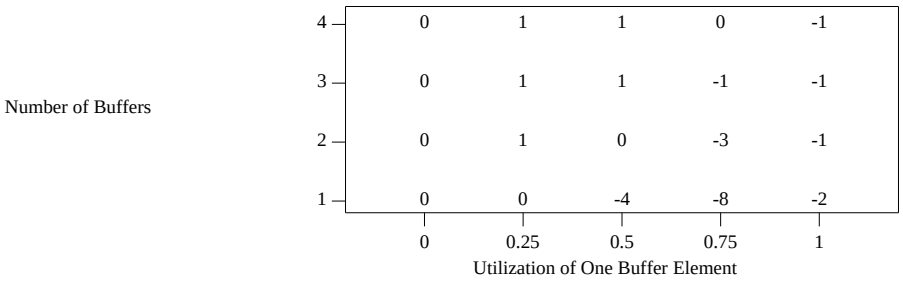
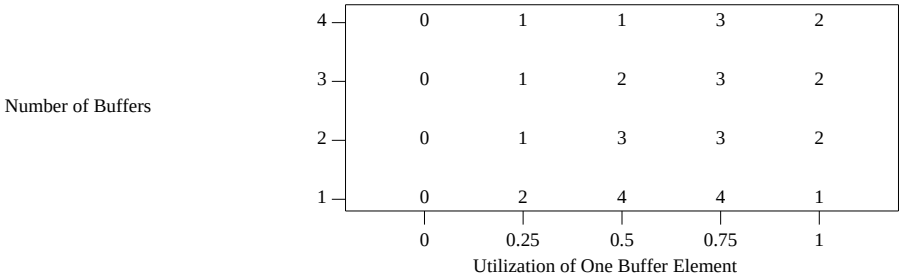
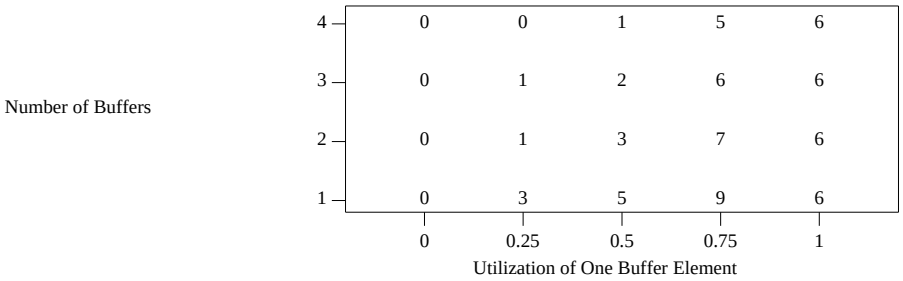
One Producer, One Consumer



