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- (Wide Area Networks – WAN)
• (Internet)
 - (Metropolitan Area Networks – MAN)
 - (Local Area Networks – LAN)
 - (Personal Area Networks – PAN)
- μ μ

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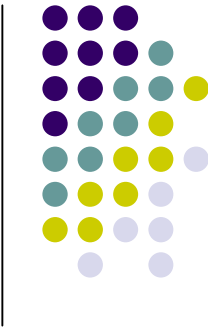
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(1.5Mbps, 1 Gbps . .)



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μ

4

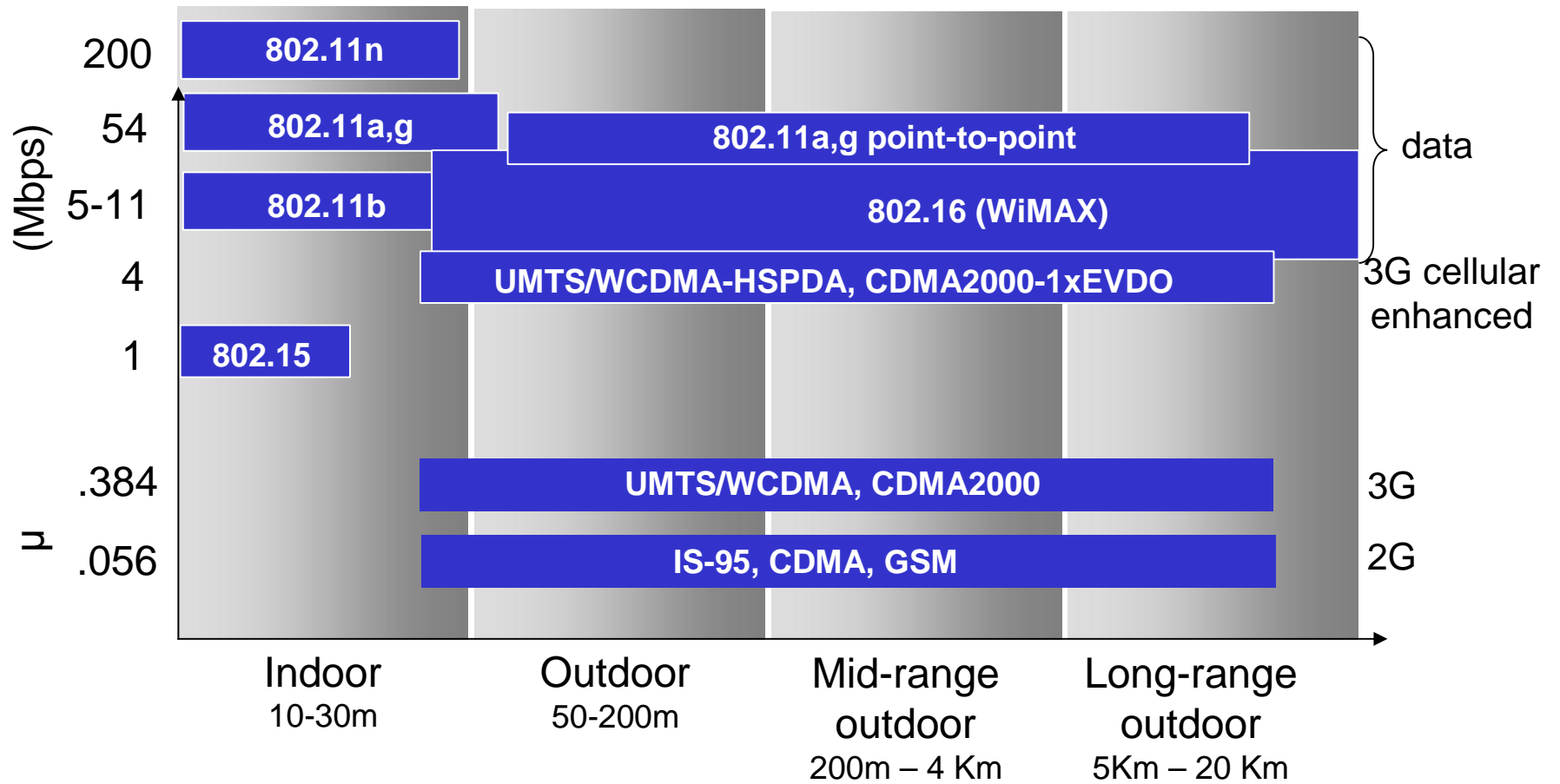


μ (1)

- μ
- Bluetooth
- μ (. . Wifi)
- μ μ
- μ

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(2)

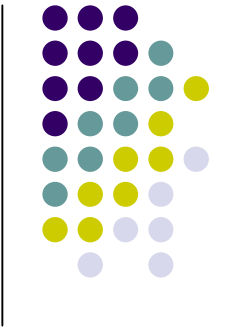




- Ethernet
 - 3: $\mu\mu$ (twisted pair), 10 Mbps
 - 5: 100Mbps Ethernet

- μ (coaxial cable)
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- μ μ μ (10 – 100 Gbps)
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(1)

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(2)

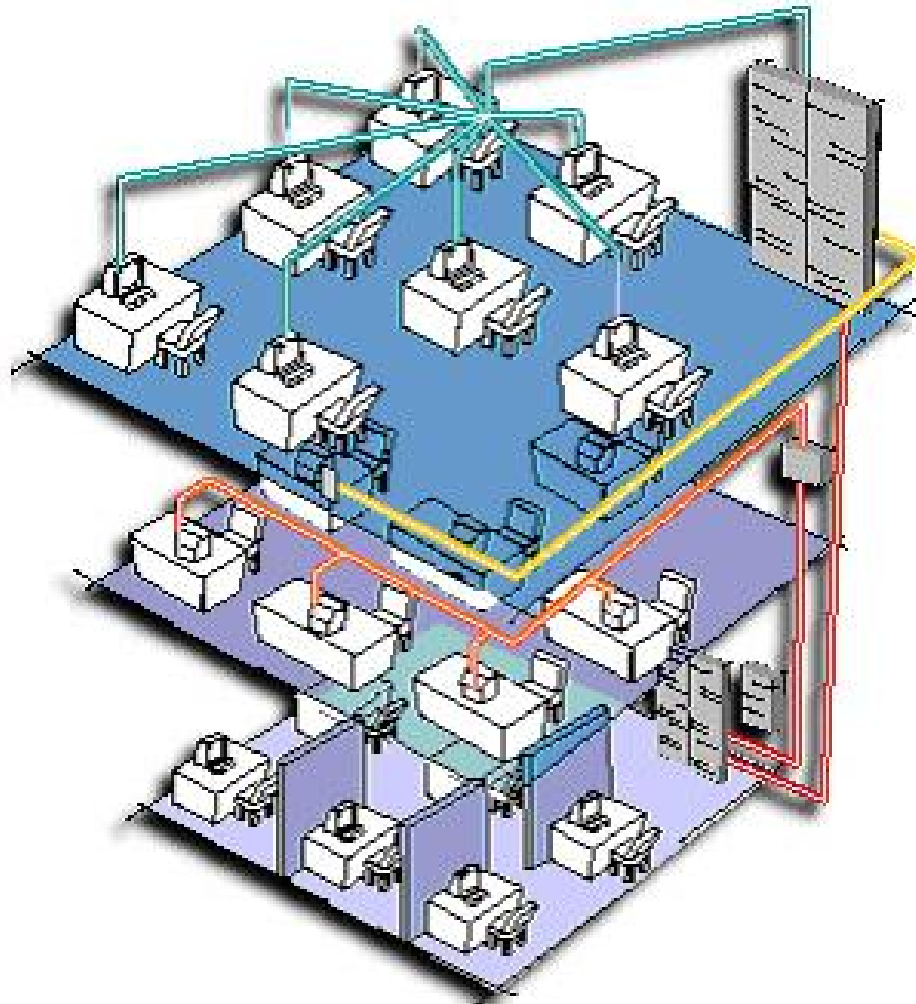


ANSI/TIA/EIA – 568

- μ μ : μ
- : , μ μ .
- backbone (μ) : μ , μ .
- : , μ , μ .

