DE CIX

WHITE PAPER

Why do I need an ASN?

The short answer:
The ASN is the key to real multi-homing and having your own direct top peer connectivity.

ASN is short for Autonomous System Number. It is a bit like the main phone number of a global company. It is a number which is globally unique and defines the path to the owner's network, no matter whether it is a small network or a global player.

As a rule, one ASN is all you need for global operations – there is no need to own and operate multiple ASNs. Most of the big global networks operate a single-AS strategy.

Where and how to get an ASN

ASNs are handed out by what are known as Regional Internet Registries (RIRs). These include, for example, RIPE for Europe and the Middle East, ARIN for North America, and AFRINIC for Africa. They provide ASNs to their members, which are known as Local Internet Registries (LIRs). Typically, one LIR can get one ASN, but a LIR can also act as an aggregator for those who need an ASN but do not want to become a full LIR. This role is called a "sponsoring LIR".

A company that needs an ASN can either contact the RIR which is responsible for their geographic area and become a LIR, or they can ask an LIR from the given region to act as a sponsoring LIR for them.

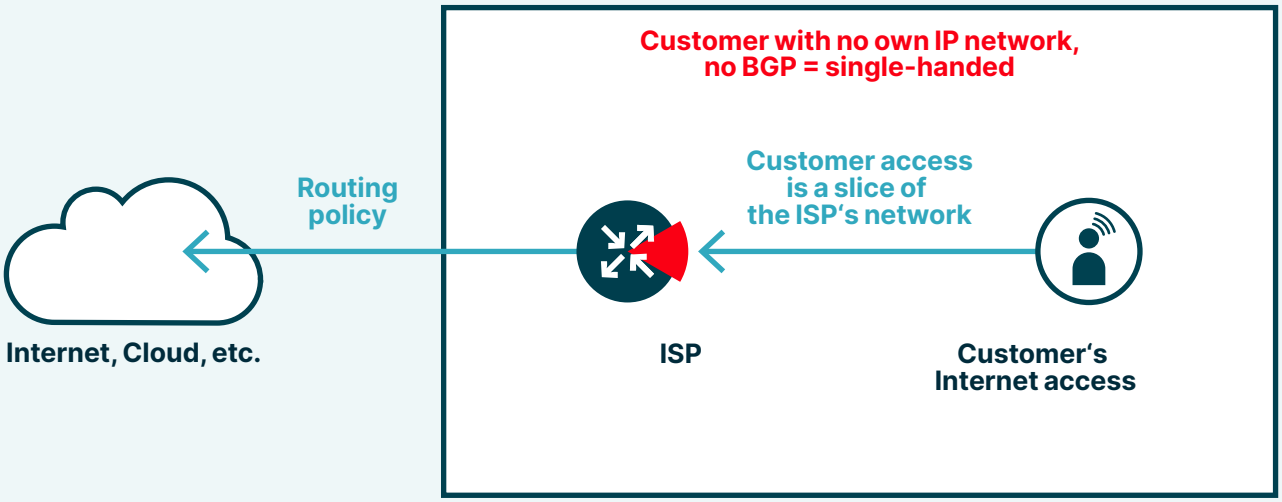
There is a recurring cost of being an LIR, which is, e.g., €1,550 per year in the RIPE region (current tariff in 2023), but there are more benefits to being an LIR than just getting an ASN. The cost for an ASN sourced via a sponsoring LIR is typically less.

Note: "Sponsoring LIR"

The ownership of the ASN remains with the AS holder and not with the sponsoring LIR, as long as no rental of a foreign ASN takes place – which would then be something different.

Technical background information: An ASN is used as a main parameter for what is known as the BGP protocol. An ASN is the key element in the process of BGP route advertisement. BGP takes care of advertising or receiving IPv4 or IPv6 networks, and the ASN information is used to help routers understand how to reach which route. The source ASN where an IP prefix is located is called the "origin ASN".

