IPv6 Address Planning
Agenda

• IPv6 Address Structure

• IPv6 Subnetting

• Nibble Boundary

• Example: ISP

• Example: Enterprise and Campus
IPv6 Address Recap

- **Network Prefix**: 0 to 63
- **Interface ID**: 64 to 127
- **ISP /32**: 0 to 32
- **Customer Site /48**: 32 to 48
- **End Site Subnet /64**: 48 to 64
- **Device 128 Bit Address**: 64 to 128
Agenda

• IPv6 Address Structure
• IPv6 Subnetting
• Nibble Boundary
• Example: ISP
• Example: Enterprise and Campus
Subnetting (Example)

- Provider A has been allocated
  
  2001:DB8::/32

  - will delegate /48 blocks to its customers

Q. Find the blocks provided to the **first 4** customers
Subnetting (Example)

Original block: 2001:0DB8::/32

Rewrite as a /48 block: 2001:0DB8:0000::/48

This is your network prefix!

How many /48 blocks are there in a /32?

2^{16} = 65536

Find only the first 4 /48 blocks…
Subnetting (Example)

Start by manipulating the LSB of your network prefix – write in bits

```
2001:0DB8:0000::/48
```

In bits

```
2001:0DB8: 0000 0000 0000 0000 ::/48  ➔  2001:0DB8:0000::/48
2001:0DB8: 0000 0000 0000 0001 ::/48  ➔  2001:0DB8:0001::/48
2001:0DB8: 0000 0000 0000 0010 ::/48  ➔  2001:0DB8:0002::/48
2001:0DB8: 0000 0000 0000 0011 ::/48  ➔  2001:0DB8:0003::/48
```

Then write back into hex digits
Exercise 1.1: IPv6 subnetting

Identify the first four /36 sub-prefixes out of 2406:6400::/32

1. _________________
2. _________________
3. _________________
4. _________________

Hex | Binary
---|---
0   | 0000
1   | 0001
2   | 0010
3   | 0011
4   | 0100
5   | 0101
6   | 0110
7   | 0111
... | ...
c   | 1100
d   | 1101
e   | 1110
f   | 1111
Exercise 1.2: IPv6 subnetting

Identify the **first four /35** sub-prefixes out of 2406:6400::/32

1. ____________________
2. ____________________
3. ____________________
4. ____________________

<table>
<thead>
<tr>
<th>Hex</th>
<th>Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0000</td>
</tr>
<tr>
<td>1</td>
<td>0001</td>
</tr>
<tr>
<td>2</td>
<td>0010</td>
</tr>
<tr>
<td>3</td>
<td>0011</td>
</tr>
<tr>
<td>4</td>
<td>0100</td>
</tr>
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<td>5</td>
<td>0101</td>
</tr>
<tr>
<td>6</td>
<td>0110</td>
</tr>
<tr>
<td>7</td>
<td>0111</td>
</tr>
<tr>
<td></td>
<td>...</td>
</tr>
<tr>
<td>c</td>
<td>1100</td>
</tr>
<tr>
<td>d</td>
<td>1101</td>
</tr>
<tr>
<td>e</td>
<td>1110</td>
</tr>
<tr>
<td>f</td>
<td>1111</td>
</tr>
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Agenda

- IPv6 Address Structure
- IPv6 Subnetting Brief Review
- **Nibble Boundary**
- Example: ISP
- Example: Enterprise and Campus
What is a nibble boundary?