μ μ

(4)

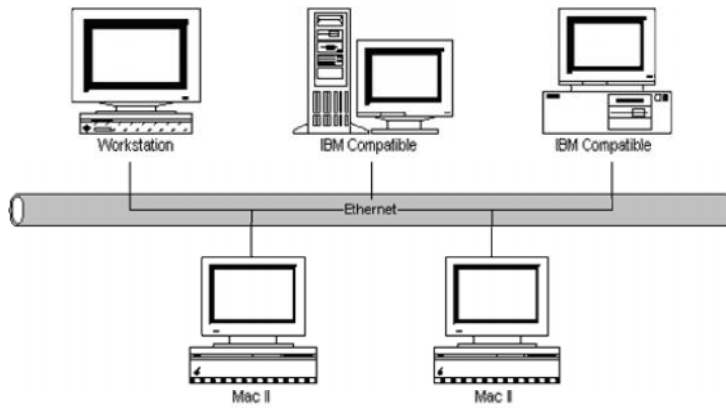


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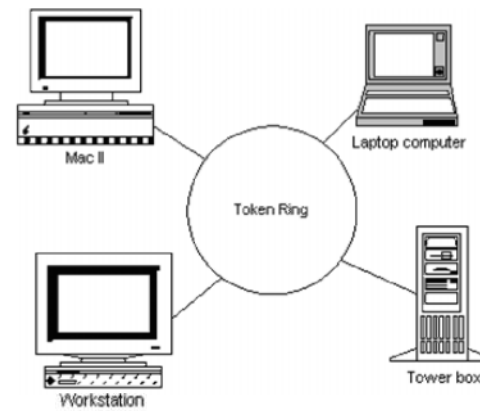


(1)

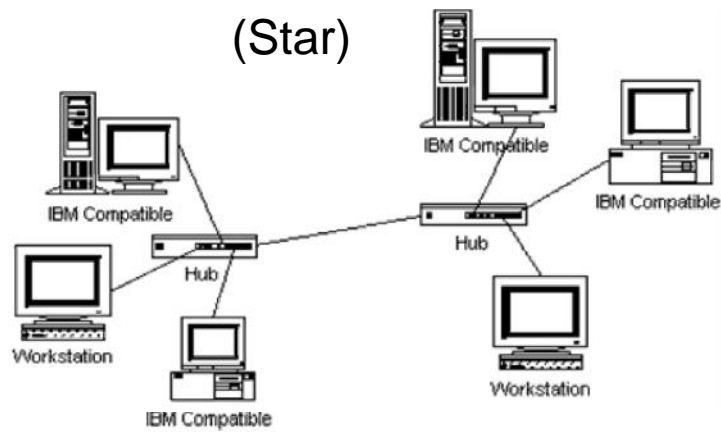
(Bus)



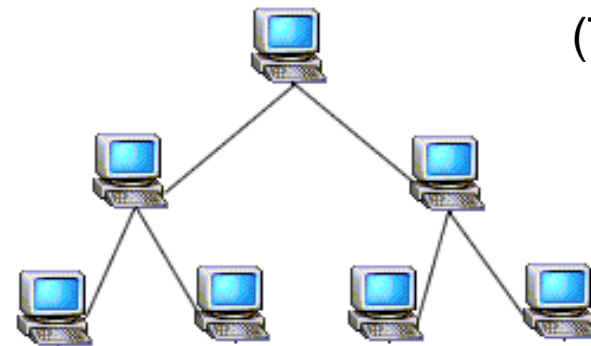
(Token Ring)



(Star)



(Tree)

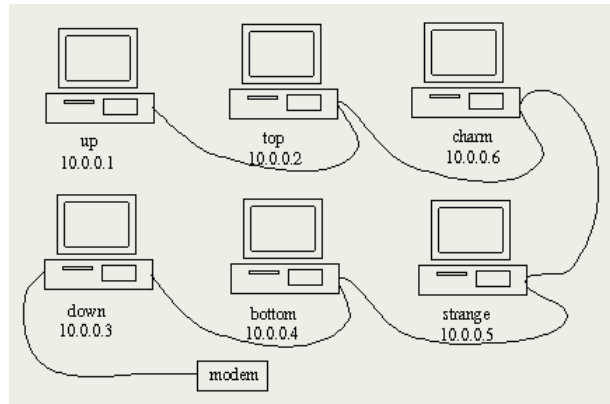




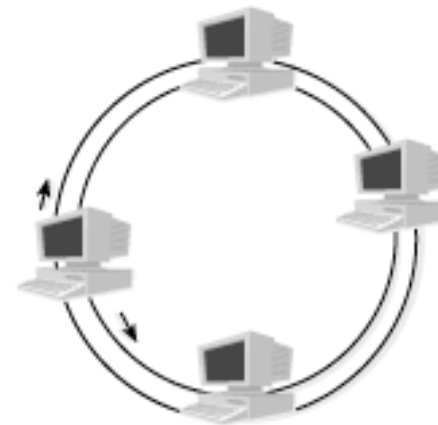
(2)

$\mu\mu$

(Linear)

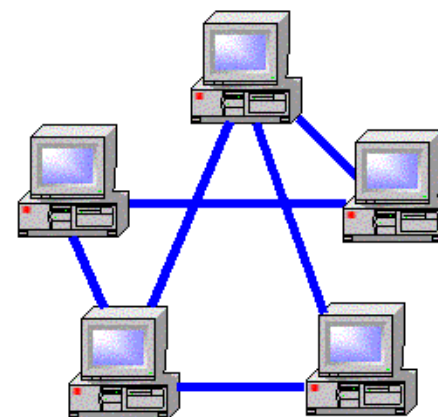
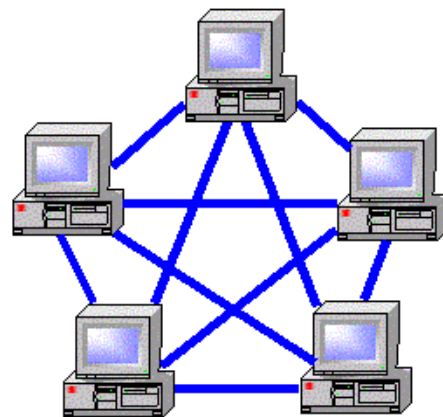


(Linear)