Not having your own ASN – the single-homing disadvantage

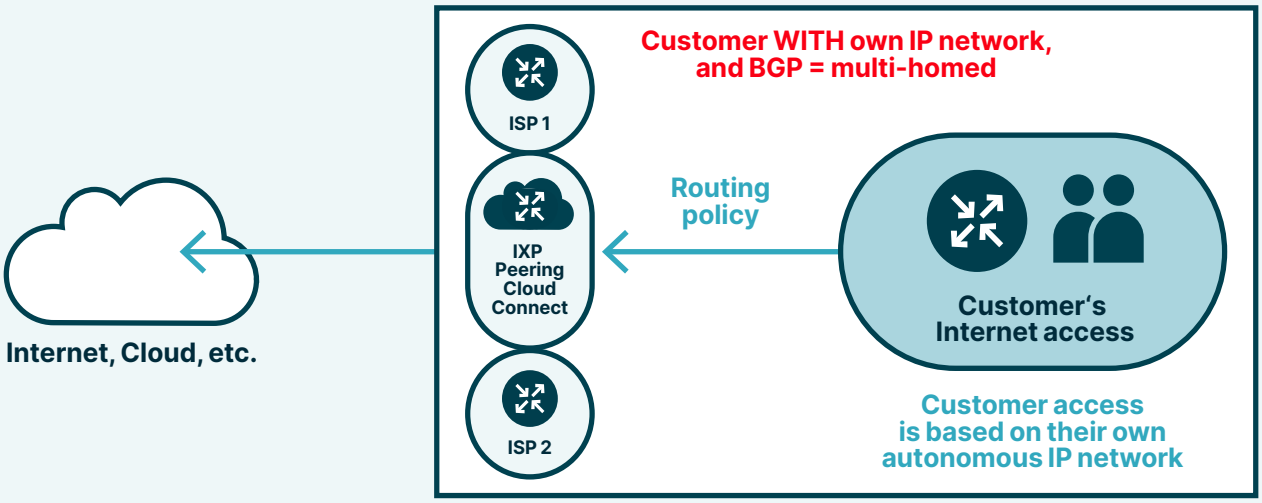


A non-BGP setup is a setup where the customer is just using one single Internet Service Provider (ISP). This means that the ISP is providing the customer with an IP range from its own network, under the control of the ISP with its routing policies, and its performance fundaments. If something is not as performant as expected or needed, there is nothing the customer can do about any of the performance parameters except open a ticket or call the responsible salesperson at the ISP. If no solution is found, the customer can only hop from one ISP to the next.

In changing ISP, the customer will lose all of the IP ranges they have been using, because the previous ISP, as the ASN owner, will keep them and disallow the continued usage of them. (Exception: in the case that customer-owned IP ranges were used from start.)

Note that an ISP is per definition a "single point of failure" – even if the ISP setup itself might be redundant in some way. Therefore, if the enterprise's policy demands a (truly) redundant setup, being single-homed with one ISP must be avoided.

Result: customer drives as passenger with whatever the network policy is



1. advantage of having your own ASN: **multi-homing**

Result: customer drives the network policy and is steering quality, latency, strategy

In comparison to the single-homing scenario, an ASN and BGP-based multi-homing means a truly redundant setup of two (or more) upstreams – independent of each other. You have the freedom of control to balance performance settings between both upstreams based on your own technical decisions about which one has the faster/better path to differently defined important target networks. This main benefit leads to full independence, "real redundancy", and allows you to choose the upstream most suitable for your own setup. If needed, a less-than-optimal upstream can easily be replaced by a better suited one.

2. advantage of having your own ASN: **Internet Exchange (IX) peering option:**

An ASN also enables the use of an Internet Exchange (IX) like one of the DE-CIX IXs which are found all over the world. DE-CIX Frankfurt is one of the world's largest IXs and offers more than 1,000 potential peering partners on its platform – including the "who's-who" of the global Internet – and provides direct access from your own network to the

desired target network, without any other “black-box ASN” (a transit network) in between. This allows a lot of options for improvements with regards of performance and security.

3. advantage of having your own ASN: **the direct connect option:**

Having an ASN provides green light for another very valuable option, which is a direct interconnect with, for example, Amazon Web Services (AWS), or the Microsoft Azure Peering Service (MAPS), or other cloud platforms. MAPS is Microsoft’s peering program for enterprise networks, and it comes with a very helpful selection of advanced features which help enterprise IT administrators to deliver any Microsoft-hosted service – especially SaaS services like Microsoft365 or Dynamics365 – in the best possible quality.

Note:

Besides the ASN, you also need your own IP space to take full advantage of the benefits described above. As this paper focuses on the ASN, why and how to get your own IP addresses is not further outlined here.

About DE-CIX
As the leading Internet Exchange operator and interconnection provider, we help companies to realize new opportunities and future-proof their connectivity needs to manage growing data volumes and new applications. From easy and secure cloud connection to creating interconnection ecosystems, we make interconnection easy. Anywhere.

Find out more at de-cix.net.

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