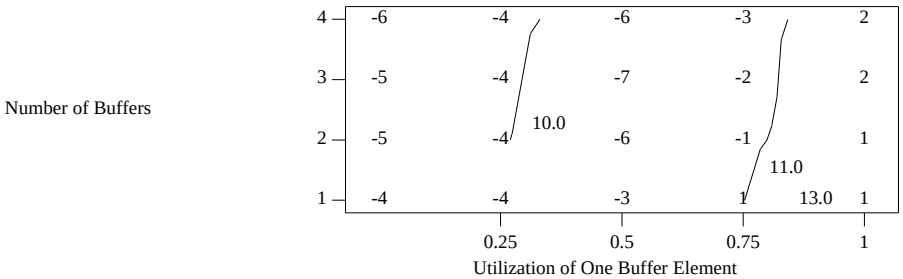
Four Producers, Four Consumers



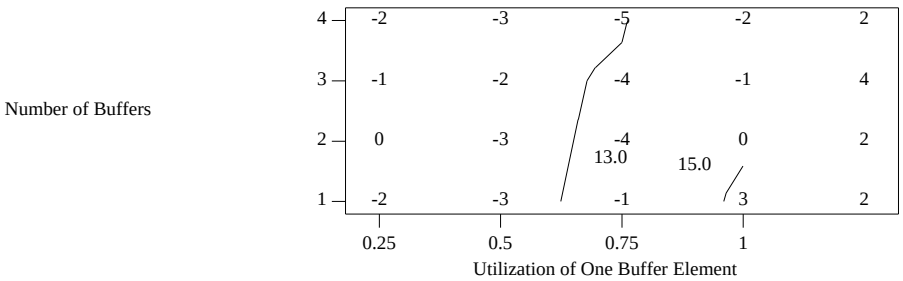
Ten Producers, Ten Consumers



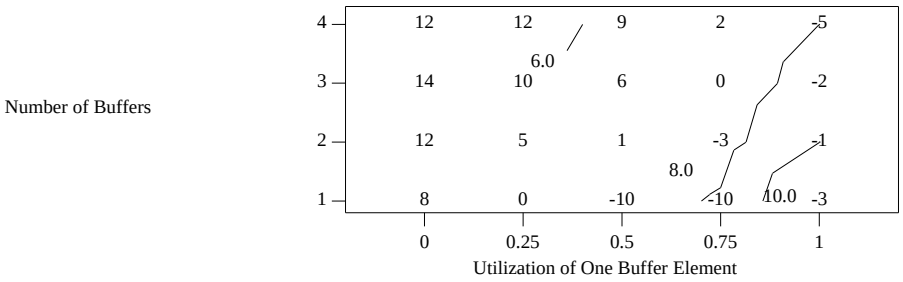
Three Producers, Six Consumers



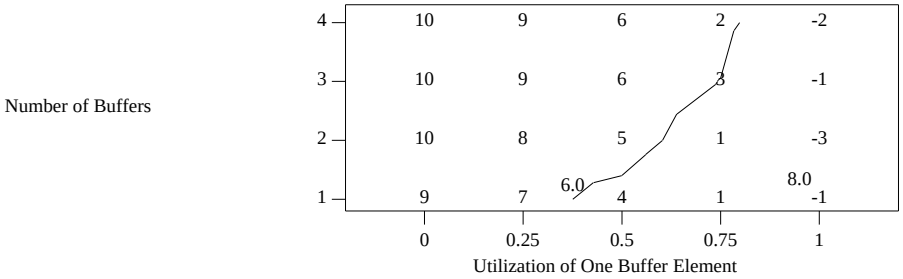
Four Producers, Ten Consumers



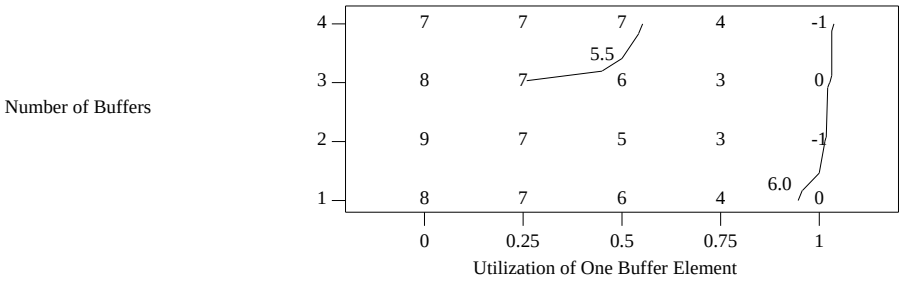
One Producer, One Consumer

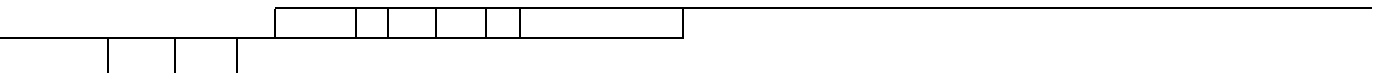


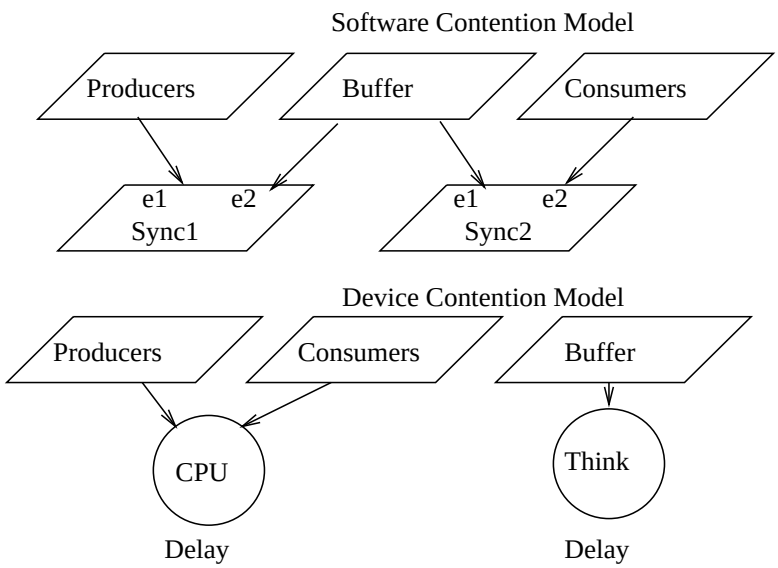
Four Producers, Four Consumers



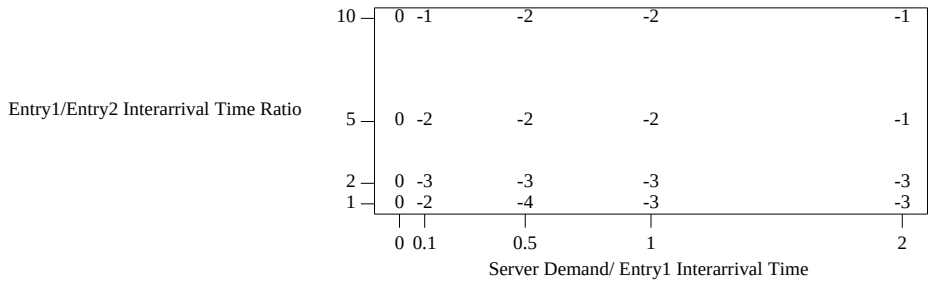
Ten Producers, Ten Consumers



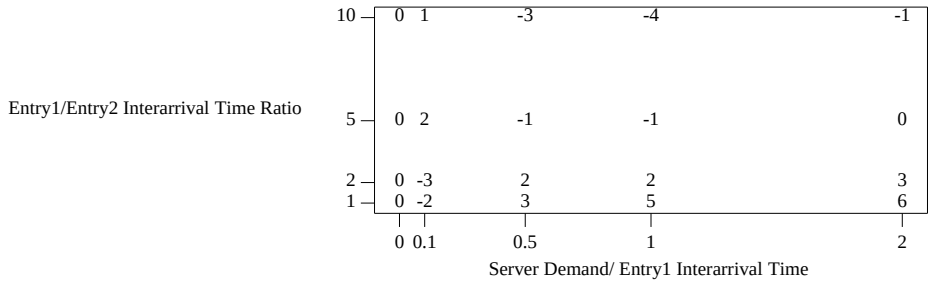



Software Contention Model
Producers
Buffer
Consumers
e1
e2
Sync1
e1
e2
Sync2
Device Contention Model
Producers
Consumers
Buffer
CPU
Think
Delay
Delay