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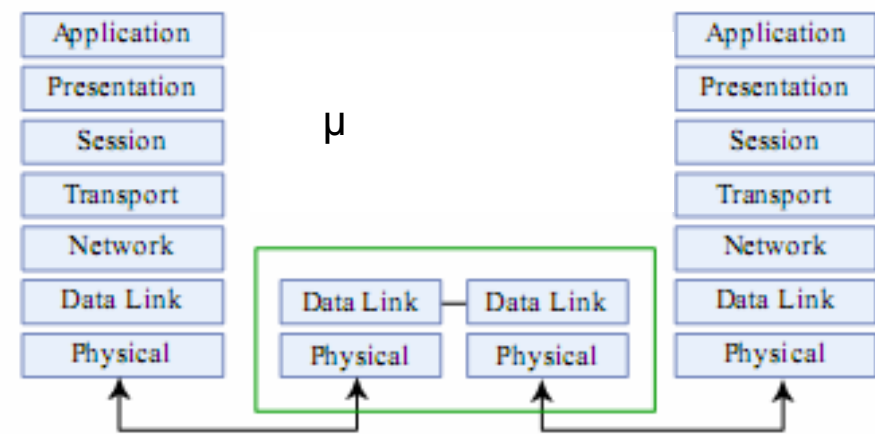
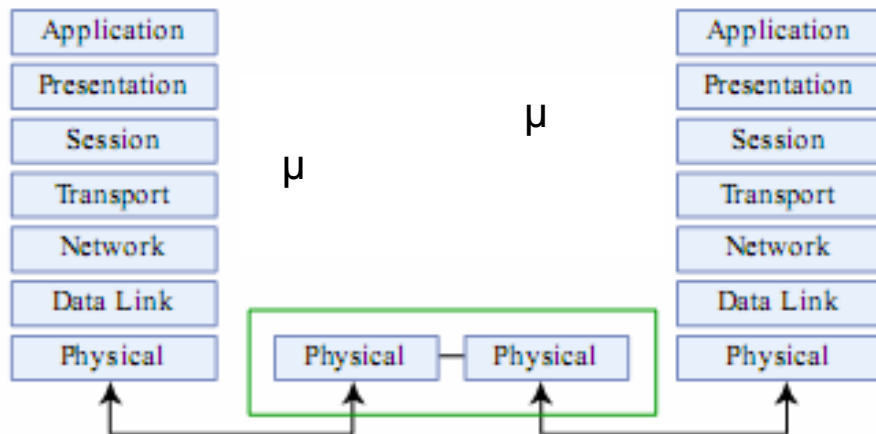
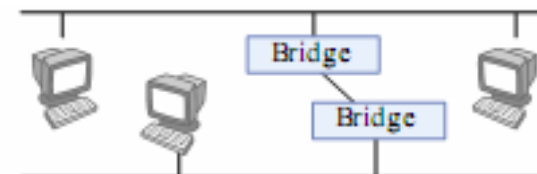
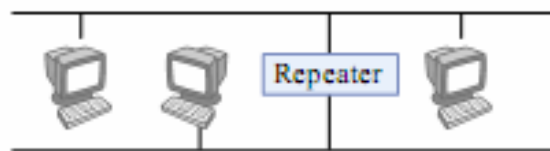
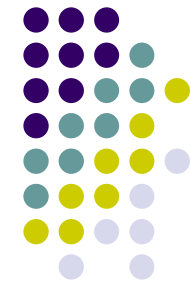
(Mesh)



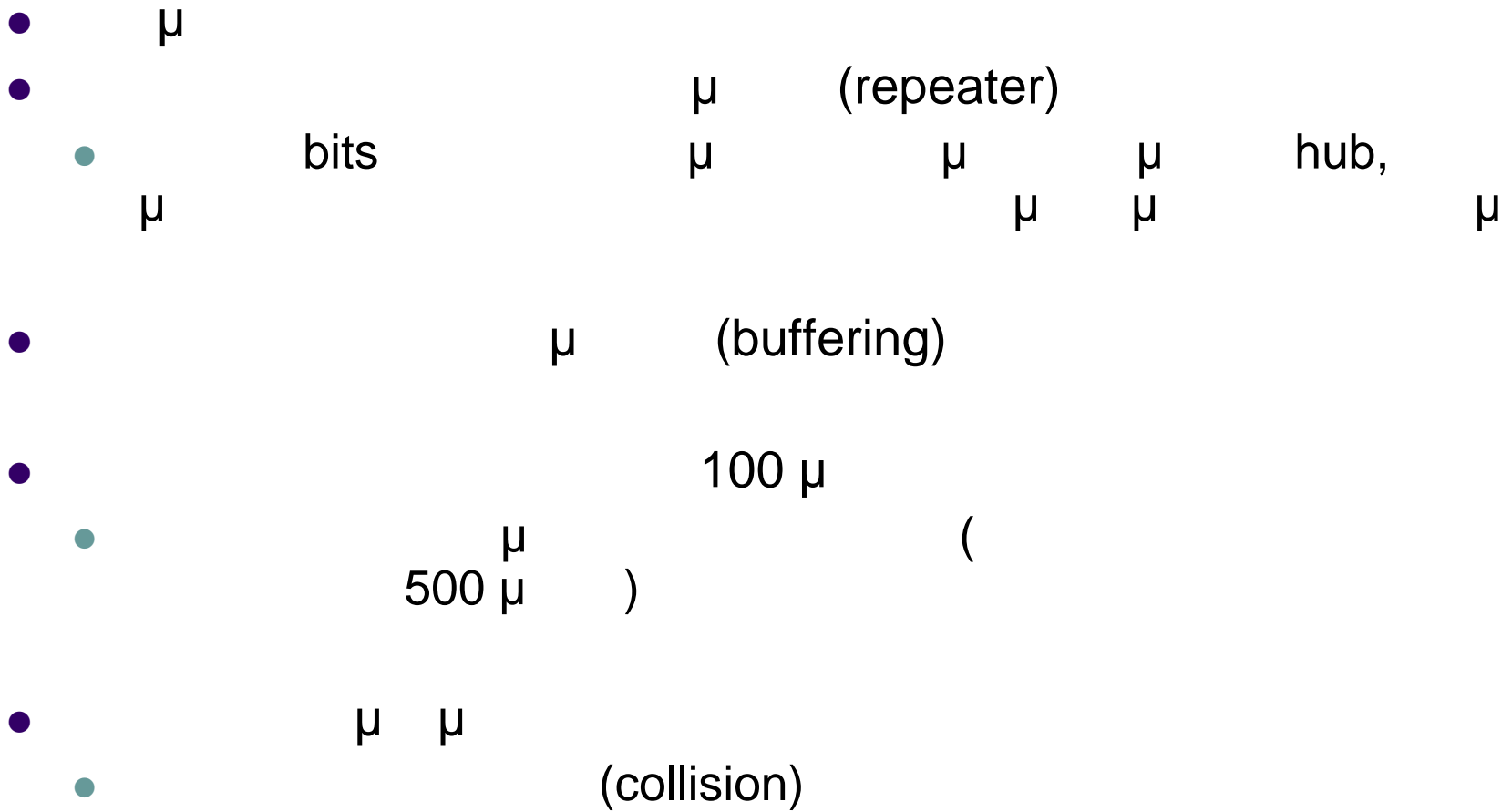
μ



- (Hubs)
- (Bridges)
- (Switches)
- μ (Routers)
- (Gateways)



(Hub)





(Bridge)

- LANs WANS
- LAN μ
- μ LANs μ
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Switch ()



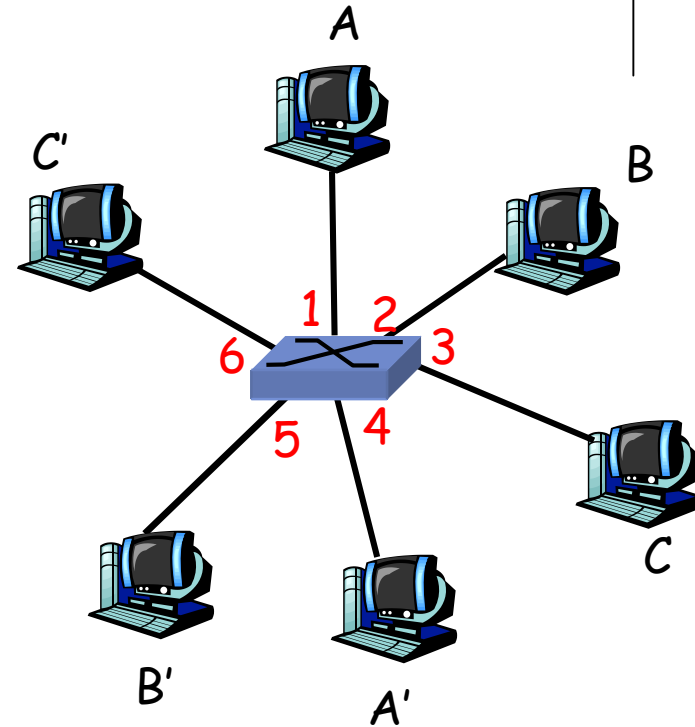
- 2: hub, Ethernet MAC μ μ CSMA/CD (transparent) μ μ
- *plug-and-play, self-learning* μ (configure) μ

