Case Study:
Home Broadband

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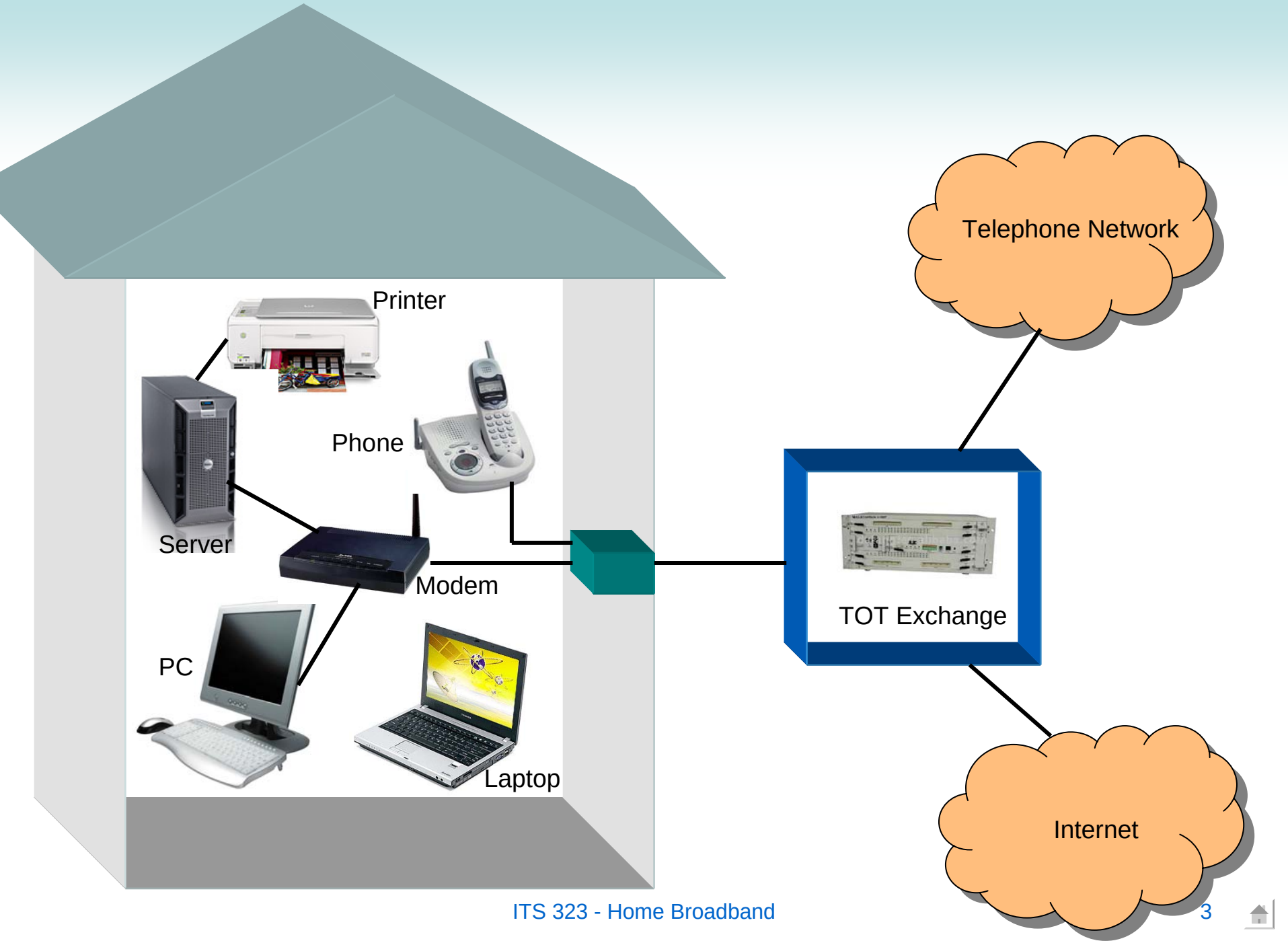
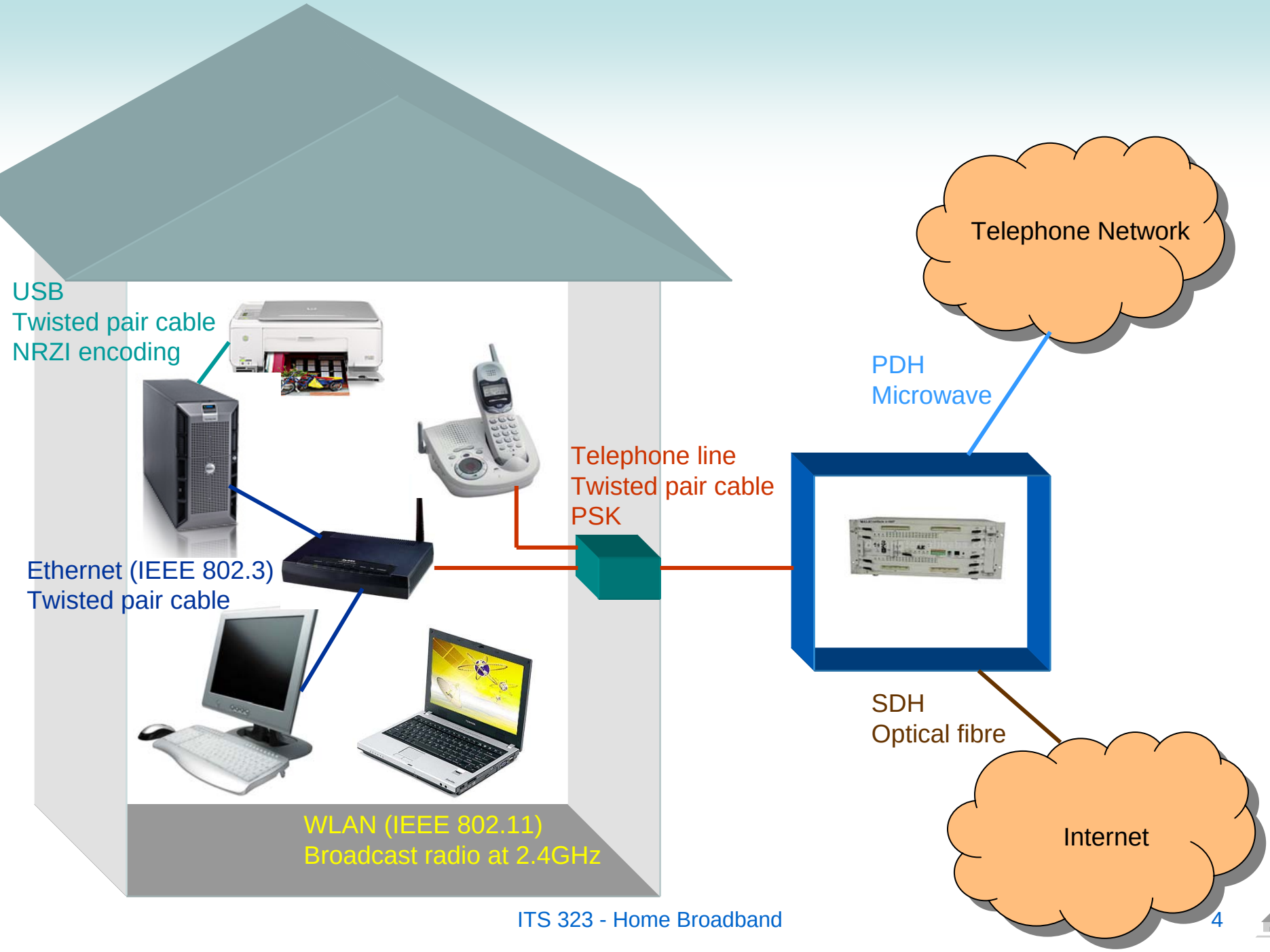