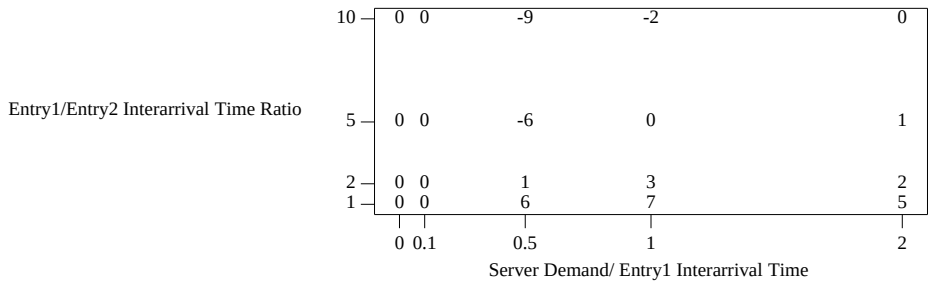
One Customer Using Each Entry



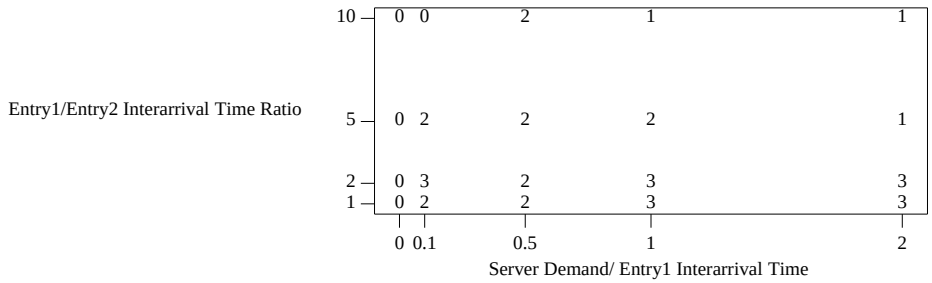
Three Customers Using Each Entry



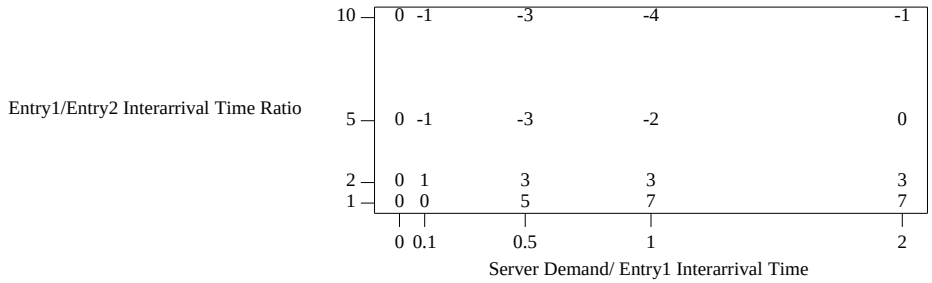
Five Customers Using Each Entry



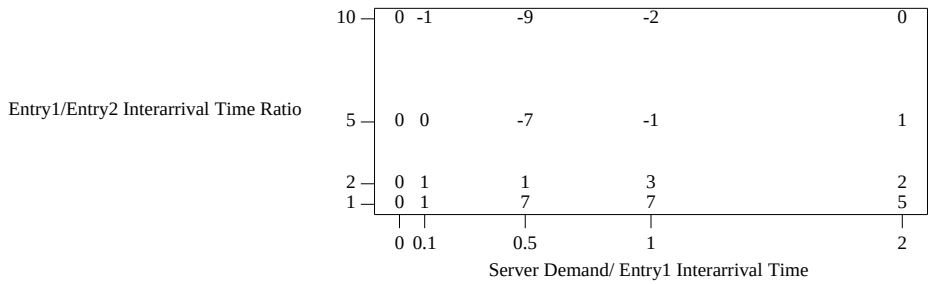
One Customer Using Each Entry



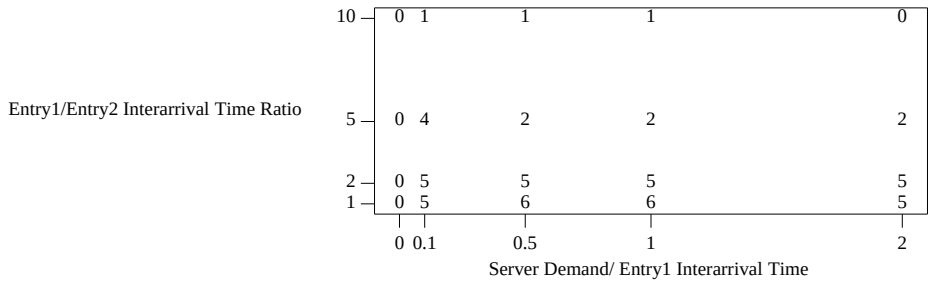
Three Customers Using Each Entry



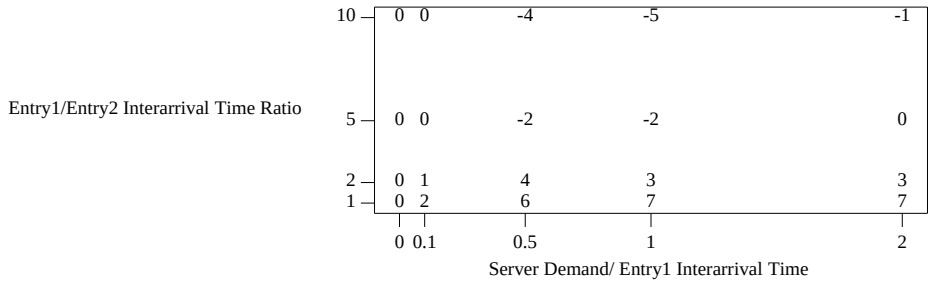