• In the context of IPv6, the nibble boundary refers to 4 bits. Any change in multiples of 4 bits is easy to calculate.

https://blog.apnic.net/2018/08/10/how-to-calculating-ipv6-subnets-outside-the-nibble-boundary/
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<td>2001:db8:1000::/36</td>
</tr>
<tr>
<td>2001:db8:2000::/36</td>
</tr>
<tr>
<td>2001:db8:3000::/36</td>
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<tr>
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<td>2001:db8:0100::/40</td>
</tr>
<tr>
<td>2001:db8:3000::/36</td>
<td>2001:db8:0300::/40</td>
</tr>
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Agenda

• IPv6 Address Structure
• IPv6 Subnetting Brief Review
• Nibble Boundary
• **Example: ISP**
• Example: Enterprise and Campus
IPv6 Address Planning

• Network Operators normally are allocated /32 by RIRs

![Diagram](image.png)

• Global Routing prefix /48
  o /48, /52, /56… (ISPs to end site)
  o upstream could filter anything smaller
  o Consider the routing table size!
IPv6 BGP Routing Table

http://www.cidr-report.org/ 20190831
IPv6 Address Planning Considerations

- Shift in thought:
  - IPv4: number of hosts
    - For example, 5 hosts -> 7 addresses -> /29
  - IPv6: number of subnets!
    - For example, one VLAN -> one subnet -> one /64
IPv6 Address Planning Considerations

- Future traffic engineering needs?

Contiguous assignment

- Customer 4
- Customer 3
- Customer 2
- Customer 1

Split assignment

- Customer 1
- Customer 3
- Customer 2
- Customer 4
Example Topology of ISP

Internet

ISP network
Example Topology of ISP

Enterprise customers

Internet

ISP network

Enterprise customers

Enterprise customers

Broadband customers

Broadband customers
Address Planning of ISP

- For example, the ISP has been allocated 2001:db8::/32 by RIR.
Example Topology of ISP

Enterprise customers

Internet

ISP network

Enterprise customers

Broadband customers

Enterprise customers

Broadband customers
Address Planning: ISP Infrastructure

- Dedicate a /40 (or /48) for the backbone infrastructure
  - Every infrastructure assignment from this block!
  - Carried by IGP (NOT iBGP)
Address Planning: ISP Infrastructure

2001:db8::/32

2001:db8:0000::/40
For ISP infrastructure
ISP Infrastructure Elements

- Loopback addresses for each node
ISP Infrastructure Elements

- Loopback addresses for each node
- Point-to-Point links
ISP Infrastructure Elements

- Loopback addresses for each node
- Point-to-Point links
- Internal Server LAN
  - also called NOC LAN
  - not seen from outside

ISP

External servers

Internal servers
ISP Infrastructure Elements

- Loopback addresses for each node
- Point-to-Point links
- Internal Server LAN
  - also called NOC LAN
  - not seen from outside
- External Server LAN
  - Mail, DNS, etc
Address Planning: ISP Infrastructure

• Loopbacks
  o Generally one /48 (/60 and /64 also common) for all loopbacks
  o /128 as loopback
Address Planning: ISP Infrastructure

- 2001:db8::/32
- 2001:db8:0000::/40
  - For ISP infrastructure
- 2001:db8:0000::/48
  - For Loopback Addresses
IPv6 Address Plan: ISP Infrastructure

2001:db8:0000::/48 For Lookback Addresses

<table>
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<tr>
<th>Address Block</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001:db8:0000::/48</td>
<td>Loopback Addresses</td>
</tr>
<tr>
<td>2001:db8:0000:0000::/128</td>
<td>Reserved</td>
</tr>
<tr>
<td>2001:db8:0000:0000::1/128</td>
<td>Core1 L0</td>
</tr>
<tr>
<td>2001:db8:0000:0000::2/128</td>
<td>Core2 L0</td>
</tr>
<tr>
<td>2001:db8:0000:0000::3/128</td>
<td>Core3 L0</td>
</tr>
<tr>
<td>2001:db8:0000:0000::4/128</td>
<td>Core4 L0</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
Address Planning: ISP Infrastructure

- Point-to-Point links (Ex: /48 for all P2P links)
  - Assign /64 per link (RFC3177);
  - /127 (RFC6164/6547)
    - Reserve /64 per link but use /127
Address Planning: ISP Infrastructure

2001:db8::/32

- 2001:db8:0000::/40
  For ISP infrastructure

- 2001:db8:0001::/48
  For Point-to-Point Links
IPv6 Address Plan: ISP Infrastructure