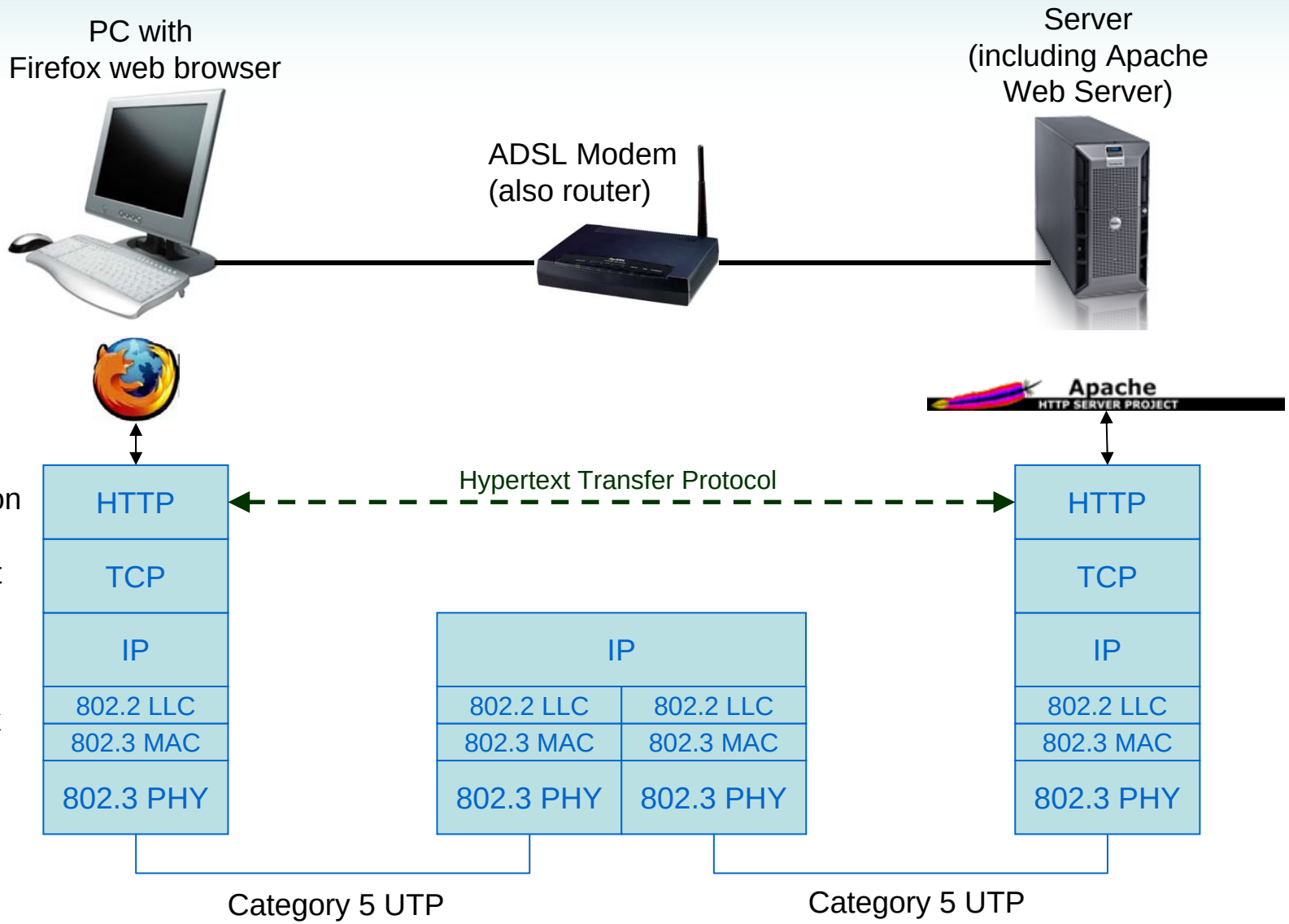
Scenario: My home network