Five Customers Using Each Entry



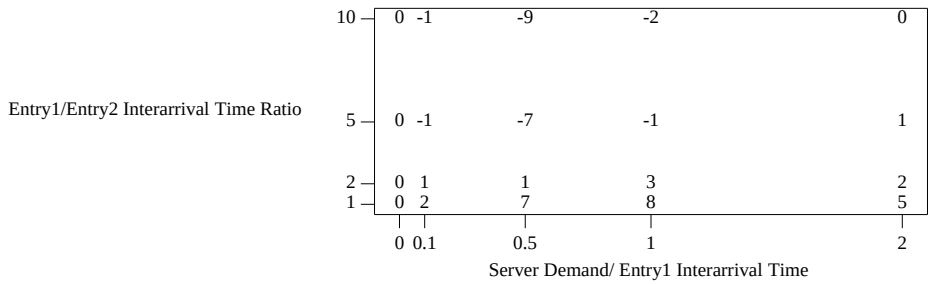
One Customer Using Each Entry



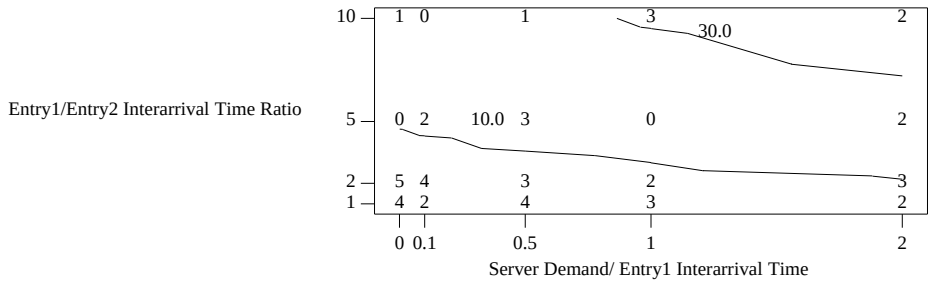
Three Customers Using Each Entry



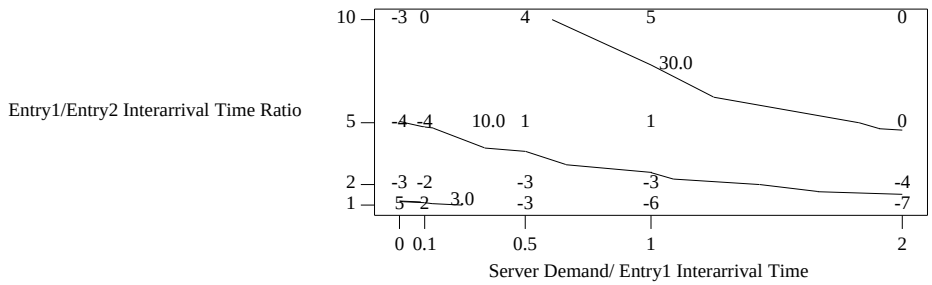
Five Customers Using Each Entry



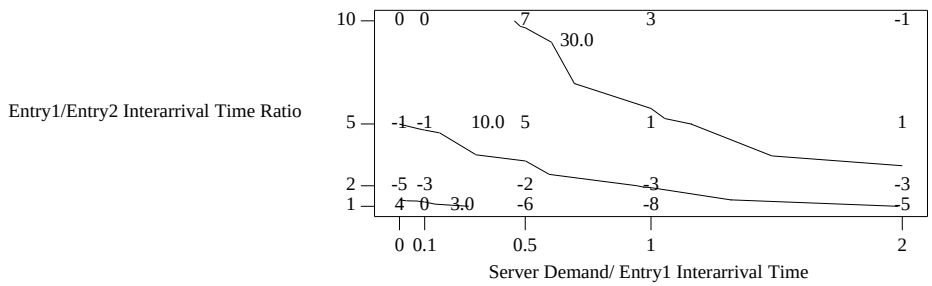
One Customer Using Each Entry



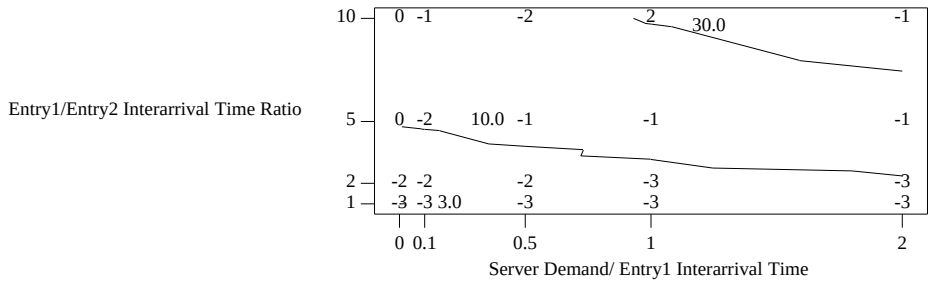
Three Customers Using Each Entry



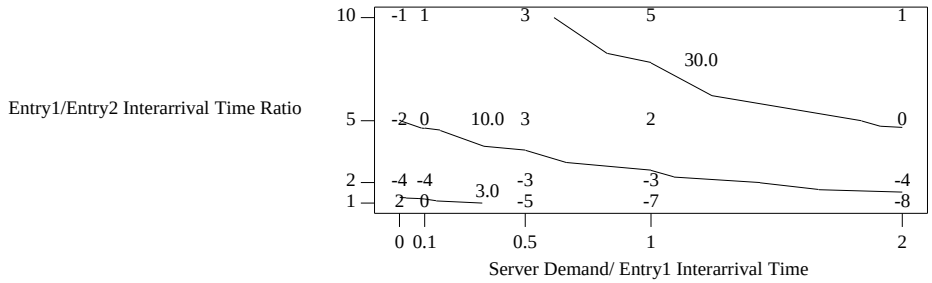
