideline from being widely different from another, so it would not confuse users who decided to choose ISPs on the basis that the ISP is on one of these IPv6 enabled service provider listings.

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 (Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," March 1997.) [RFC2119].

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2. Summary of the Current Situation

The following are the list of currently known programs that list or
rate ISPs according to a guideline that each has determined.

> IPv6 Enabled Program http://ipv6forum.org/ipv6_enabled/
>
> IPv6 Ripeness http://labs.ripe.net/content/ipv6-ripeness/
>
> SixXS http://www.sixxs.net/wiki/IPv6_Enabled_Service_Providers
>
> IPv6 to Standard http://ipv6-to-standard.org/
>
> Hurricane Electric Free IPv6 Certification http://ipv6.he.net/
> certification/

note: the following description of each program is not yet complete.

2.1. IPv6 Enabled Program

The IPv6 enabled program lists ISPs at two levels: basic and advanced.
At the time of this writing, the advanced level list has not been
started yet. The basic requirements for being listed in the basic list
are, to have a prefix assigned or allocated (IPv6 enabled program does
not check if the prefix is an assignment or allocation), have a global
AS route it, and keep reachability as much as possible.
The IPv6 Enabled Program checks the following.

2.1.1. Network Accessibility Ability

The ISP's AS number is checked against a database to see if the AS
exists and is unique.

2.1.2. Active IPv6 Address Requirement

The ISP's IPv6 prefix is checked against a database to see if the
applying ISP is the rightful owner. Actual traffic to the prefix from a
customer is also checked. Checking at the time of writing is done by
using a script that the ISP will paste to a web site, and the script
checks if it was accessed via IPv6.

2.1.3. Persistence of IPv6 service Ability

The check noted in the previous section is done periodically to check global reachability.

2.2. IPv6 Ripeness

IPv6 Ripeness is part of a study conducted by RIPE NCC. Stars are given to LIRs registered in the RIPE NCC service region by checking there status in IPv6 deployment.

2.2.1. Criteria

Stars are earned by checking the following criteria.

    *Have an IPv6 prefix allocated or a PI assigned.

    *Prefix is visible in the Routing Information System(RIS).

    *A route6 object is registered in the RIPE database.

    *Reverse DNS is setup for the IPv6 prefix.

2.3. Summary of the Checking Criteria

The programs discussed in this section share these criteria in common.

    *Have an IPv6 prefix allocated or a PI assigned.

    *Prefix is visible in a routing database.

IPv6 Ripeness also checks if a route6 is registered (have good routing manners), and a reverse DNS is set up. IPv6 Enabled Program checks for actual traffic which requires the presence of an active web server inside the ISP.

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3. Guidelines for Listing an IPv6 Enabled ISP

3.1. Scope of the Guideline

This guideline can be used to check any LIR or a PI address holder, that claims to be an ISP. The guideline is only intended to check an ISP's network accessibility. In turn, this guideline can also be used as a minimum requirement checklist by ISPs who want to newly turn up IPv6 in their network.

3.2. Levels of the Listing

We divide the listing into two levels, basic and advanced. Basic level is what is absolutely necessary for any ISP to claim that they have some form of IPv6 working. The basic level will not guarantee that the ISP has a fully working or production quality IPv6 network. The advanced level will take the requirements one step further in bring the level of deployment closer to the quality of the IPv4 network. It checks for the basics needed to achieve any of the service types defined in the General Terminology section in [RFC4084] (Klensin, J., "Terminology for Describing Internet Connectivity," May 2005.).

3.3. Basic

The basic level listing checks an ISP to meet the following criteria.

   *Have an IPv6 prefix allocated or a PI assigned.

   *Prefix is visible in at least one routing database.

   *Have at least one server with an IPv6 address where accessibility can be checked.

3.4. Advanced

The advanced level listing checks an ISP to meet the following criteria.

*Reverse DNS for is set up for allocated prefixes.

*DNS cache servers are accessible via IPv6 transport.

*Path MTU discovery [RFC1981] (McCann, J., Deering, S., and J. Mogul, "Path MTU Discovery for IP version 6," August 1996.) is functional and is not filtered.

*Prefix visibility is seen in at least two routing databases belonging in different regions of the world.

3.5. Considerations

The listings can be made more useful if checking is done according to the target users of the ISP service. ISP for residential, ISP for ISPs (transit providers), ISP for enterprises, and ISP for data centers have different requirements. This document does not go into discussing the requirements for each type of services are. This document intends to discuss the requirements that should be common to any services provided by any ISP.

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4. Security Considerations

None.

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5. IANA Considerations

None.

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6. Acknowledgements

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7. References

7.1. Normative References

7.2. Informative References

[RFC1981]	McCann, J., Deering, S., and J. Mogul, "Path MTU Discovery for IP version 6," RFC 1981, August 1996 (TXT).
[RFC2119]	Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels," BCP 14, RFC 2119, March 1997 (TXT, HTML, XML).
[RFC4084]	Klensin, J., "Terminology for Describing Internet Connectivity," BCP 104, RFC 4084, May 2005 (TXT).

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