Is HEP a “niche” for switch providers?

Switching for telecoms:

- Largest systems installed in France for Telecoms:

  ~ 150 - 200 Gbit/s

- 70 x 10^6 people in France, all talking over digital telephone:

  4.5 Tbit/s

- Assuming 1/10 ==> 450 Gbit/s

CERN network:

Peak aggregate traffic on the backbone: 0.7 Gbit/s

LHC experiments:

- ATLAS Level 2: 200 Gbit/s
- LHCB, Level 2+3: > 100 Gbit/s

(Switches with 70 Gbit/s are available now.)

Gigabit Ethernet project at CERN:

B. Dobinson et al.,

ATLAS level 2 event builder in competition with Saclay ATM based solution.

- Point to point measurements.
- Simulation for event building will be developed, but depends on specific implementation of switches.

Conclusion:

IP is the solution

What is the problem?

Some contradictions:

- "ATM does not go to the desktop because we do not need QoS"
- Strong emphasis put on QoS for IP and Ethernet

QoS:

- better assigned to a connection
  but IP, Ethernet are connectionless
- Requires "traffic engineering" instead of
  "best effort"
  (not just switch packets to a destination)

==> *a lot is invested in switches:*

- to supply "traffic engineering"
- to support QoS

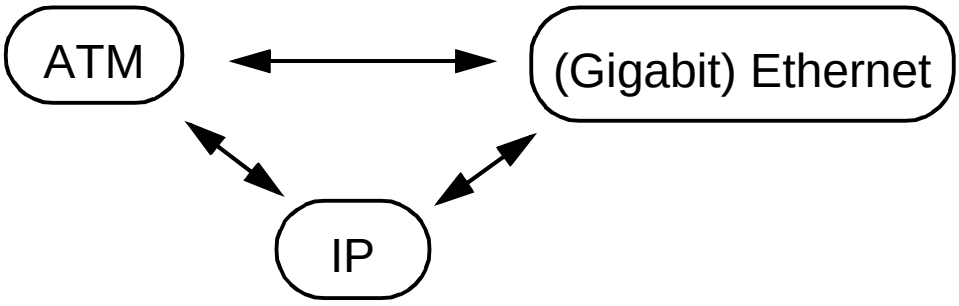
==> *more complex switches implement these techniques to compensate for the simpler adapters (Ethernet) (e.g. PacketStar IP switch from Lucent)*

==> *at present ad-hoc solutions; what about long distance?*

IP is leading the dance:

- IP will provide multimedia,
- technologies will survive if they can provide what IPvxx requires,
- new technologies appear that go in the direction: POS (packet over Sonet), MPLS (multiple Label Switching),
- IP will drive your vacuum cleaner, microwave oven...

Emphasis on:



Joosten recalled a joke from a few years ago:

- ATM is the solution
- What is the problem?

In LANs the role of ATM is shrinking to

- implementation of the backbone
- Real time applications

...but full solutions, down to the desktop, are nevertheless still implemented.

Forecasts (3-Com):

Ethernet: 80% (of which 20% for Gigabit Ethernet
ATM: 20%

Report on the

ESONE Workshop on Applications of ATM in High Energy Physics

Paris, 21 - 22 September, 1998

Goal of the workshop:

Cover all aspects of the use of ATM in HEP labs:

- LANs and WANs
- Control (accelerators)
- DAQ

50 participants

25 presentations:

2 *ATM General*
(ATM Forum representative)

4 *LAN, MAN, WAN, support for experiments*
(CERN, Japan, ESRF Grenoble, Jülich)

7 *DAQ*
(CERN, München, Uppsala, BNL, Saclay)

2 *Control*
(CERN LHC, JET)

4 *Ethernet and IP*
(CERN, Lucent, 3-Com)

6 *Industry*
(IDT, CES, Cabletron, Newbridge, CISCO, FORE)

+ 2 discussion sessions