



switching

definitions

switch

varieties

classes of switches

non-switch devices

verbs

switching

external view: modularity

by layer of operation

by switching rate

by switch location

benefits

level names

switch features vary with location

hierarchical network structures

motivation

benefits

costs

non-telecom applications

equipment manufacturers

alternatives

scalable

reliable: choice of path

relatively secure: info need only be heard by destination (& switches on path)

upgradable: change node and adjacent switch

switching equipment

switch congestion & blocking

delay

IT

old phone switches

computer architecture

transport

irrigation

utilities

full mesh network

many poorly utilized links

unreliable - each pair of hosts depend on one link

insecure: each host directly connected to each other

broadcast and select network

poor scalability: shared medium bottleneck

unreliable - one central channel

insecure: A sending to B can be heard by C

hard to upgrade: all nodes must be compatible with each other

access

distribution

core

Bell system offices

ISPs

NSPs

desktop

workgroup

campus

enterprise

access

distribution

availability

throughput

feature set

of interfaces

uniformity of interfaces

data flow symmetry

transit vs line switching

physical switching, e.g. photonic

to different servers according to TCP ports

transport layer switching

vary service (e.g. delay/loss) according to transport layer info

objects distributed on different servers

e.g. web server farm

application layer switching

users distributed on different servers

bridges link layer switching

router: network layer switch

marketing definition: link layer device

marketing definition 2: faster than a router

functional def 2: datagram vs flow switching