Five Customers Using Each Entry



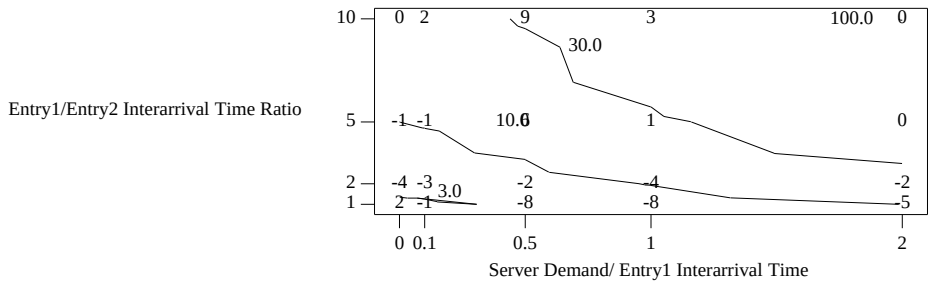
One Customer Using Each Entry



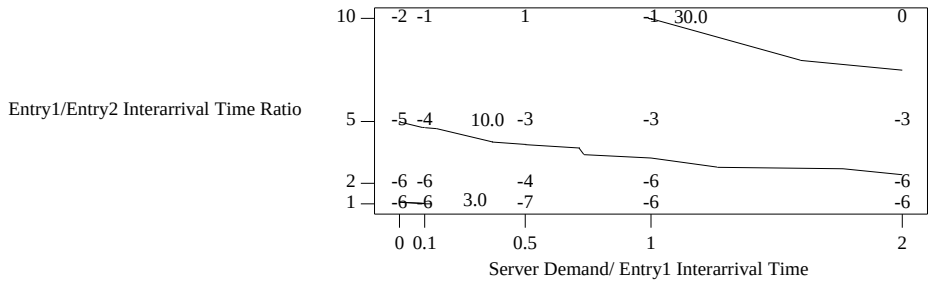
Three Customers Using Each Entry



Five Customers Using Each Entry



One Customer Using Each Entry



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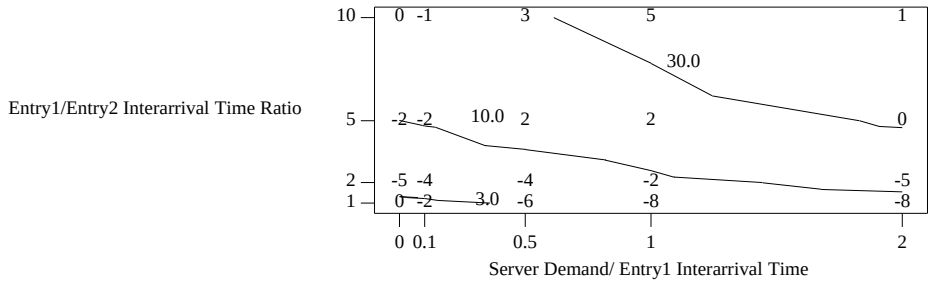
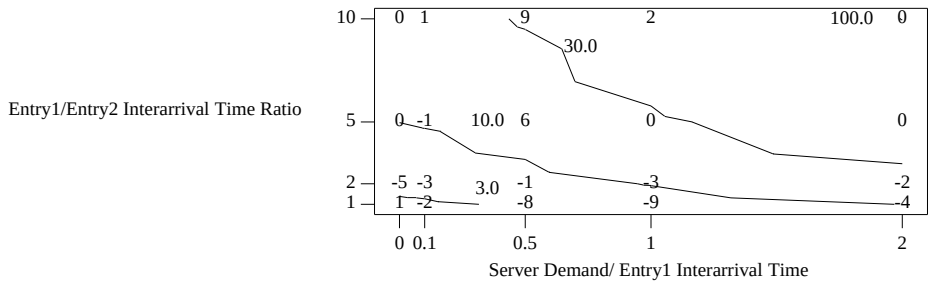
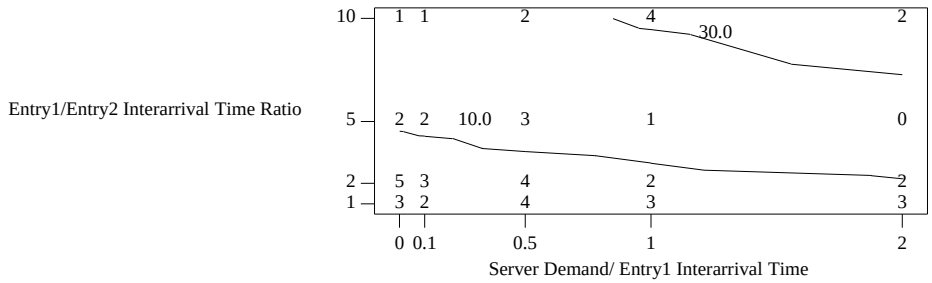


