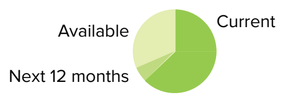
# 6MAP

IPv6 Address Planning

## /60




NOTES
- 2001:db8:def1::/60 and 2001:db8:deff::/60 not used
- (16) /64 remaining for /60

**IPv6 Allocation**
**2001:db8:de00::/40**

CREATED
01/26/2015

| | | | |
|---|---|---|---|
| **Data Center 5** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 6** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 7** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 8** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 9** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 10** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgro** :1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 11** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **g**:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **g** 56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 12** 2001:db8:de01::/48 | **Group** 2001:db8:abc | **Subg** :1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | 2001 :1000::/52 | **ubgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 13** 2001:db8:de01::/48 | **Group** 2001:db8 :1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Gr** b8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 14** 2001:db8:de01::/48 | **up** db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Da ter 15** 2001 01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Center 16** 01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 17** 2001:db8:defe::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 18** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 19** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 20** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 21** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| **Data Center 22** 2001:db8:de01::/48 | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |
| | **Group** 2001:db8:abc0:1000::/52 | **Subgroup** 2001:db8:abc:1100::/56 | **Subgroup** 2001:db8:de01:1::/60 |



## IPv6 Principles

**1 Plan for number of subnets not number of host addresses.**

The key difference between IPv4 and IPv6 is that in IPv6 we are no longer concerned with address conservation for the purpose of ensuring sufficient host addresses. As a result, the atomic unit of IPv6 address planning is a subnet (of at least a /64 or larger).

**2 Allocate or assign subnets in a way that leave many in reserve for future use.**

It's important for keeping your IPv6 addressing plan viable that you leave sufficient subnets in reserve for growth.

By adhering to nibble boundaries in assigning groups of subnets to your hierarchy, sparse allocation can be automatically accomplished.

In addition, practicing a 75% utilized maximum before assigning the next available block of subnets will always leave at least 1/4 of the subnets in reserve for future use.

**3 Define a site in a way that best fits your organization's operational and administrative needs.**

The number of sites you have will determine the initial size of your IPv6 allocation.

Define as many of the different kinds of sites you have in your organization. For example, sites can be geographical (HQ, campus, regional office, etc) or functional (data center, remote office, lab, etc).

Internally, sites may have varying levels of required hierarchy (e.g., VLANs, groups of users, subnets to be aggregated, security policy and ACL entries to define, etc). You'll need at least one or more /64 subnets per level of hierarchy. A minimum of 16 (with up to 12 for immediate use) is recommended; i.e., a /60.

The greater the complexity or size of the site, the more groups of subnets will be needed to accommodate the hierarchy of the site; e.g., /56, /52. Keep this in mind when defining your basic site definition. If there is any uncertainty, a /48 per site is recommended."



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