2001:db8:0001::/48  For Point-to-Point Links

<table>
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<th>Address Block</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2001:db8:0001::/48</td>
<td>Point-to-Point Links</td>
</tr>
<tr>
<td>2001:db8:0001:0000::/64</td>
<td>Reserved for future</td>
</tr>
<tr>
<td>2001:db8:0001:0001::/64</td>
<td>Core1 GE1 &lt;-&gt; Core2 GE1</td>
</tr>
<tr>
<td>2001:db8:0001:0002::/64</td>
<td>Core2 GE2 &lt;-&gt; Core3 GE1</td>
</tr>
<tr>
<td>2001:db8:0001:0003::/64</td>
<td>Core3 GE2 &lt;-&gt; Core4 GE1</td>
</tr>
<tr>
<td>2001:db8:0001:0004::/64</td>
<td>Core4 GE2 &lt;-&gt; Core1 GE2</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
IPv6 Address Plan: ISP Infrastructure

- Internal Server/NOC LAN
  - /60 (if different subnets within the NOC), or /64
Address Planning: ISP Infrastructure

2001:db8::/32

2001:db8:0000::/40
For ISP infrastructure

2001:db8:0002::/60
For Internal Server/NOC LAN
IPv6 Address Plan: ISP Infrastructure

- **Internal Server/NOC LAN**
  - /60 (if different subnets within the NOC), or /64

- **External Server LAN**
  - /64 (allows up to $2^{64}$ services to be hosted)
Address Planning: ISP Infrastructure

- 2001:db8::/32
- 2001:db8:0000::/40 For ISP infrastructure
- 2001:db8:0003::/64 For External Server LAN

(Rest in the infrastructure block is reserved for future use.)
IPv6 Address Planning: ISP Customers

• How about the IPv6 address assignments to customers?

  For example,

  o Enterprise customers

  o Broadband customers
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers

Region 2
Enterprise customers

Region 3
Enterprise customers

Region 4
Enterprise customers

Internet

ISP network
IPv6 Address Plan: Enterprise Customers

- Consider regional delegation
  - Aggregation in mind!
  - For example, /40 per region
IPv6 Address Plan: Enterprise Customers

- Consider regional delegation
  - Aggregation in mind!
  - For example, /40 per region

```
2001:db8::/32

2001:db8:0000::/34
2001:db8:4000::/34
2001:db8:8000::/34
2001:db8:c000::/34
```

- For Region 1
  - Enterprise Customers
- For Region 2
  - Enterprise Customers
- For Region 3
  - Enterprise Customers
- For Region 4
  - Enterprise Customers
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise customers
2001:db8:c000::/40
IPv6 Address Plan: Enterprise Customers

- One /48 per customer
  - Could be transit customers or leased line customers
  - Could be given additional /48s as they grow (more than 65K subnets)

- We also see ISPs give:
  - /52 or /56 to mid-sized customers
  - /60 for very small customers
  - /64 to end sites NOT recommended!!
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise customers
2001:db8:C000::/40

Internet

ISP network
IPv6 Address Plan: Region 2 Enterprise Customers

2001:db8::/32

2001:db8:4000::/34

2001:db8:4000::/40

For Region 2 Enterprise Customers
IPv6 Address Plan: Region 2 Enterprise Customers

2001:db8::/32

2001:db8:4000::/34

2001:db8:4001::/48 for Region 2 Enterprise Customer 1

For Region 2 Enterprise Customers

2001:db8::/32
IPv6 Address Plan: Region 2 Enterprise Customers

2001:db8::/32

2001:db8:4000::/34

2001:db8:4002::/48 for Region 2 Enterprise Customer 2
2001:db8:4001::/48 for Region 2 Enterprise Customer 1
IPv6 Address Plan: Region 2 Enterprise Customers

2001:db8::/32

2001:db8:4000::/34

2001:db8:4000::/40
For Region 2 Enterprise Customers

- 2001:db8:4003::/48 for Region 2 Enterprise Customer 3
- 2001:db8:4002::/48 for Region 2 Enterprise Customer 2
- 2001:db8:4001::/48 for Region 2 Enterprise Customer 1
IPv6 Address Plan: Customer WAN links