Five Customers Using Each Entry



One Customer Using Each Entry



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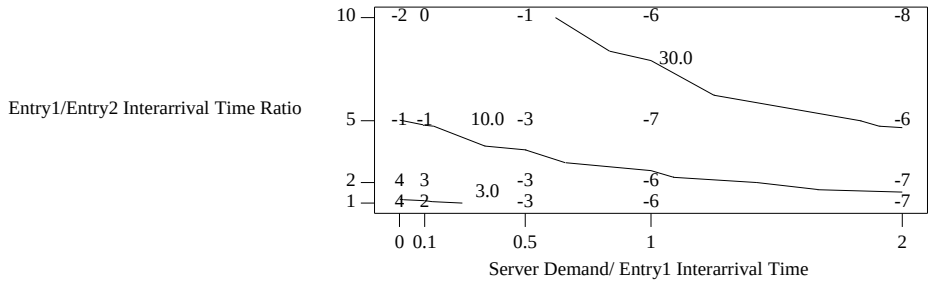
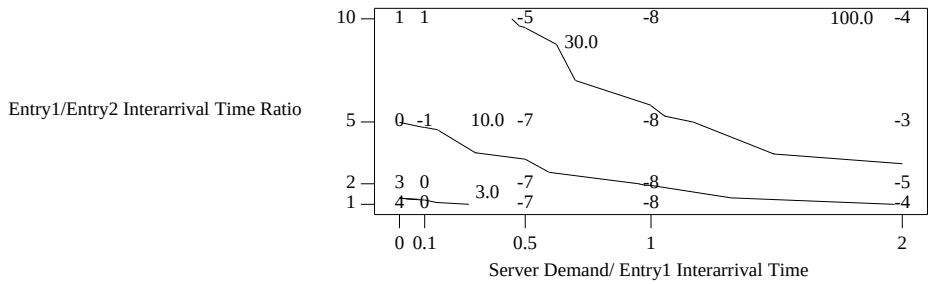
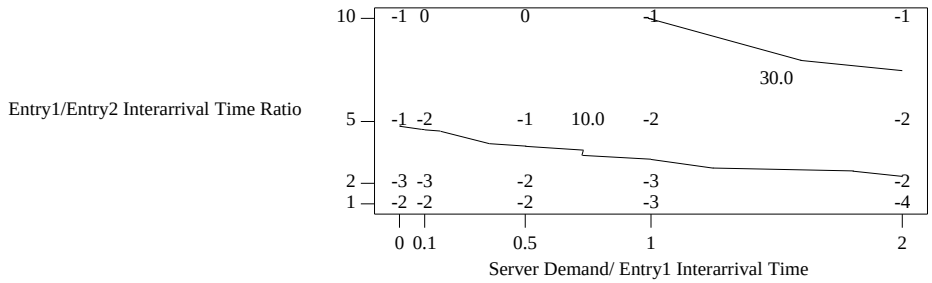