- Computers and communication devices at home:
  - PC, telephone, printer, laptop, PDA, …
- Want connectivity to the outside world:
  - Public switched telephone network (PSTN)
    - Provided by TOT; standard phone line
  - Internet
    - Broadband usually uses ADSL for Internet connection
    - Provided by TOT; 512kb/s down and 256kb/s up
- Home Devices:
  - PC: my main computer for everyday use
  - Server: stores files, and hosts my personal website (www.sandilands.info)
  - Printer: print from PC/Server (optional: print from anywhere on Internet)
  - Modem: ADSL modem + Ethernet switch + IP router + firewall
  - Telephone: DECT cordless telephone
  - Laptop: mobile wireless access
- TOT:
  - Provide connection to rest of TOT network and to:
    - PSTN, e.g. via PDH or microwave link
    - Internet, e.g. via optical links to other ISPs (in Thailand and international)

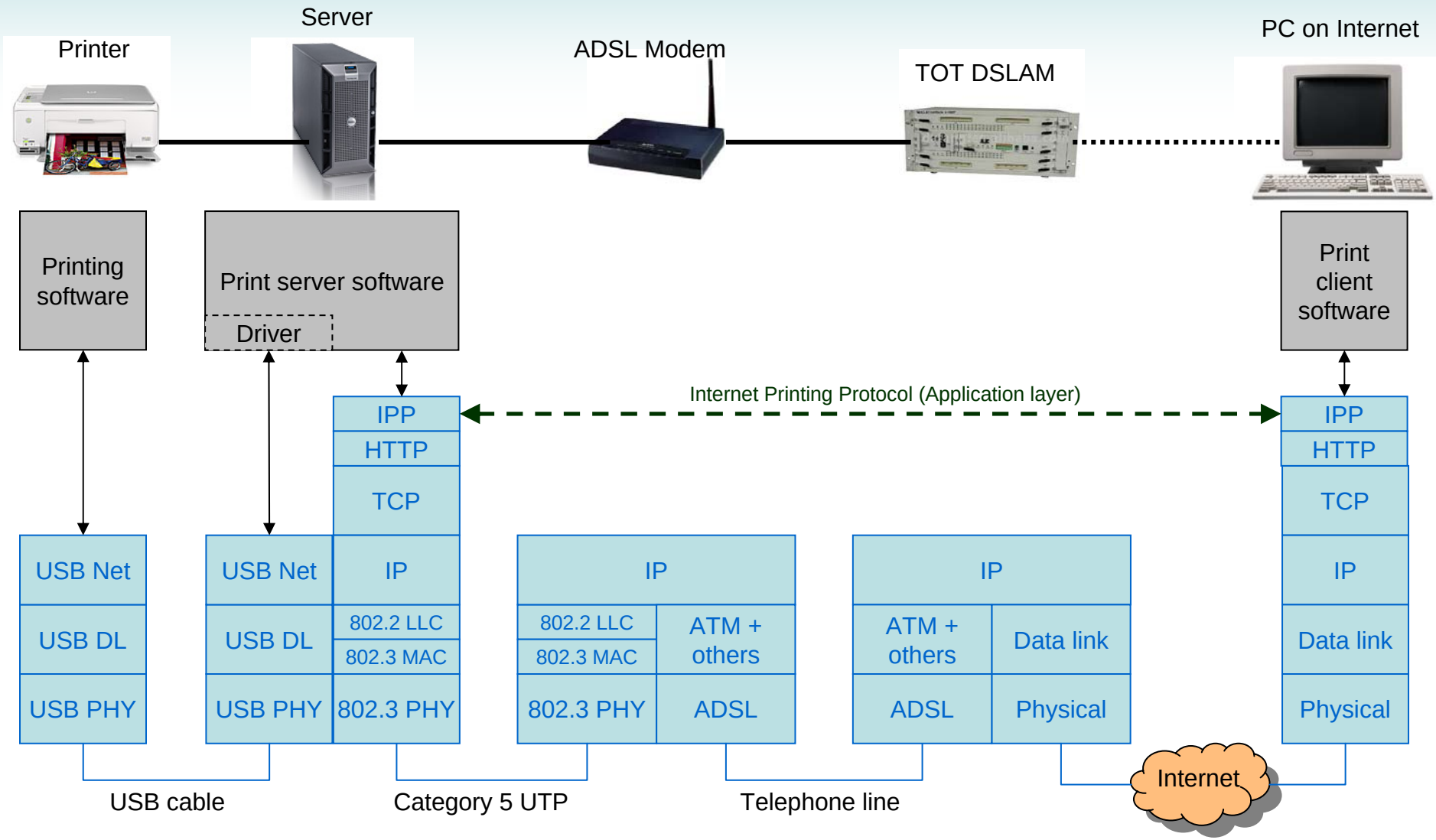

Telephone Network
Printer
Phone
Server
Modem
PC
Laptop
TOT Exchange
Internet


Telephone Network
USB
Twisted pair cable
NRZI encoding
PDH
Microwave
Telephone line
Twisted pair cable
PSK
Ethernet (IEEE 802.3)
Twisted pair cable
SDH
Optical fibre
Internet
WLAN (IEEE 802.11)
Broadcast radio at 2.4GHz

Protocol stacks for my PC browsing to my local web server



Protocol stacks for a PC on the Internet printing to the printer in my home network



USB has its own Physical, Data link and Network layer. Applications can directly use the network layer. A device-specific protocol may be used between driver and printer.

There may be many routers, using different data link and physical layers, between the TOT DSLAM and the PC