What is an Internet Exchange Point

An Internet Exchange Point (IXP) is an open neutral interconnect where network operators can interconnect for the purpose of exchanging traffic.

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Definitions

Open means that the physical infrastructure provided for interconnecting networks is open to any and all network operator to participate in, as they wish. Each network operator is responsible for providing their own connectivity to the public interconnect location.

Neutral means that the physical infrastructure provided for interconnecting networks is not owned or operated by any network operator who'd participate in the IXP. It is important that each member of the IXP has equal opportunity to participate and there is no perception of advantage for any one member.

IXPs are typically hosted in or by data centre or data housing organisations or other entities such as Universities who operate 24×7 data centre facilities.

Participation

Any network operator can participate in an Internet Exchange Point.

The only requirements are:

1. they have their own public IP address space
2. they have their own public AS number
3. they have their own transit arrangements

IXPs are not limited to just commercial Internet Service Providers. Research & Education network operators, enterprises, content providers, gTLD and ccTLD operators, content distribution networks, broadcasters, etc all participate in IXPs. The only requirements are the Internet resources mentioned above.

Location

IXPs are located where it is most convenient for the largest number of network operators to access and participate at the most optimum cost to the network operators. (Bearing in mind that peering is designed to minimise the cost of operation for network operators.)

Ideal locations for public interconnects include datacentres and/or locations of concentrations of fibre provided by several infrastructure operators. These locations all have good physical and network access, 24 hour coverage, independent power grid supplies with on-site backup, sufficient cooling, and are well protected from natural disasters (earthquake, tsunami, wildfire, floods, volcanoes, cyclones).

Given the large concentration of network operators present, these public interconnects are often considered critical infrastructure, and their reliable operation is often considered of national importance.

Physical Infrastructure

The interconnect medium of the IXP itself is *just* an ethernet switch.

The basic ethernet switch used for most new IXPs today tends to be a 24 port or 48 port fibre switch supporting dual personality 1G or 10G ports. The port's behaviour is determined by the Small Form-factor Pluggable Transceiver (SFP) installed in the port.

The simplest IXPs have little more than an ethernet switch to support interconnections by the participants.

The world's largest IXPs operate multiple switches over multiple locations in the metro area, and provide services and facilities for the benefit of all the members.

Agreements

Operators who participate at an IXP usually will sign an agreement with the IXP itself. This agreement usually contains information such as:

- contact details of the Peering Coordinator (the administrative contact) at the operator
- contact details of the Network Operations Centre at the operator (not customer helpdesk!) and the IXP
- escalation process in case of faults on the interconnect
- rules/behaviour at the IXP
- how to use IXP infrastructure to aid with setting up connections with other operators
- any other relevant information relating to the connection at the IXP to ensure its continuous and reliable operation

Not all IXPs require such an agreement although it is recommended simply so there is a documentation trail and that the operator knows what to do if any issues need to be resolved.

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