



COST
605

Econ@Tel

A Telecommunications Economics COST Network



3-5 May 2010

Benefits and total cost of ownership of different technologies for last mile residential user access

Cătălina VASILESCU

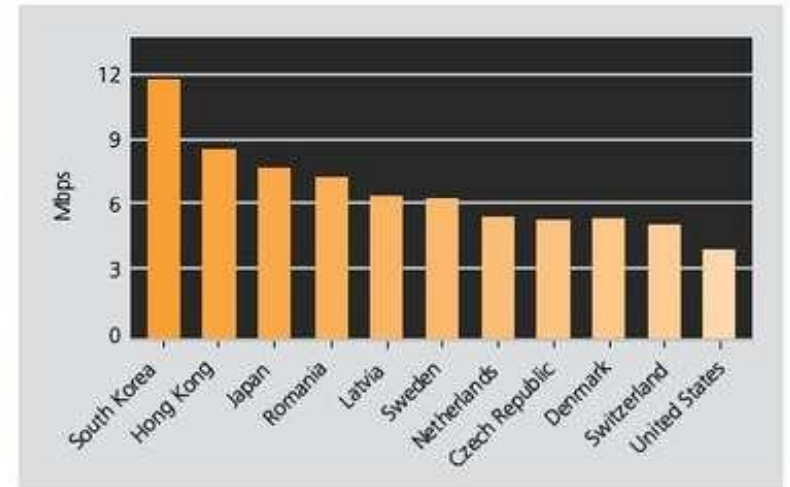
The Fastest International Countries

- State of the internet report for the fourth quarter of 2009



Country/ Region	Q4 09 Mbps	QoQ Change	YoY Change
- Global	1.7	-1.2%	-2.7%
1 South Korea	11.7	-24%	-29%
2 Hong Kong	8.6	11%	17%
3 Japan	7.6	-4.0%	6.8%
4 Romania	7.2	14%	28%
5 Latvia	6.2	23%	28%
6 Sweden	6.1	5.8%	2.0%
7 Netherlands	5.3	1.9%	10%
8 Czech Republic	5.2	9.1%	17%
9 Denmark	5.2	8.8%	16%
10 Switzerland	5.1	3.7%	-0.4%
...			
22 United States	3.8	-0.9%	-2.5%

Figure 7: Average Measured Connection Speed by Country/Region



What are the technologies used and their total ownership costs?

The internet service market in Romania

Classify in 3 groups:

- The major national level providers: Romtelecom, Romania Data System,
- The small regional level providers: more than 1000 companies registered
- Mobile companies: Vodafone, Orange

The technologies used by internet services companies

The major provider Romtelecom:

- Started with telephone line communication
- DSL technology over ISDN
- Fiber optic for important trunks

The major provider Romania Data System:

- Started with analogical cable television
- Cable modem technology

Small providers: Ethernet 802.3ab

Total cost of ownership

TCO for one user per
one year using ADSL

Service Part	Monthly Cost	Year cost
Line Installation	60E	60E
ADSL Installation	20E	20E
ADSL Modem		50E
Line Rental Service	10E	120E
Internet Data Services	50E	600E
Total Cost		850E

TCO for one user per
one year using Ethernet

Service Part	Monthly Cost	Year cost
LAN	40E	40E
Network Card	5E	5E
Network Service	2E	24E
Internet Data Services	40E	480E
Total Cost		549E

Benefits of the hybrid architecture used by small providers

- good transfer speeds
- can be build inclemently
- positive effect on a company capital budget

Disadvantage:

- The number of active node is high and the operational costs are increased
- The provider loses control of the network
- Quality of Services impossible without managed equipments

Benefits of ADSL technology used by large operators

- Efficient control of the network
- Application of quality of service policy
- Gigabit speeds are unreachable

The Passive Optical Network Technology

- Alternative to hybrid network and DSL networks

Benefits of PON technology:

- Control over the client connection
- High-speed channels
- Quality of services policies
- Reduce operational costs

Conclusion

- The inexpensive Ethernet technology offered high speed last mile connection and together with fiber optics used for WAN transport solution have lead to an important increased of the average internet speed.
- On the long term PON technology is cheaper than current technologies used in networks because it has a lower operation cost. On a short term a new infrastructure is very costly.