# Latency in network applications

**Or "why there is latency and how little
you and the server can do about the lag".**

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As i have played lots of online games (MMORPGs) i have come to realise that
the understanding about latency or "lag" as it is more commonly known as is
quite low. I present you with this paper to help the end user see the problem
from a networking perspective. The problem is that people think that they have
a direct connection to the server and that the server is always at fault, which it
normally isnt and there is really not much that can be done if everything is
updated with the latest hardware and a dedicated network connection is used.

## 1. Clientside latency

Clientside latency (CL) happens when it appears mostly on the clientside. This is where YOU – the end user - can affect the latency

We can divide the  CL into two bits:

### 1. Clientside application latency (CAL)

CAL is what you get when you are running the application on a low performance hardware. At times it will *look like latency*, but it is only your application that is running slowly. What will happen is that the hardware is so overloaded with tasks (example: antivirus software, spyware, p2p/torrent software) so it may slow down, stop responding for a brief period of time - or sometimes disconnect, crash or stop responting.

### 2. Clientside network latency (CNL)

CNL is what you get if you have lots of applications running that are accessing the network from your point of orgin, i.e. It may not be YOUR computer that are accessing it, it may be your sister downloading something in another room, or someone in the same building if bandwidth throtteling isnt properly implemented.

For both **CAL** and **CNL** there is a possible solution:

You can try shutting down some programs that run in the background but there is **no garantee** that it will increase performance.

## 2. Network latency (NL)

NL is something you - or the endpoint (server) can not do anything about. It is latency that appear from the result of the internet being... well, the internet. Remember, ALL DATA that is sent from everyones computer go out on the internet and some of it is going to compete with your data that are going from your client (computer) to the endpoint (server) and back.

The only thing you actually can do to reduce latency is to change internet service provider (ISP) and hope that the next one has better latency than the one you got now. Or move yourself or the server closer to the other.

## 3. Serverside application and network latency (SAL, SNL)

Serverside latency is like **CAL** and **CNL**, but it is serverside and more likely to happen because all the clients that connect to the server are going to end up at this side of the pipeline.

Here you can do something about it:

1. You can get multiple network interfaces and add different ISPs to each interface.

2. Get faster hardware. If the application/database or other applications is weighing down the server, then it is time to upgrade.

Again, there are no garantees.

## 4. Summary

As you now may begin to understand, **you are not alone on the internet**. Internet trafic will increase at times (Weekends, hollydays) and sometimes it will drop sharply and everything will be fine. Latency may be solveable - and again, it may not be.