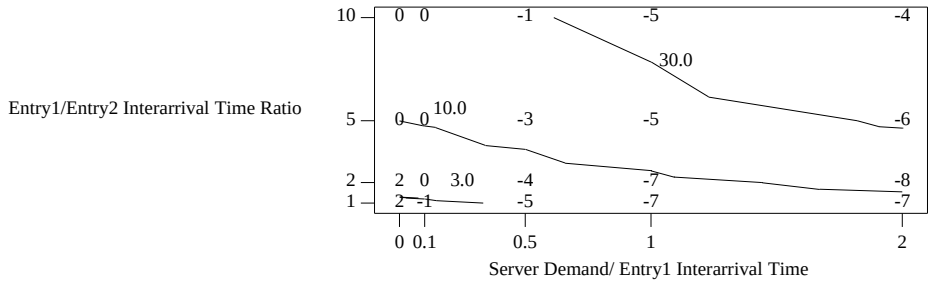
Five Customers Using Each Entry



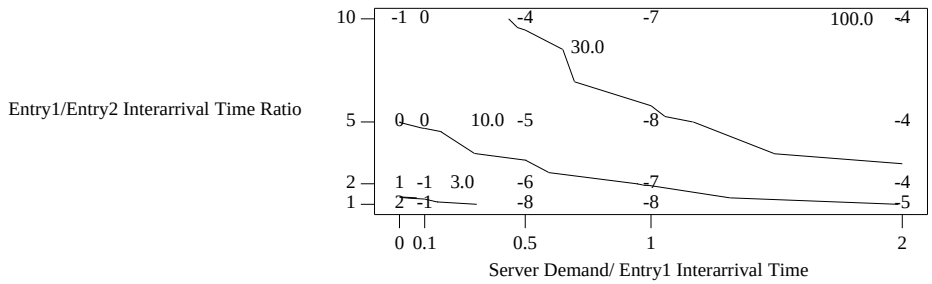
One Customer Using Each Entry



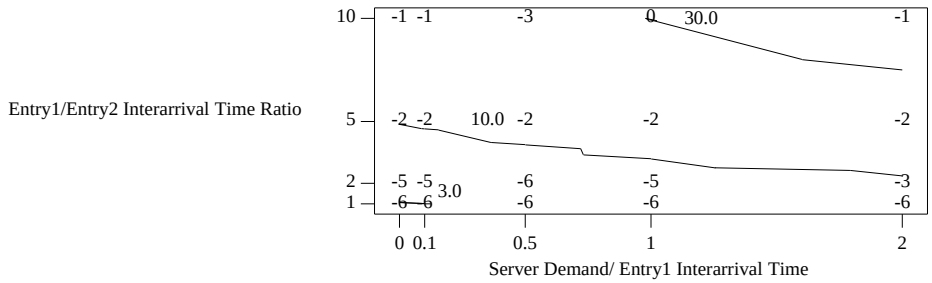
Three Customers Using Each Entry



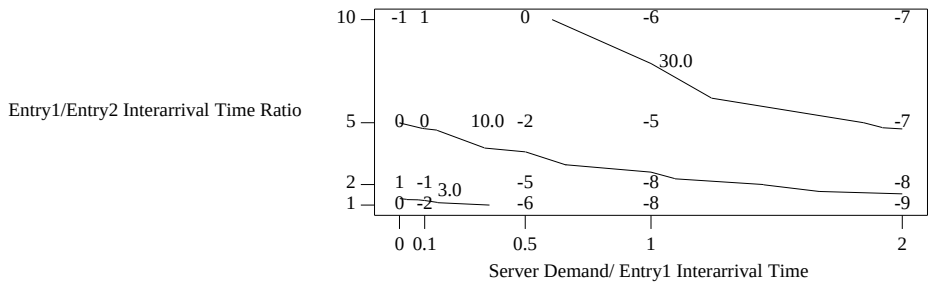
Five Customers Using Each Entry



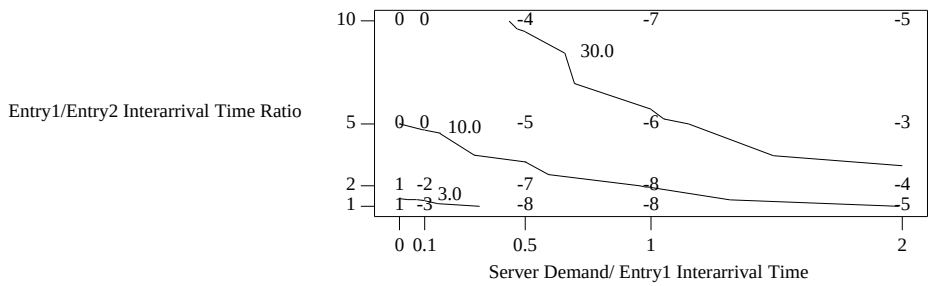
One Customer Using Each Entry

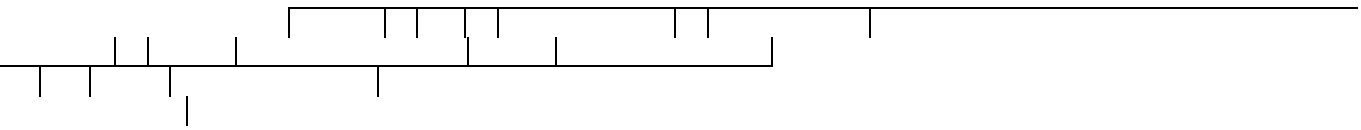


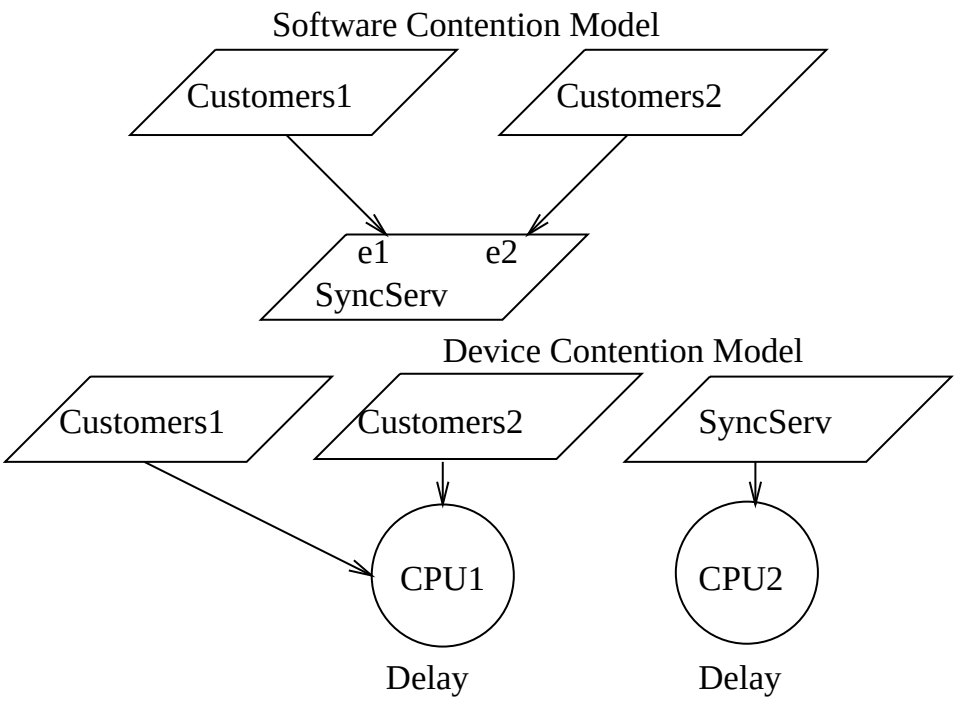
Three Customers Using Each Entry



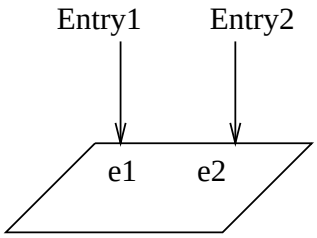
Five Customers Using Each Entry



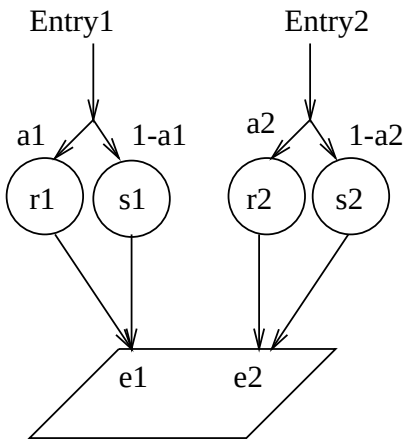



Software Contention Model
Customers1
Customers2
e1
e2
SyncServ
Device Contention Model
Customers1
Customers2
SyncServ
CPU1
CPU2
Delay
Delay