- Dedicate a /48 block for customer WAN links
  - Helps to monitor customer links
  - Not to be mistaken with the trusted infra PtP block!
  - Actual addressing still the same:
    - Reserve /64 and use /127

- Carried in iBGP (not IGP)
  - Aggregated at the Gateway router or POP routers
IPv6 Address Plan: Region 2 Customer WAN Link

2001:db8::/32

2001:db8:4000::/34

First /32

2001:db8:4000::/32
For Region 2 Customers

2001:db8:4000::/40

First /48

2001:db8:4000::/48
For Region 2 Customer WAN Link
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise customers
2001:db8:C000::/40

Internet

ISP network

WAN Links
2001:db8:4000::/48
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise customers
2001:db8:c000::/40

ISP network

WAN Link 1
2001:db8:4000:1::/64

WAN Link 2
2001:db8:4000:2::/64

WAN Link 3
2001:db8:4000:3::/64
Example Topology: ISP with Enterprise Customers

Region 1
Enterprise customers

Region 2
Enterprise customers

Region 3
Enterprise customers

Region 4
Enterprise customers
Example Topology: ISP with Broadband Customers

Region 1
Broadband customers

Region 2
Broadband customers

Region 3
Broadband customers

Region 4
Broadband customers
IPv6 Address Planning:
ISP Broadband Customers

- Dedicate a /40 (or bigger) for Broadband network
  - /48s out of the /40 to each BRAS (up to 65K BRASes)
  - Announced in iBGP by BRAS
Example Topology: ISP with Broadband Customers

ISP network

Region 1
Broadband customers
2001:db8:0200::/40

Region 2
Broadband customers
2001:db8:4100::/40

Region 3
Broadband customers
2001:db8:8100::/40

Region 4
Broadband customers
2001:db8:c100::/40

Internet
Example Topology: ISP with Broadband Customers

Region 1 Broadband customers
2001:db8:0200::/40

Region 2 Broadband customers
2001:db8:4100::/40

Region 3 Broadband customers
2001:db8:8100::/40

Region 4 Broadband customers
2001:db8:c100::/40

ISP network

Internet
## Example Topology: ISP with Broadband Customers

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<td>Region 4 Broadband customers</td>
</tr>
<tr>
<td>2001:db8:c100::/48</td>
<td>BRAS1 Address Pool</td>
</tr>
<tr>
<td>2001:db8:c101::/48</td>
<td>BRAS2 Address Pool</td>
</tr>
<tr>
<td>2001:db8:c102::/48</td>
<td>BRAS3 Address Pool</td>
</tr>
<tr>
<td>2001:db8:c103::/48</td>
<td>Reserved for future BRAS</td>
</tr>
<tr>
<td>2001:db8:c1ff::/48</td>
<td>Reserved for future BRAS</td>
</tr>
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</table>

- **BRAS1 Address Pool**: 2001:db8:c100::/48
- **BRAS2 Address Pool**: 2001:db8:c101::/48
- **BRAS3 Address Pool**: 2001:db8:c102::/48
Example Topology: ISP with Broadband Customers

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IPv6 Address Plan: Broadband Customer

- Depends on your deployment
  - ND-R.A for CPE WAN side
    - A /64 prefix on BRAS can still support $2^{64}$ CPEs through SLAAC
  - DHCPv6-PD for CPE LAN side
    - A /48 pool on each BRAS (65k /64s can be delegated)
Example Topology: ISP with Broadband Customers

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<tr>
<td>2001:db8:c100:0000::/64</td>
<td>CPE WAN side</td>
</tr>
<tr>
<td>2001:db8:c100:0001::/64</td>
<td>Home 1</td>
</tr>
<tr>
<td>2001:db8:c100:0002::/64</td>
<td>Home 2</td>
</tr>
<tr>
<td>2001:db8:c100:0003::/64</td>
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</tr>
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Example Topology: ISP with Broadband Customers

