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## Worry free portfolio

In my profession as a programmer and system designer the most important conclusion I came to is that if you get the structure of the data right, then the procedures, the algorithms, will easily follow. The corollary is that if you need complicated algorithms, the data structure is probably wrong.

I believe that the same is true for the Telecosm where structure is called topology of the network. Based on this idea here is my take on the upcoming Telecosm.

When we talk about the core we are talking about world wide or about a 24 thousand mile circumference or maybe about 10 to 15 thousand miles from a client to the furthest server. This is far enough that we need the speed of light to get it right. When we talk about the edge we talk about short distances, campus wide or city wide. Here electronics is probably fast enough to avoid latency.

Internet protocol (IP) was invented mainly to create a fail safe network where lots of the hardware could be taken out by atomic attack and the messages still had a chance to get through. In the old telephone system, when you dialed, you set a sequence of switches to create a unique path from caller to receiver. With IP came packet switching where each packet was forwarded to the optimum next node in the network. If it did not get through, the routers would try to find alternate paths. Packet switching only works if the message is slow enough so that its address arrives first and can be decoded by the node and the node can then forward the message with no visible delay. The speed of light is so fast that the address of a packet cannot be deciphered and used without considerable relative delay in the handling of the packet. This is what makes packet switching over light paths unreasonable. This then dictates that lambda transport should be switch free. The core of the Telecosm should be switch free. On the other hand, at the edge, where latency is not a problem, fail safe IP is probably the best answer.

Lambda transport in the core mandates fiber optics. The edge does not have to be fiber optics, it can be anything: fiber optics, fiberless optics, cellular, PCS, satellite, cable, copper, infrared, Bluetooth or maybe even smoke signals ;-).

The most interesting conclusion that I reach is that the joint between core and edge can be and should be storage: various types of caches. In this scenario, the client accesses the nearest cache which will provide all that is available to it and the cache, not the client, will query the server for the missing pieces. In this scenario, it is easy to see how an electronic edge works seamlessly with an all optical switchless core. If my reading of GG is correct, 30 to 50 caches worldwide are all that are needed. Instead of millions of clients connecting to millions of servers, we have millions of clients connecting to 30 to 50 caches and 30 to 50 caches connecting to millions of servers. The complexity drops by several orders of magnitude. Is there a statistician in the crowd who can figure out the numbers?

What does all this mean to the investor:

At the core: Avanex will supply the lambdas, JDS Uniphase / SDL will supply the active and passive components, Corning will supply the fiber and Northern Telecom will install the stuff.

At the edge; Qualcomm and its value chain will supply the wireless and satellite networks, the rest of the last mile solutions will be supplied by a very large number of suppliers. Cisco will assemble cheap routers based on the EZ Chip network chip and ARM Holdings will supply the RISC processors for all the mobile and embedded gadgets.

At the caches: the service providers will buy storage from EMC and Network Appliance.

Power One will provide the power converters in the Internet Hotels. Micromuse will make sure that the network is glitch free. Portal Software will make sure that clients are billed and well taken care of.

Add a chip maker or two: AMCC, PMCS, XLXN and ALTR and you have a portfolio that can take care of itself while you go fishing, sailing, mountain climbing or whatever else makes life worth living for you!

Happy investing!

Denny

"Demand creates queues. Supply gets rid of them."