

# DFZ, pLIRs and the 6bone

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# Goals of this presentation:

Semantics clarifications.

Provoke thoughts about the future of the IPv6 Internet backbone.

Suggest some changes to RFC 2772.

# Semantics

Problem at hand: define “IPv6 DFZ”.

What does it mean?

Default-Free Zone

But what is it exactly?

# Semantics

## IPv4 DFZ:

The subset of routers that do not have a default route and do not receive a full routing table from a single peer.

In the current IPv4 tiered system, the DFZ is the inter-connected full mesh of tier-1 providers. Tier-1 ISPs do not pay anyone for transit, resulting in them being fully meshed.

# Semantics

There is a difference between the IPv4 DFZ and the IPv4 DFZ's routing table.

The IPv4 DFZ's routing table extends beyond the DFZ's boundaries (for example, to multihomed customers).

One of today's IPv4 issues is the size of the DFZ's routing table.

# Semantics

Then, what is the IPv6 DFZ?

If the v4 definition is to be used for v6, there is no such thing as an IPv6 DFZ today.

The definition of the IPv6 DFZ is based on our guess of the evolution of the IPv6 Internet.

# Semantics

We see three possible scenarios:

1. Centralized backbone, Arpanet / NSFnet style.  
Unlikely.

2. Competing but interconnected backbones. This is the current tier-1 system. Likely.

3. No major backbone(s) but large scale direct interconnection between smaller networks.

Is this a realistic possibility?

# Semantics

There is no direct relation between being a Local Internet Registry and being a tier-1 ISP.

“8K DFZ” doubly does not make any sense because only tier-1 are part of the DFZ and because there is no 8K limit anymore. RIRs are giving out /32s = 512M routing table!? Do we need/want hierarchical address allocation?

We need a replacement for “pTLA”, as “TLA” does not exist anymore. Since the closest replacement is LIR, “pLIR” is suggested.

# Semantics

IF scenario 3 is what happens:

Then what is the definition of “IPv6 DFZ” ?  
(because the v4 definition does not match anything).

A possible definition is that the DFZ will be a backup only localized at one or more exchanges.

# Food for thought

Is scenario 2 the only one?

If yes, does the 6bone / IETF have a role in recommendations, or do we just accept the fact the current v4 tier-1 will become v6 tier-1 as well?

If not, please speak up about what you think the peering structure should be.

# Changes to RFC 2772

Make the 6bone more “production quality” requires some hardening of the rules.

Software of 6bone routers is not always current, this has caused problems. The updated RFC could require keeping router software current.

Obsolete the term “pTLA” and replace it with something more appropriate such as “pLIR”.

**Thank you for your time and  
attention**