

General network terms

- NAT
- CG-NAT
- Packet

NAT

NAT stands for Network Address Translation, and it's generally used with regards to allowing a larger number of client devices to share one public [IPv4 address](#), due to the exhaustion of the IPv4 address pool. It tends to break things like peer to peer communication and is generally viewed as a nuisance to other protocols and programs attempting to set up communications, which is why [IPv6](#) is being implemented, to replace IPv4 and subsequently kill off NAT with it.

Effectively all home ISPs require you to use NAT, unless you are only using a single computer on your network, as they will only assign you one public IPv4 address. NAT is typically done by routers, and what it does is it takes your private IP addresses, and translates them into a single public IP address, then does the same thing in reverse, by keeping a table of what has been sent out and received. Hosting servers behind a NAT is possible via the use of port forwarding, which is something most routers doing NAT will support, do note however this breaks down with ISPs implementing [CG-NAT](#), which is a second layer of NAT controlled by the ISP, making it impossible to open ports on your home network without them also opening those ports on there NAT device.

CG-NAT

CG-NAT or Carrier-Grade NAT is a deployment of [NAT](#) that is done at the ISP scale, and it's extremely disliked among users as it completely breaks the ability to open ports or services at your home without utilizing a tunneling mechanism to an outside server. It's not significantly different from standard NAT except that it's done at the ISP level, adding further complexity and difficulty to making peer to peer connections.

Packet

a network packet is a formatted unit of data carried by a switching network. A packet consists of control information and user data, the latter is also known as the payload. Control information provides data for delivering the packet to its destination. Typically, control information is found in packet headers and trailers.