

Peering Agreements and Peering Policies

Peering can be achieved on different 'levels', it can be implemented in a technical way, but it can also be implemented in a non-technical way, based on the peering policies from connected IXP participants. When it's based on the peering policies, it has nothing to do with the IXP itself, because it's purely an agreement between two or more parties that connect to the IXP and describes how they want to exchange the traffic and under which conditions this has to be done.

There are two ways to implement peering on a technical basis. This can either be done via private peering or through public peering where the traffic goes over an IXP. A definition of both can be found in the table below.

Private peering	Physical direct connection between only two parties
Public peering (over IXP)	Physical connection to a medium, managed by a third party, through which multiple parties are connected and approachable

The other possibility on implementing peering is in a non-technical way, where agreements are made between two or more parties. Every connected party to an IXP has a specific peering policy, in which is defined how they want to exchange traffic and under which conditions. The different peering policies are described in the table. Every connected party can have one of these policies, based on their business model and peering conditions. This peering policy can differ per region. For example the local incumbent in a country in Europe can choose to have a restrictive peering policy, when this incumbent expands its business to a different region, for example North America, it can decide to have an open peering policy. The connected parties to IXPs in North America might be more interesting to openly peer with than the connected parties at the IXP in its home country, where they think it will decrease their business.

Policy	Definition
Open Peering	Generally willing to peer with anyone, with no or few prerequisites.
Selective Peering	Generally willing to peer, but there are some prerequisites, once met this generally leads to peering.
Restrictive Peering	Generally not willing to peering, extremely difficult to meet prerequisites with high possibility of denial once they are met.
No Peering	No intention to peer. Traffic is exchanged via transit agreements

The implementation of the peering policies can be done in a number of different ways. This happens on a non-technical way and is more agreement based on the conditions made between different parties. The connected parties can

implement exchanging traffic through buying transit, having a bi-lateral or multi-lateral peering agreement. The distinction between the three can be found below.

Transit	Gives access to the complete Internet
Bi-Lateral	Gives access to the networks of the parties you are peering with and their client-networks.
Multi-Lateral	Access to multiple networks from parties you are peering with, based on one agreement

'Paid-peering', where one party pays another party to peer with them, this is usually done on the difference in exchanged traffic between the two parties. This is a modification of bi-lateral peering agreement. The term 'Mandatory Multi-Lateral peering' is often used when every connected party at an IXP is forced to peer with every other party, this peering agreement can be seen as multi-lateral peering, where all connected parties agree to exchange traffic under the same agreement. If they do not agree to this agreement, there will be no peering available for them (and have to find different ways).

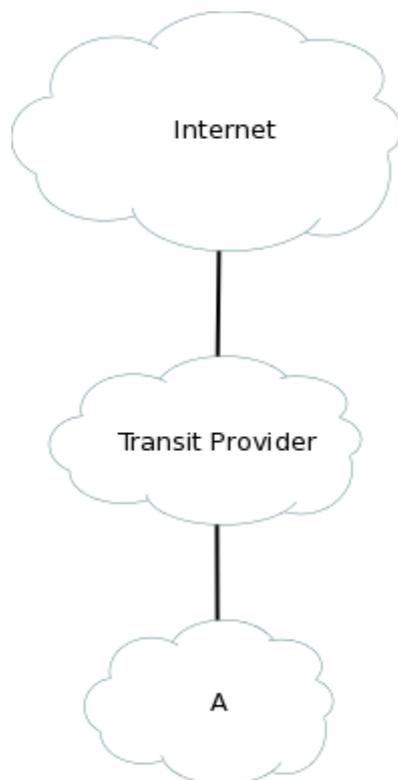


Figure 6.1 shows a transit agreement. Network A buys transit from its Transit Provider, which provides Network A with connectivity to the Internet. .

Figure 6.1: Transit agreement.