Switch:

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- μ switch
- To switches μ Ethernet
- μ ,
- μ μ
- : A-A' B-B'
- hub



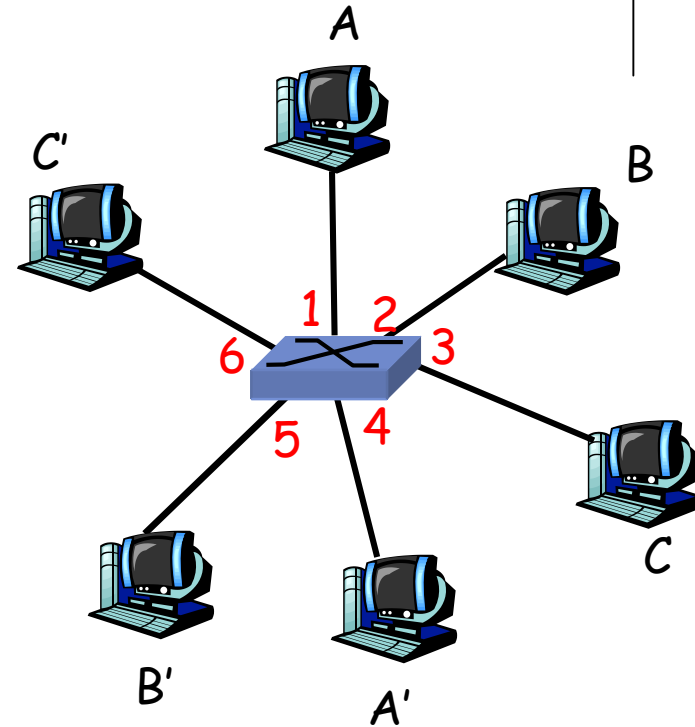
Μεταγωγέας με έξι διεπαφές
(interfaces)
(1,2,3,4,5,6)



Switch:

μ

- switch
μ
MAC
μ
μ
(Time To Live – TTL)
- μ
routers
- (self-learning)

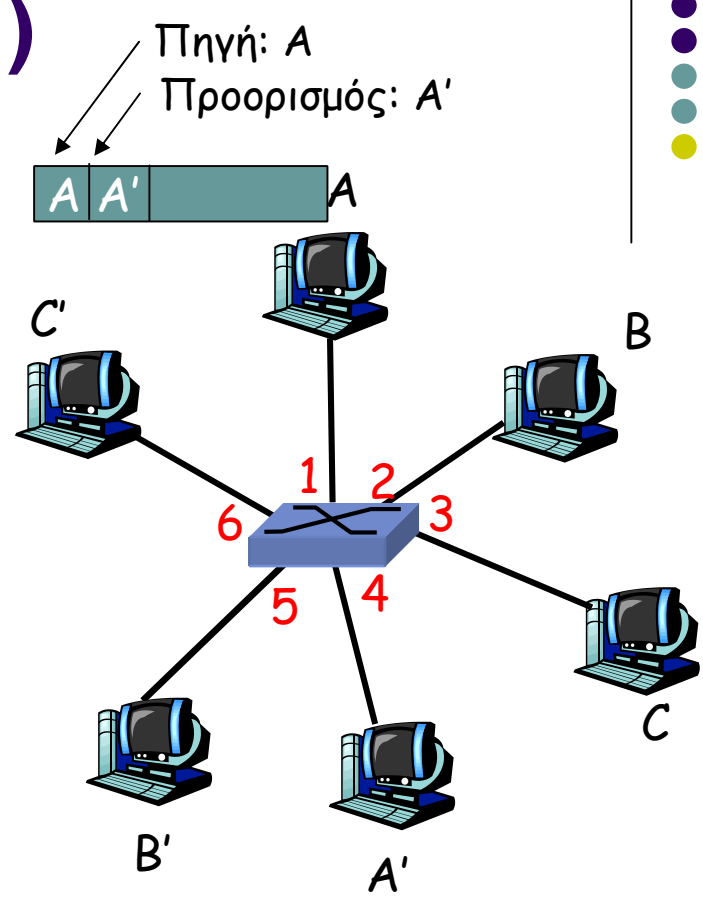


Μεταγωγέας με έξι διεπαφές
(interfaces)
(1,2,3,4,5,6)

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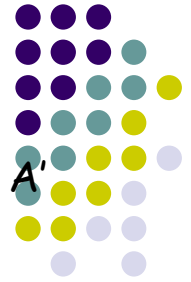
Switch: self-learning (1)

- switch μ
 μ
- switch μ
- μ /



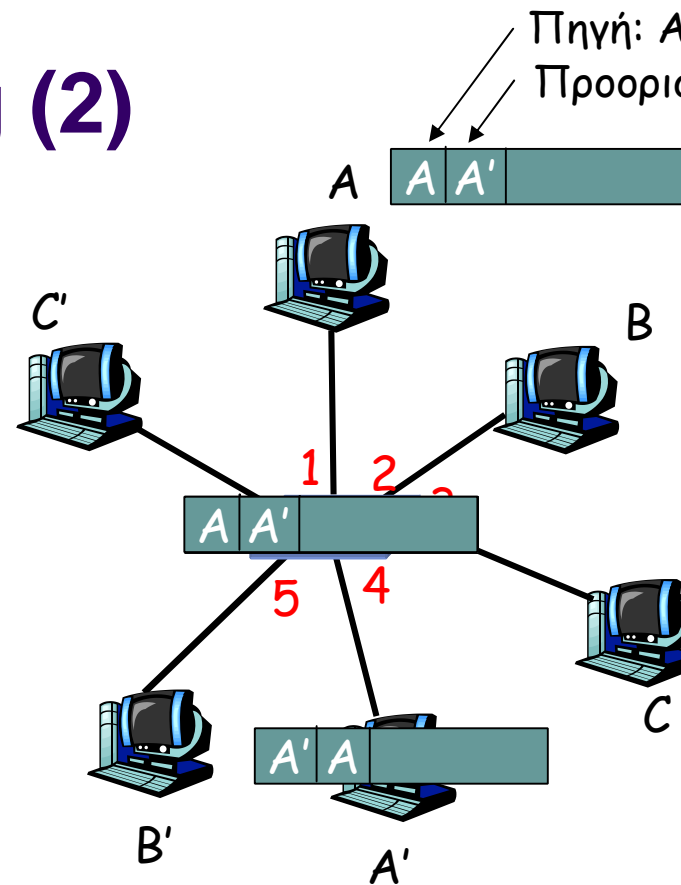
MAC addr	interface	TTL
A	1	60

Πίνακας Μεταγωγής
(αρχικά κενός)



Switch: self-learning (2)

- μ : μ
- (flood)
- μ : μ
- μ



MAC addr	interface	TTL
A	1	60
A'	4	60

Πίνακας Μεταγωγής
(αρχικά κενός)

