

IPv6 Addressing Plan

What is an IPv6 addressing plan?

An addressing plan is a systematic model that defines **how the process for distributing IPv6 addresses** among all the elements of a network **will be organized**. Basically, it defines what assignments we will make and how we will make them for the different categories of networks on our platform, based on our available prefixes. In this case, 'elements of a network' refers to hosts, routers, servers, and any other network device that requires an IPv6 address. The term 'network' applies to both ISP and end client networks.

An addressing plan is **prepared in advance, using a systematic model** for the purpose of optimizing the assignment process. It is therefore advisable to create this plan based on previously established guidelines and following the best possible practices.

An important aspect of any IPv6 addressing plan is that it should **be flexible and able to adapt** to any new requirements and deployment scenarios that may appear in the ISP's network over time. In other words, while it is indeed a plan and should be created in an organized manner, it must allow for any adjustments and modifications that might be required once the deployment is complete.

The result should be a guide that specifies how assignments will be made, which prefixes will be used, and the different assignment categories to be considered in the plan. The last step is for the addressing plan to be implemented, managed and documented.

Why is it important for your organization to have an IPv6 addressing plan?

- An IPv6 addressing plan increases network routing efficiency, as routing equipment performs better when routing tables are optimized to a smaller size.
- It expedites assignments because they are made in an orderly manner.
- It improves network management, maintenance and troubleshooting processes.
- It makes it easier to scale the network and supports network growth.
- It allows for a more efficient network management.
- It improves network security architecture, as an addressing plan makes it easier to deploy filtering rules and traffic control.

Which features should an IPv6 addressing plan consider?

- An addressing plan should be **simple and easy** to implement.
- It should be based on **good practices**.
- It should be **scalable and able to adapt** to changes and new network deployment requirements.
- It should consider **comprehensive IPv6 assignment** for the entire network. It must include future and reserved assignments.
- **Readily accessible**. The addressing plan should be readily available to be consulted or to insert updates and new records.
- It should also define an **assignment procedure**, its documentation, and registry mechanism.