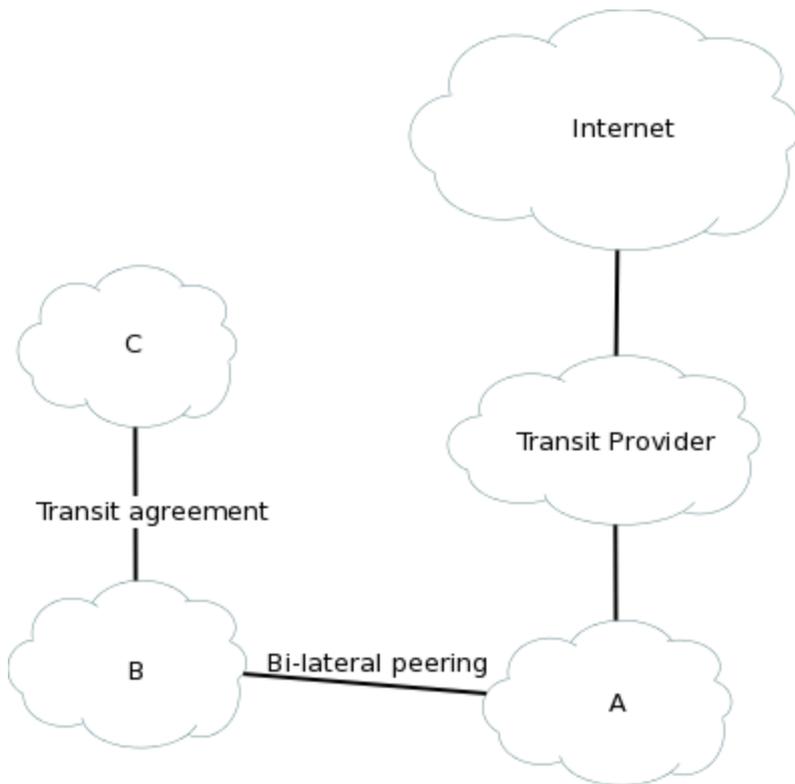


Figure 6.2: Bi-lateral peering agreement.

Figure 6.2 shows a Bi-lateral peering agreement. Network C buys transit from Network B, when Network A and Network B have agreed to peer (bi-lateral peering), Network A will get access to Network C. Network C will also get access to Network A, because of the transit agreement between Network B and Network C.

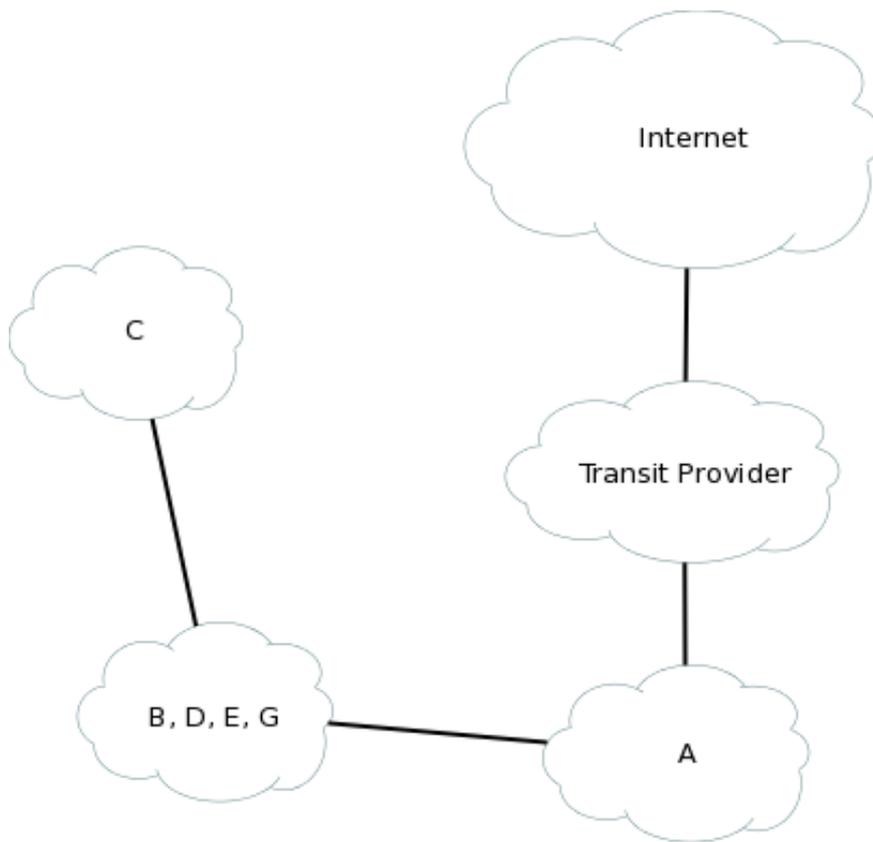


Figure 6.3 shows a Multi-lateral peering agreement. Network B, D, E and G have agreed to peer under the same peering conditions, so they have access to each other's networks. Network C still buys transit from Network B. Network A and Network B still have a bi-lateral peering agreement, this provides network A with access to Network B, D, E and G and the other way around.

Figure 6.3: Multi-lateral peering agreement.