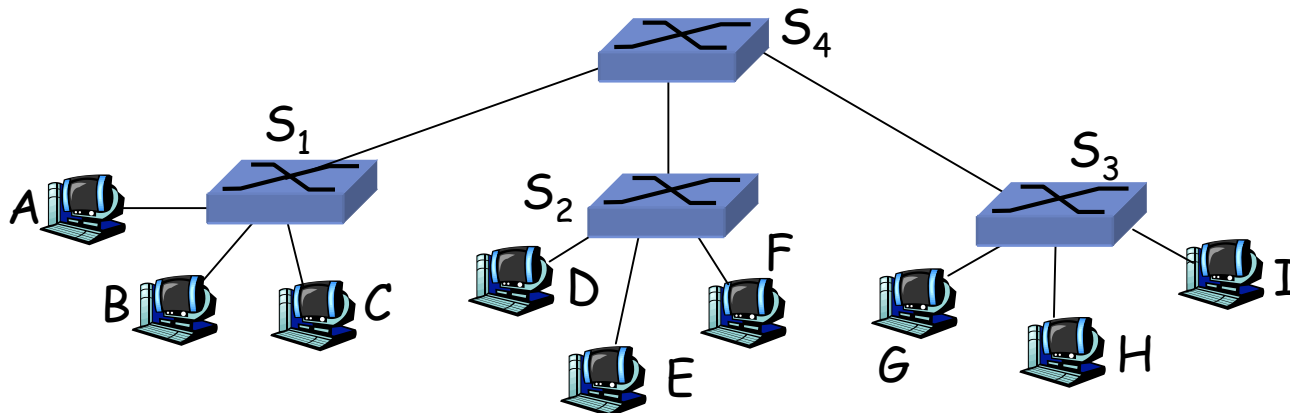


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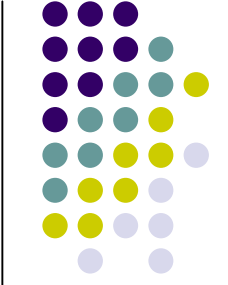
- switches μ

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- μ



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μ (1)



(3)



LAN
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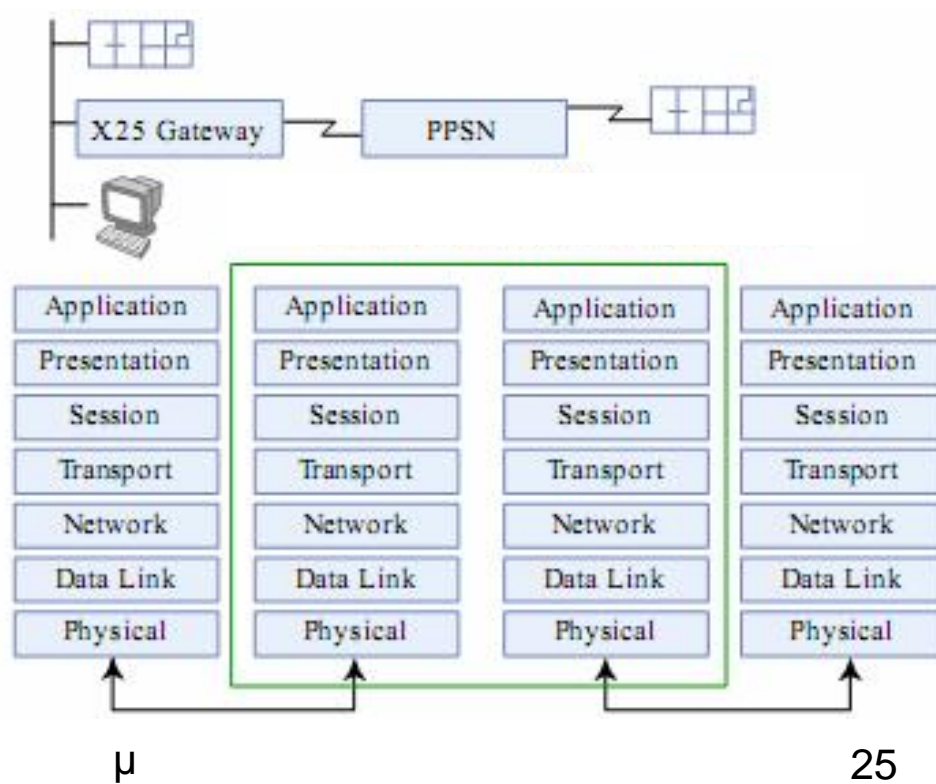
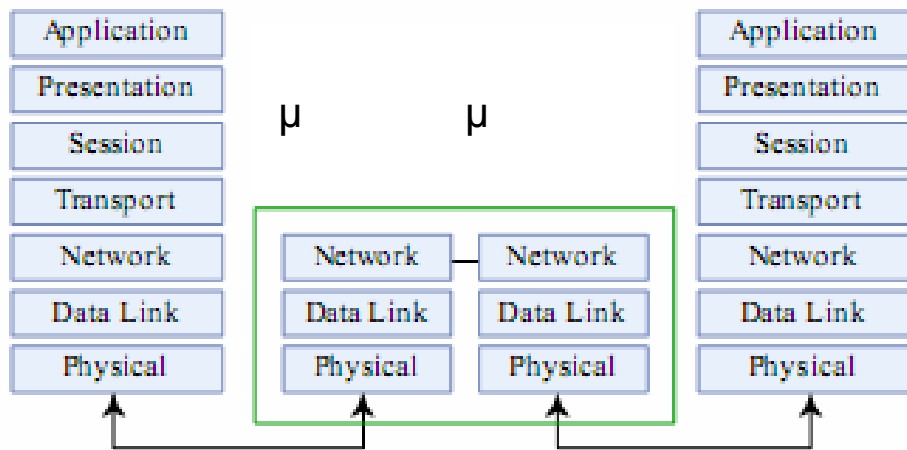
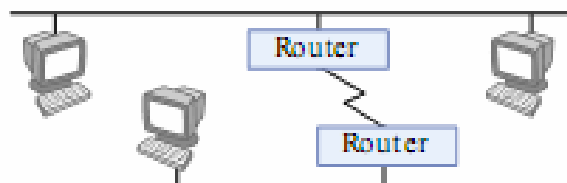
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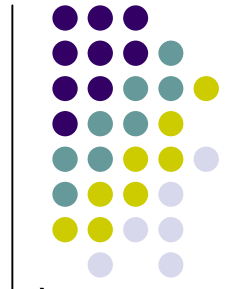
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μ (2)





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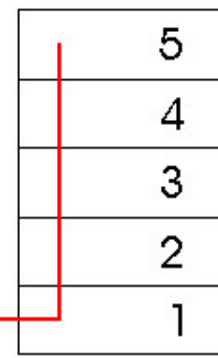
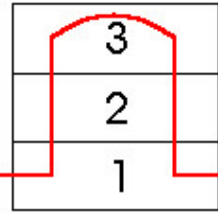
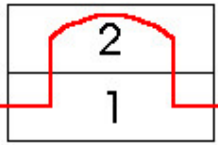
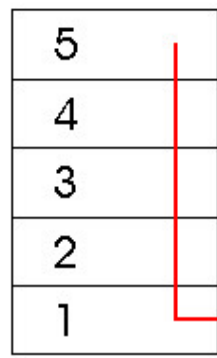
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(Gateways) (1)

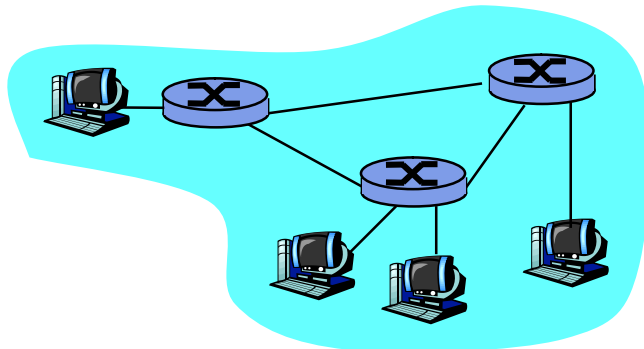


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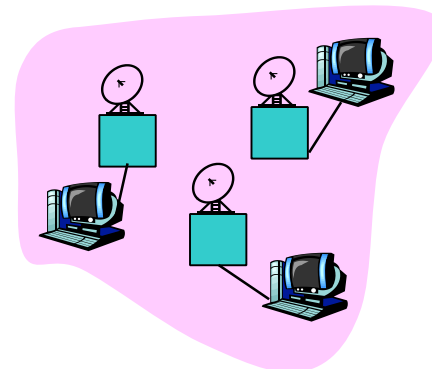
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ARPAnet



