IPv6 Assignments for hosting providers

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(through proxy, called Jan)

IPv6 assignment for hosting operators

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1. Introduction

2. Webhosting

2.1. HTTP web hosting

In IPv4 setups web hosting is normally done running more than one website on a single IPv4 address using the HTTP Host-header. *Is there a reason to keep this approach when assigning IPv6 address or shall we provide one IP per website? The hosting ISP could provide these from a local pool like 2001:db8:1::[1...ffff]. However, virtual hosts work reliably enough to put them under one IP address e.g. per physical server.*

2.2. HTTPS web hosting

One of the few exceptions where IPv4-address based virtual hosting was done is if SSL is used so the webserver can decide which certificate to use. SNI (Server Name Indication) has become widely implemented in browsers (with a few exceptions) which enables the web browser to transmit the requested host inside the TLS header.

Should the recommendations be to use one-IPv6-address-per-certificate like on IPv6 or should this not be a recommendation because SNI is widely enough implemented by now? If the answer is against SNI, it will also have an impact on the choice for HTTP because we can not split websites among different IP addresses for IPv4 and IPv6.

2.3. FTP hosting

FTP servers are still popular for software projects, mirror servers etc. It is normally configured as one-IP-per-server but RFC 7151 defines a HOST command in FTP.

Is this important enough to cover this here?

3. Virtual machines/dedicated servers

3.1. For customers

Hosting providers offer virtual machines and dedicated servers to rent. On IPv4 servers normally get assigned a single IPv4 address. More B2B oriented providers assign IPv4 networks like /30 or bigger sometimes on dedicated VLANs.

On IPv6, many providers offer a single IPv6 address within a /64 network. The network is shared with other customer's servers. Other providers assign a dedicated /64 to a customer's server or networks like a /56 or even /48 per customer.

How should providers configure IPv6 for virtual or physical servers? Does the rule "one /48 per customer per location" apply or is the "one /128 per server"-rule useful and recommended?

3.2. For internal purposes

Does an ISP actually need help in assigning IPv6 addresses for their internal servers?

Internal servers of ISPs for DNS, Radius, E-Mail etc. also require IPv6 addresses. In IPv4 network engineers use different ways of assigning IPv4 addresses to servers:

- Servers receive a single subnet of IPv4 addresses. This is portable between locations but a waste of addresses.
- Servers receive a single IPv4 address within their local network. This safes addresses but renumbering is required when the server needs to be moved to a different LAN or another location.
- In addition to a single IPv4 address within a LAN with several servers, servers receive a single IPv4 address (/32) for providing their actual services (e.g. Radius). If a server needs to be moved, this /32 could be re-routed.

Call for co-authors

- https://docs.google.com/document/d/13iq69BogimEHER7opMj9u2-V6Y1oXaSnnubxyGUMuhs/edit?usp=sharing

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…for being part of this document.