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IPv6 Address Plan: DC services

- DC infra blocks from your infra block
  - Loopbacks
  - PtP links

- dedicate /40 for Data Center (hosted) services
  - Depends on DC architecture
  - Dedicated VLAN/subnet per service?
    - /64 per VLAN/subnet (2^64 servers)
  - Dedicated subnet per customer (customer buys VMs/hosts services)?
    - /64 per customer or subnet (2^64 VMs)
  - Announced in iBGP (DC border router)
IPv6 Address Plan: Traffic Shaping

- If the ISP has been multihomed to transit providers. (Borrow from IPv4)
  - sub-aggregates to shape traffic
  - Difficult with contiguous assignment

- Assign customer prefixes (that attract traffic) from both ends of address space
  - Infrastructure prefix do not attract traffic
IPv6 Address Plan: Traffic Shaping

- Customer prefixes assigned from each /33 sub-prefix
  - Similar to IPv4 sub-aggregates!
  - Allows us to balance incoming traffic
IPv6 Address Plan: Routing

- IGP to carry next-hop reachability information
  - Infrastructure blocks (PtPs, loopbacks)
  - Aggregation desirable in IGP

- Customer prefixes (Enterprise, broadband, DC customers/services)
  - Sub-aggregates for traffic shaping (multihoming)
  - Consider regional delegation
  - iBGP carries all customer prefixes
    - Aggregation may interfere with traffic shaping
  - Aggregation necessary in eBGP (pull up routes)
Agenda

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• Nibble Boundary
• Example: ISP
• Example: Enterprise and Campus
Background: Example Topology of ISP

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Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise & Campus customers
2001:db8:c000::/40
Background: Example Topology of ISP

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise & Campus customers
2001:db8:c000::/40

ISP network

Internet
Example Topology of Enterprise Network

2001:db8:4001::/48 for Region 2 Enterprise Customer 1

- 2001:db8:4001::/48
- 2001:db8:4001:0::/52  Infrastructure
- 2001:db8:4001:XYZZ::/64

Building NO.
Department
VLAN
Example Topology of Enterprise Network

2001:db8:4001::/48 for Region 2 Enterprise Customer 1

<table>
<thead>
<tr>
<th>Address Block</th>
<th>Comment</th>
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<tbody>
<tr>
<td>2001:db8:4001::/48</td>
<td></td>
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<tr>
<td>2001:db8:4001:0000::/52</td>
<td>Enterprise Infrastructure</td>
</tr>
<tr>
<td>2001:db8:4001:1000::/52</td>
<td>Building 1</td>
</tr>
<tr>
<td>2001:db8:4001:2000::/52</td>
<td>Building 2</td>
</tr>
<tr>
<td>2001:db8:4001:3000::/52</td>
<td>Building 3</td>
</tr>
<tr>
<td>2001:db8:4001:4000::/52</td>
<td>Building 4</td>
</tr>
<tr>
<td>2001:db8:4001:5000::/52</td>
<td>Building 5</td>
</tr>
<tr>
<td>2001:db8:4001:6000::/52</td>
<td>Reserved for future</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>2001:db8:4001:f000::/52</td>
<td>Reserved for future</td>
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### Example Topology of Enterprise Network

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### Example Topology of Enterprise Network

![Diagram of an enterprise network topology](image)

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<tr>
<td>2001:db8:4001::/48</td>
<td></td>
</tr>
<tr>
<td>2001:db8:4001:000::/52</td>
<td>Enterprise Infrastructure</td>
</tr>
<tr>
<td>2001:db8:4001:1000::/52</td>
<td>Building 1</td>
</tr>
<tr>
<td>2001:db8:4001:1000::/52</td>
<td>Reserved for future</td>
</tr>
<tr>
<td>2001:db8:4001:1100::/56</td>
<td>Building 1 Department A</td>
</tr>
<tr>
<td>2001:db8:4001:1200::/56</td>
<td>Building 1 Department B</td>
</tr>
<tr>
<td>2001:db8:4001:1300::/56</td>
<td>Building 1 Department C</td>
</tr>
<tr>
<td>2001:db8:4001:1400::/56</td>
<td>Reserved for future</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>2001:db8:4001:1f00::/56</td>
<td>Reserved for future</td>
</tr>
</tbody>
</table>
Example Topology of ISP