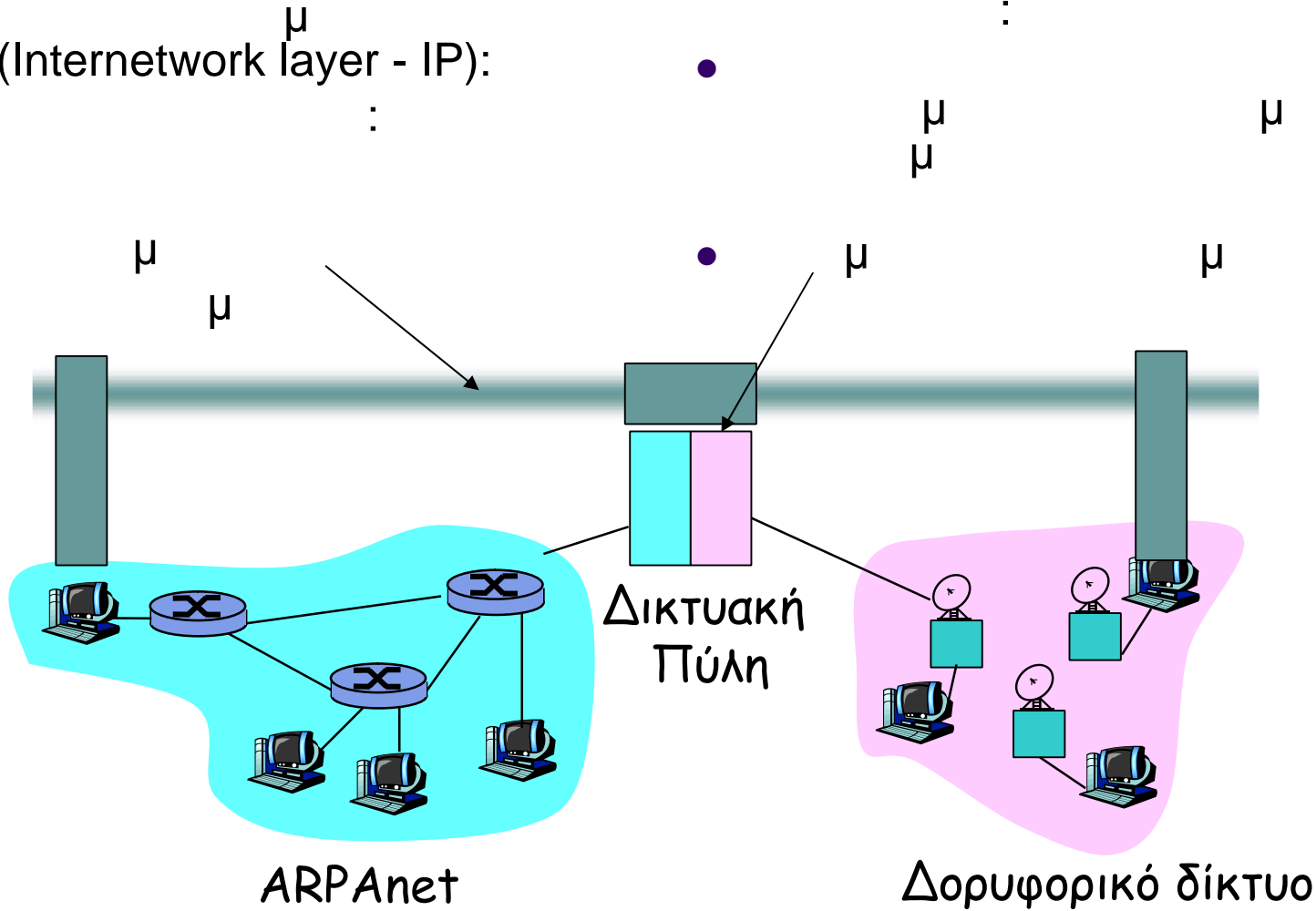
Δορυφορικό δίκτυο

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(Gateways) (2)

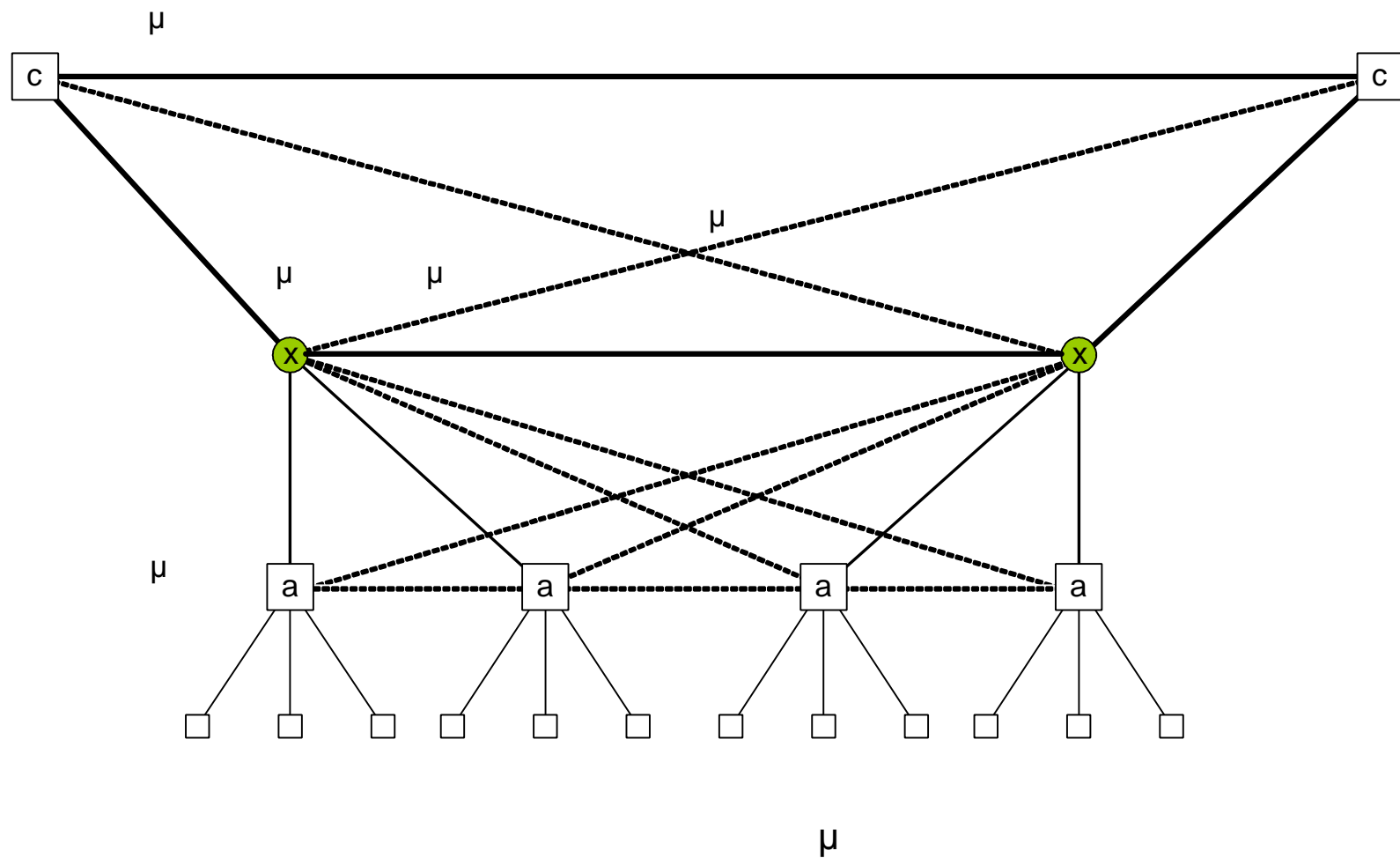


(Internetwork layer - IP):

