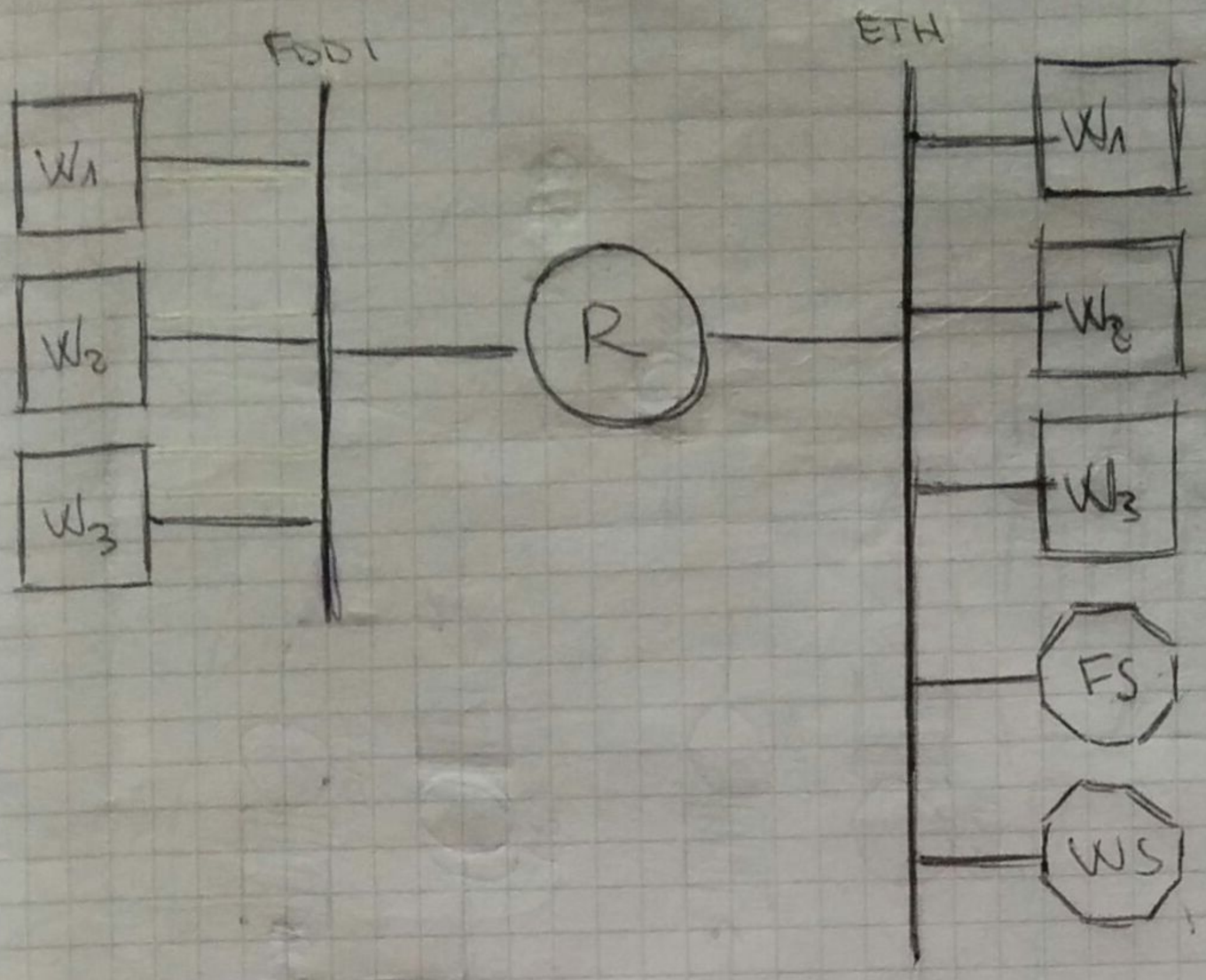
9 FEB 2012



4 CLASSES:

1. FDDI, FS → 1,5
2. FDDI, WS → 1,5
3. ETH, FS → 1,5
4. ETH, WS → 1,5

$Z = 50\,sec$

$P_{HIT} = 0.8$

$AvgFileSize_{FS} = 10\,KB$

$AvgFileSize_{WEB} = 100\,KB$

$AvgReqSize = 300\,B$

$S^{FS}_{REQ-CPU} = 5ms$

$S^{FS}_{REQ-DISK} = 10ms$

$S^{FS}_{RES-CPU} = 30ms$

$S^{WS}_{REQ-CPU} = 10ms$

$S^{WS}_{REQ-DISK} = 20ms$

$S^{WS}_{RES-CPU} = 30ms$

$S_{CPU-FS} = 20ms$

$S_{DISK-FS} = 30ms$

$S_{CPU-WEB} = 20ms$

$S_{DISK-WEB} = 40ms$

$Bandwidth_{ETH} = 100MB/s$

$Bandwidth_{FDDI} = 600MB/s$

$Delay_{ROUTER} = 1ms/packet$

Assumptions:

- The RAID 1 system 2+2 is made of two replicas of the same filesystem, each composed by a pair of two disk that are not twins.
- TCP does not know about the data link layer that lies below IP.
- IP implements PATH DISCOVERY in order to avoid fragmentation at ROUTER level!

HALF #1
HALF #2
TWIN #1
TWIN #2
DISK-CONTR. +L.B
CPU
X3
WS
ROUTER
FDDI
ETH
FS
CPU-FS1
CPUFS2
L.B
DISK CONTR.
CPU
DISK
L.B
WEB
WS
X3

$D^{[1]}_{WS\text{-}CPU} = D^{[3]}_{WS\text{-}CPU} = D^{FS}_{WS\text{-}CPU} = 35ms$

$D^{[2]}_{WS\text{-}CPU} = D^{[4]}_{WS\text{-}CPU} = D^{WEB}_{WS\text{-}CPU} = 110ms$

$D^{[1]}_{WS\text{-}DISK} = D^{[3]}_{WS\text{-}DISK} = D^{FS}_{WS\text{-}DISK} = 10ms$

