



A Short Guide to Microsoft's Global Network

June 2021

Microsoft runs one of the world's largest communication and data centre networks to support its rapidly growing cloud services. Here we describe some key components as an aide to understanding the terminology used, the make-up of the network, and some of the key data routing techniques employed.

Data Centre

A physically collocated set of networked computing resources that store and process data. Most data centres are classified into Tiers 1 to 4, with higher tiers having stricter infrastructure requirements and expected uptimes. Tier 4 data centres have expected uptime of 99.995%. Microsoft's data centres do not have public tier ratings.

Region or Data Locality

A geographically close set of data centres. The location may be important to consumers for political reasons, legislative reasons, speed or redundancy.

Microsoft backbone

A network backbone owned and operated by Microsoft which connects multiple networks together much like a highway between cities.

Point of Presence (POP) and Edge Servers

A POP is an exchange point between multiple networks to allow data exchange between them.

It can be a simple server installed in a client's cabinet or a more elaborate deployment of machines and networks (edge servers).

Internet Service Providers and Network Service Providers

ISPs offer consumers access to the public internet. NSPs manage and provide access to the internet backbone. ISPs are typically customers of NSPs but nowadays the difference between the two is blurry. It could be said that ISPs are a subset of NSPs.

Peering service

Peering is a relationship between ISPs in which they have a direct network connection instead of routing traffic through the internet. It allows for very fast traffic because the ISPs connect directly to each other, and the ISPs' costs are lower because they do not need to pay NSPs for providing access to the internet backbone.

Routing models

Cold potato routing – a technique whereby data packets stay on the originating system network for as long as possible and transfer off it as close to the destination as possible. Considerations:

- More expensive
- Optimal routing

Hot potato routing – this is where data packets are handed off from the source network to another network for routing to the destination as soon as possible.

Considerations:

- Cheaper
- Potentially longer routes because exposed to more public pathways

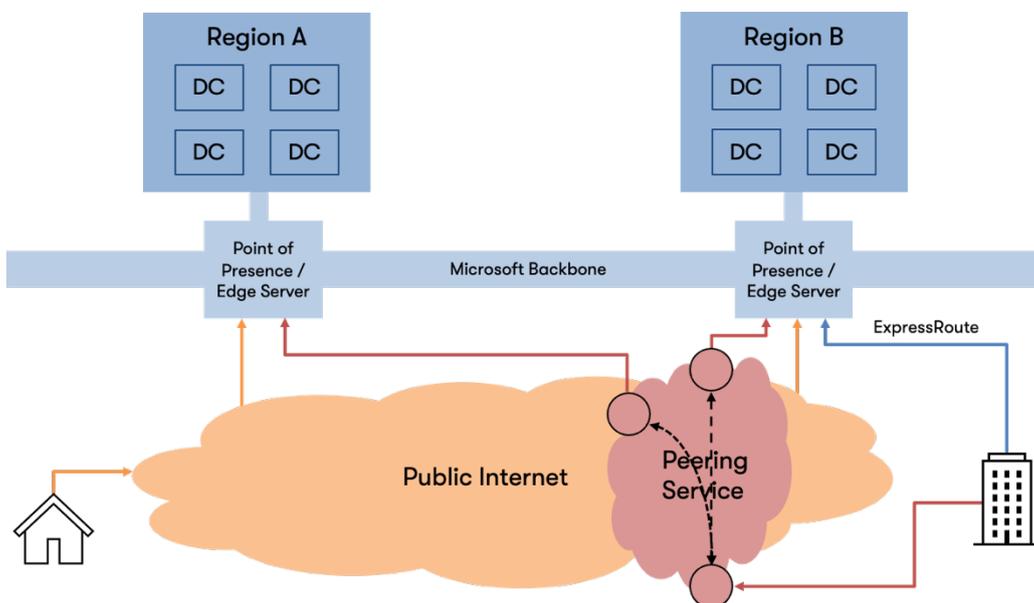
In the context of the Microsoft global network, cold potato routing is routing via Microsoft's global network and hot potato routing is routing over the public internet. Cold potato is Microsoft's default routing method on its global network.

ExpressRoute

This is a direct connection – via a Microsoft partner – to Microsoft's edge servers for connectivity to Microsoft's global network.

This provides direct access to the Microsoft network bypassing the public internet.

Overview of the Microsoft Global network



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