

It's about Capacity not Speed

Confusing bandwidth with speed, as in "High Speed Internet" [sic] is like thinking of a light year as a measure of time rather than distance (how far light travels in a year).

Bandwidth is a measure of capacity and not speed. Confusing the two has consequences because it reinforces the railroad metaphor and makes us think that the only way to increase speed is newer and more expensive technology. Speed is important for trains because getting to Chicago on the Twentieth Century limited has advantages over local trains.

Talking about capacity and recognizing that bits are bits means that we can add capacity by any means available.

In practice this is a tad difficult since current Internet protocols use IP addresses for relationships and those addresses are path-dependent. But protocols like Skype or BitTorrent aren't tied to a particular path. We need relationship-based protocol such as Skype. BitTorrent is interesting in that it is based on content relationships.

It's easy to understand why we accept the speed metaphor. It adds perceived value and waiting for more bits does feel like waiting for a train to arrive. Even more so when a network has limited capacity and treats packets like freight with high latency due to setting up paths (especially in cellular) or buffer bloat which is like adding a lot of sidings on a railroad. This misunderstanding is one reason why we tolerate dividing capacity into "pipes" -- <http://rmf.vc/NotSuper>.

If we shift metaphors slightly to airlines we recognize that the business is about capacity management. Airlines are having a bumper year because they have managed to limit capacity so that all the planes are full. A great policy for the airlines but it doesn't make sense for exchanging bits once we escape the idea we need a dedicated, fast, path.

Beware the metaphor -- we do need to use them to communicate but perhaps they are most valuable in highlighting contrasts. Otherwise the semantic baggage may be too much to bear.

See my older essay, [Assuring Scarcity](#), for the carriers' explicit plan for limiting capacity.