Addressing architecture at NIIF/HUNGARNET (case study)

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NIIF - HUNGARNET NATIONAL ACADEMIC BACKBONE NETWORK
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http://www.nif.hu
## IPv6 address space – based on flexible address allocation RFC3531

<table>
<thead>
<tr>
<th>Location</th>
<th>IPv6 POP addressing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNTRL (Central)</td>
<td>2001:0738:0::/36</td>
</tr>
<tr>
<td>Gödöllő</td>
<td>2001:0738:58::/44</td>
</tr>
<tr>
<td>BME (Budapesti Műszaki és Gazdaságtudományi Egyetem)</td>
<td>2001:0738:2000::/44</td>
</tr>
<tr>
<td>KFKI</td>
<td>2001:0738:5000::/44</td>
</tr>
<tr>
<td>SZEGED</td>
<td>2001:0738:7000::/44</td>
</tr>
<tr>
<td>MISKOLC</td>
<td>2001:0738:6000::/44</td>
</tr>
<tr>
<td>PECS</td>
<td>2001:0738:7800::/44</td>
</tr>
</tbody>
</table>
Site addressing

Each site (including site infrastructure) get /48:

- each NIIF managed site the 16 bit SLA is allocated based on the following convention: <SLA> = Address segmentation within the POP

Where for <SLA>:

- Range: 0000 till 00FF: Loopback addresses
- Range: 0100 till 01FF: Intra-pop point-to-points (if it necessary to number it)
- Range: 0200 till 02FF: connections to HUNGARNET member of institution
- Range: 0300 till 03FF: external IPv6 connectivity (e.g. local IPv6 peering)
- Range: 0400 till 04FF: POP Local Ethernets
IPv6 loopback addresses

- Loopback address will also be used for operational and management actions on the equipment, and for routing protocols like iBGP, which will use these addresses for terminating the peering-sessions.
- Loopback addresses have typically a prefix mask of /128. This will avoid unnecessary unused addresses although address conservation is not really an issue in IPv6.
Link IPv6 addresses?

• Not necessary!
  – OSPFv3 is working with link-local
  – IS-IS not necessary

• IGP table can quite small! – helps on convergence!

• Customer network is propagated into BGP (even if static routes are used)
  – not with redistribute
  – with network statement