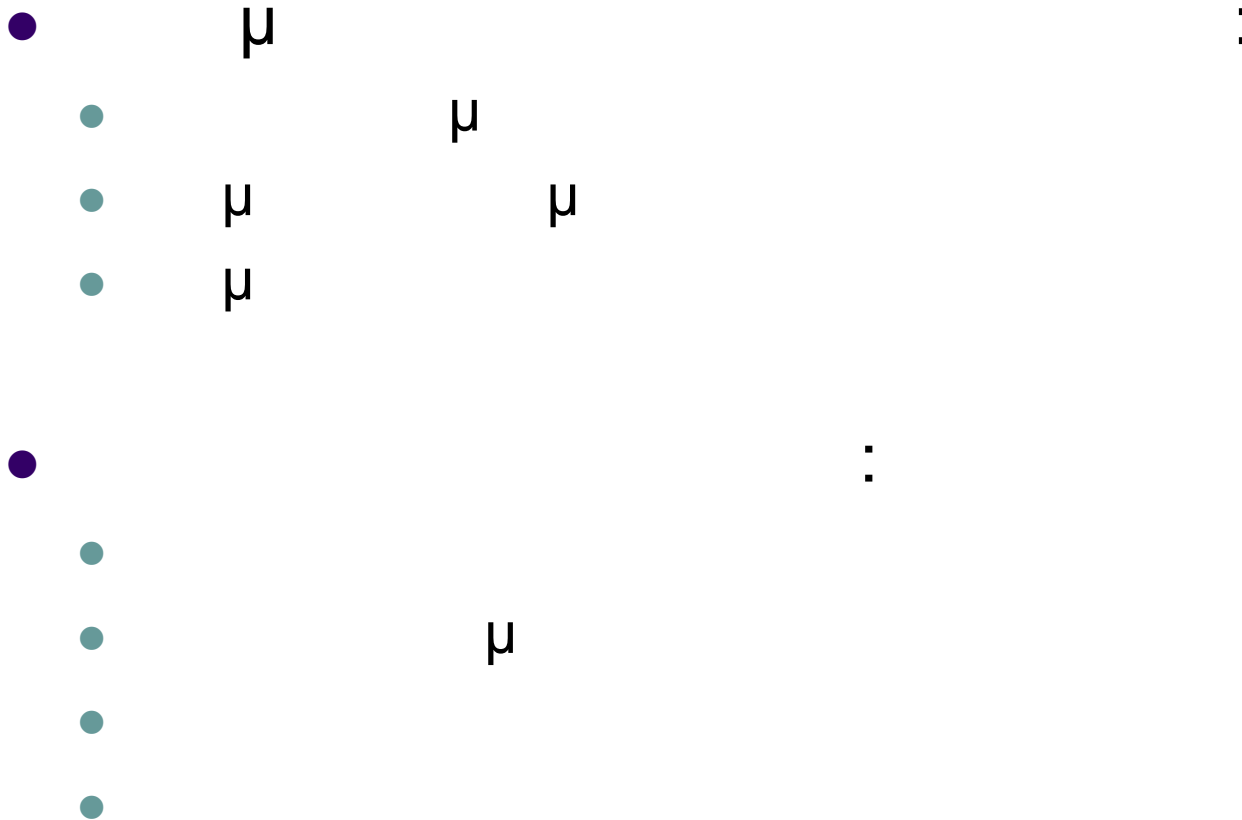


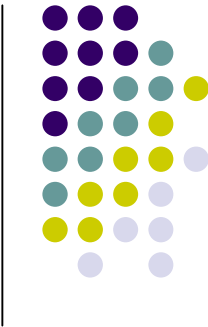


(WAN, MAN) (1)



(WAN, MAN) (2)





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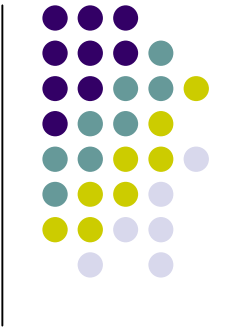
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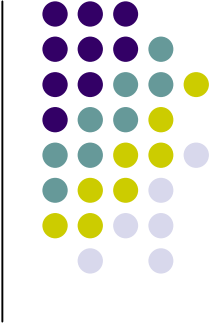
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(μ)

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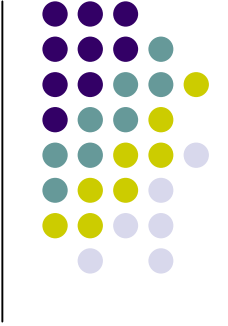