Region 1
Enterprise customers
2001:db8:0100::/40

Region 2
Enterprise customers
2001:db8:4000::/40

Region 3
Enterprise customers
2001:db8:8000::/40

Region 4
Enterprise & Campus customers
2001:db8:c000::/40

ISP network
Internet

2001:db8:c001::/48 for Region 4 Campus Customer 1
Example Topology of Campus Network

2001:db8:c001::/48 for Region 4 Campus Customer 1

2001:db8:c001::/48
2001:db8:c001:0::/52 Infrastructure
2001:db8:c001:XXZZ::/64

VLAN
Department or User group
Example Topology of Campus Network

2001:db8:c001::/48 for Region 4 Campus Customer 1

2001:db8:c001:XXZZ::/56

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<td></td>
</tr>
<tr>
<td>2001:db8:c001:0000::/52</td>
<td>Campus Infrastructure</td>
</tr>
<tr>
<td>2001:db8:c001:1100::/56</td>
<td>Department 1</td>
</tr>
<tr>
<td>2001:db8:c001:1200::/56</td>
<td>Department 2</td>
</tr>
<tr>
<td>2001:db8:c001:1300::/56</td>
<td>Department 3</td>
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<tr>
<td>2001:db8:c001:1400::/56</td>
<td>Department 4</td>
</tr>
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Overview

- IPv6 Address Structure
- IPv6 Subnetting
- Nibble Boundary
- Example: ISP
- Example: Enterprise and Campus
IPv6@APNIC

What is IPv6?

Internet Protocol addresses, or IP addresses, are a core part of how the Internet operates. Every device needs an IP address to connect to the Internet and communicate with other computers, networks and devices. Internet Protocol version 6 (IPv6) is the next generation of the Internet protocol. It was developed to succeed version 4 (IPv4) as IPv4 addresses have almost run out globally. While there are only 3.7 billion unique IPv4 addresses available for use on the Internet, the theoretical IPv6 address pool size is 340 trillion trillion trillion addresses. IPv6 addresses comprise 128 bits and they are usually shown as sequences of hexadecimal digits, separated by a colon character ( : ).

IPv6 example address: 2001:0db8:85a3:0000:0000:8a2e:0370:7334

Each group is up to four hexadecimal digits long, and each address is made of up to eight groups.
APNIC Helpdesk Chat

Helpdesk
APNIC Helpdesk provides assistance to all on matters related to APNIC Services, such as membership and IP address enquiries.

APNIC Helpdesk offers (through prior arrangement) multi-language phone support for the following: Bahasa Indonesia, Bahasa Malaysia, Burmese, Cantonese, English, Filipino (Tagalog), Hindi, Japanese, Mandarin, Sinhalese, Tamil and Telugu.

You may also find our FAQs helpful with your enquiries.

Contact details
Helpdesk hours
09:00 to 21:00 (UTC +10)
Monday – Friday
(closed for some public holidays)

Chat

Skype
Call

ID: apnic-helpdesk

Email
helpdesk@apnic.net

Phone
+61 7 3858 3188
helpdesk@voip.apnic.net
Using VoIP
+ 61 7 3858 3199

Fax

Service Updates
Upgrade edge router firmware

Start: Thursday, 31 January 2019 07:00 AM (UTC +10)
End: Thursday, 31 Jan 2019 08:00 AM (UTC +10)

This maintenance is required to upgrade our edge router firmware in DC2. There may be one or two interruptions to the services listed above for a maximum of 30 minutes within the change window.

More Updates

Subscribe to APNIC Service Announcements
Learn more about system maintenance
Any questions?
Thank You!