$D^{[2]}_{WS\text{-}DISK} = D^{[4]}_{WS\text{-}DISK} = D^{WEB}_{WS\text{-}DISK} = 20ms$

$D^{[1]}_{FS\text{-}CPU} = D^{[3]}_{FS\text{-}CPU} = S_{CPU\text{-}FS}\ 0,5 = 10ms$

$D^{[2]}_{FS\text{-}CPU} = D^{[4]}_{FS\text{-}CPU} = \emptyset$

$D^{[1]}_{FS\text{-}DISK} = D^{[3]}_{FS\text{-}DISK} = S_{DISK\text{-}FS} = 30ms$

$D^{[2]}_{FS\text{-}DISK} = D^{[4]}_{FS\text{-}DISK} = \emptyset$

$D^{[1]}_{WEB\text{-}CPU} = D^{[3]}_{WEB\text{-}CPU} = \emptyset$

$D^{[2]}_{WEB\text{-}CPU} = D^{[4]}_{WEB\text{-}CPU} = S_{CPU\text{-}WEB}\ 0,5 = 10ms$

$D^{[1]}_{WEB\text{-}DISK} = D^{[3]}_{WEB\text{-}DISK} = \emptyset$

$D^{[2]}_{WEB\text{-}DISK} = D^{[4]}_{WEB\text{-}DISK} = S_{DISK\text{-}WEB}\ 0,5\ 0,2 = 4ms$

$D^{[1]}_{FDDI} = NetTime_{CH,FDDI} + NetTime_{REQ,FDDI} + NetTime_{RES,FDDI,FS} =$

$D^{[2]}_{FDDI} =$ // // $+ NetTime_{RES,FDDI,WEB} =$

$D^{[3]}_{FDDI} = D^{[4]}_{FDDI} = \emptyset$

$D^{[1]}_{ETH} = D^{[3]}_{ETH} = NetTime_{CH,ETH} + NetTime_{REQ,ETH} + NetTime_{RES,ETH,FS}$

$D^{[2]}_{ETH} = D^{[4]}_{ETH} = NetTime_{CH,ETH} + NetTime_{REQ,ETH} + NetTime_{RES,ETH,WEB}$

$D^{[1]}_{ROUTER} = 1ms \cdot (6+1+7)$

$D^{[2]}_{ROUTER} = 1ms \cdot (6+1+70)$

$D^{[3]}_{ROUTER} = D^{[4]}_{ROUTER} = \emptyset$

MVA for <u>every</u> class!

↑ MULTICLASSE