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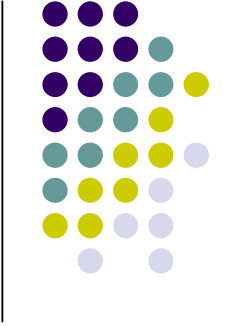
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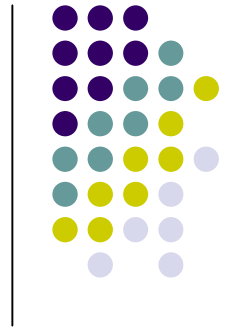
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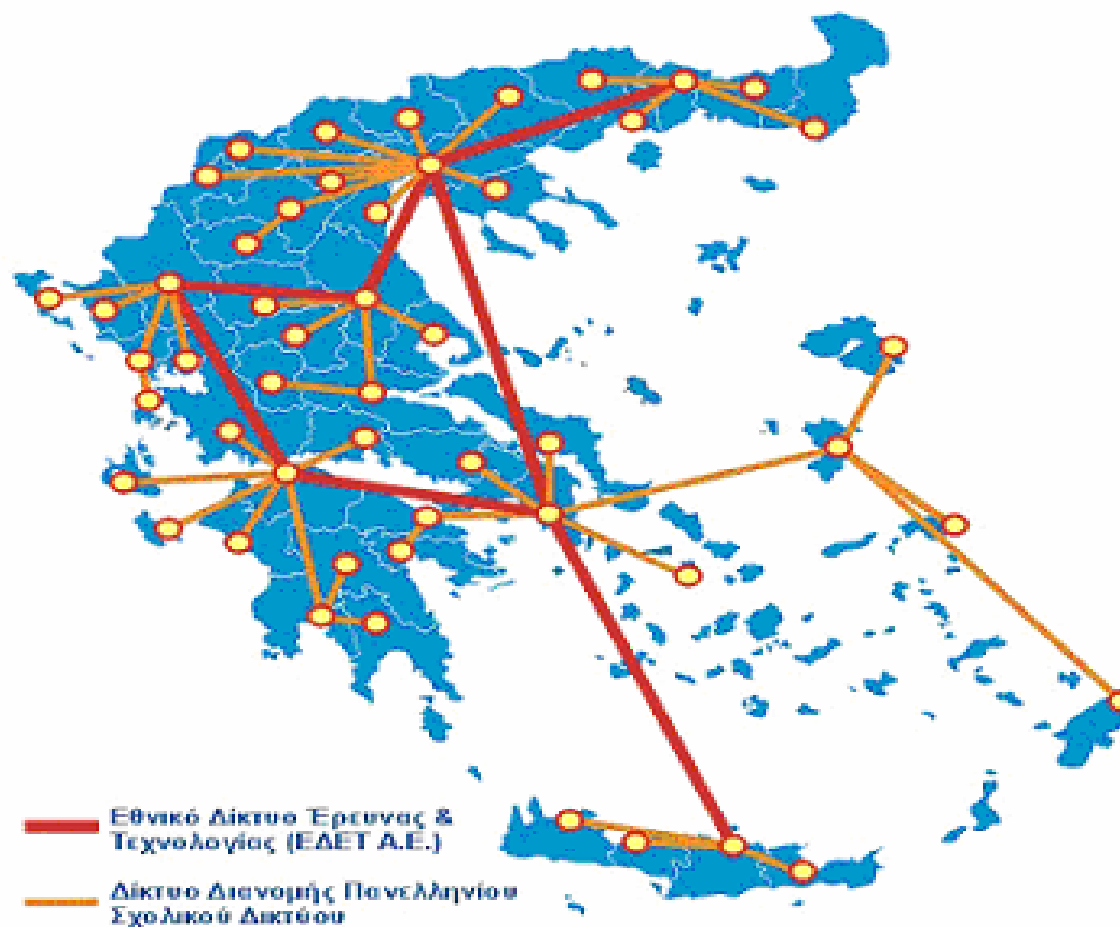
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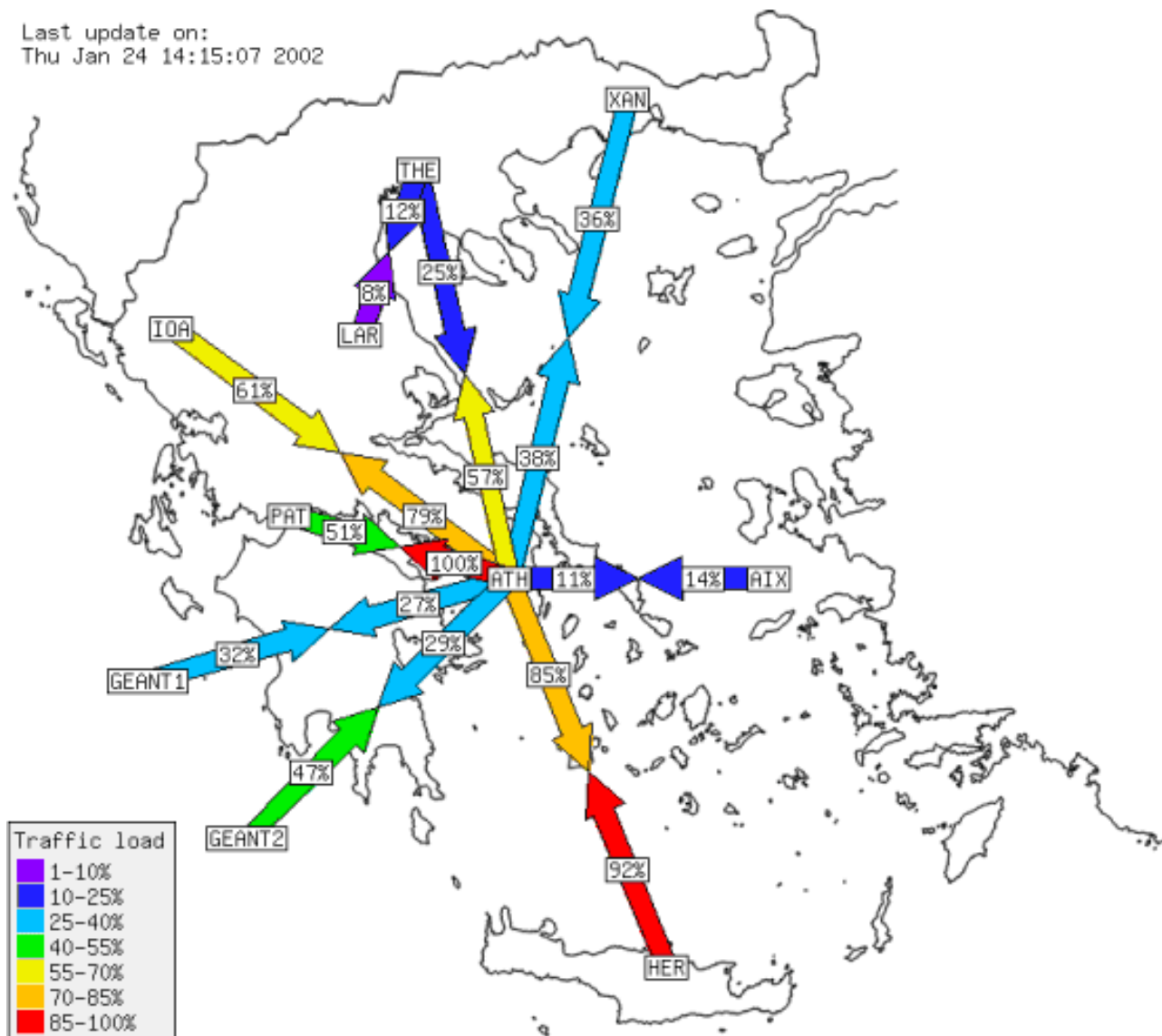
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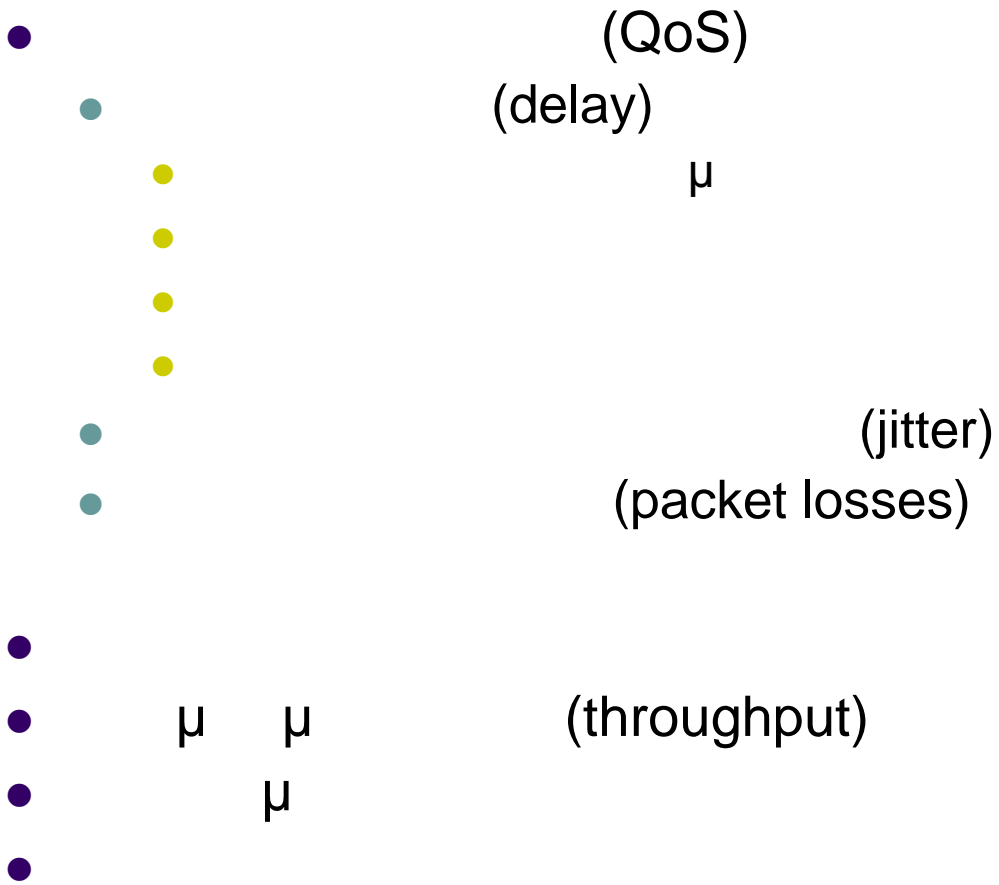
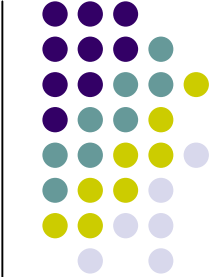
WAN:



WAN:

Last update on:
Thu Jan 24 14:15:07 2002







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- μ (Interior Gateway Protocols - IGP)
 - RIP: Routing Information Protocol
 - OSFP: Open Shortest Path First
- μ (Exterior Gateway Protocols - EGP)
 - BGP: Border Gateway Protocol



μ

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μ

μ

(Resource sharing)



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μ



(Services)

μ



(2)

- μ : RTSP, RTP/RTCP
 - μ server (Streaming)
 - μ (Real Time Streaming)
- μ (Voice over IP – VoIP)
- (Videoconferencing): .320, .323, .324
- / μ
- : SNMP/MIB