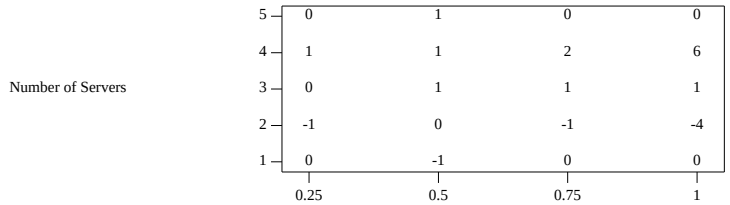
Original View
of Interarrival
Times



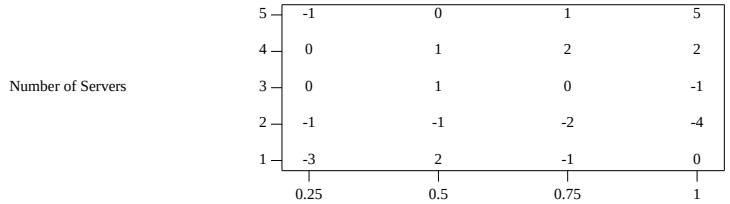
SP Model View
of Interarrival
Times



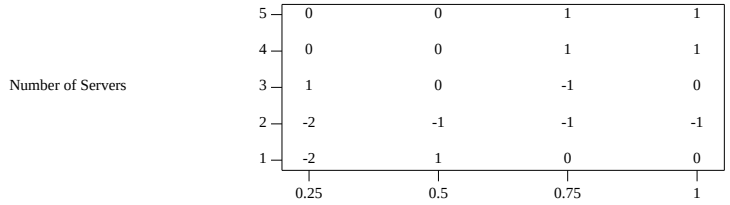
Five Customers Using the Server



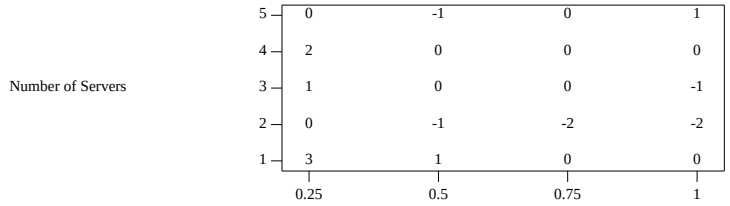
Seven Customers Using the Server



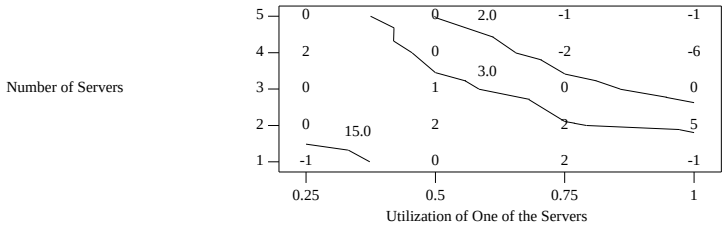
Nine Customers Using the Server



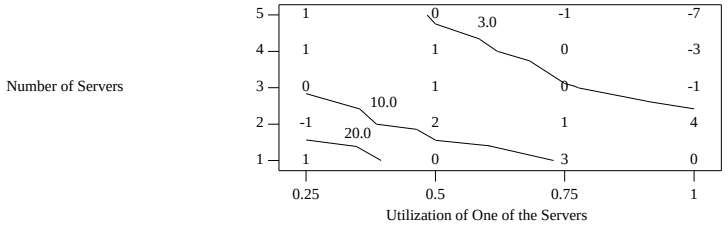
Twelve Customers Using the Server



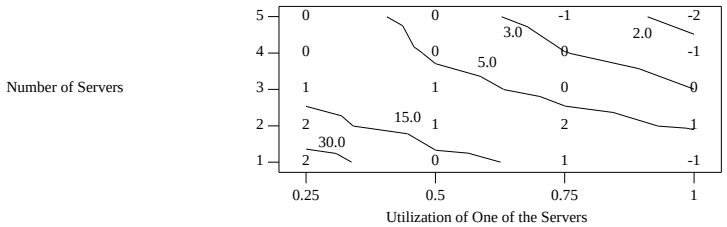
Five Customers Using the Server



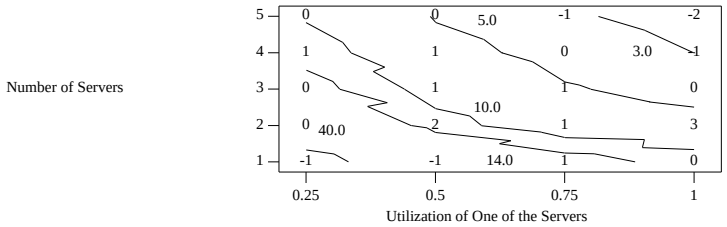
Seven Customers Using the Server

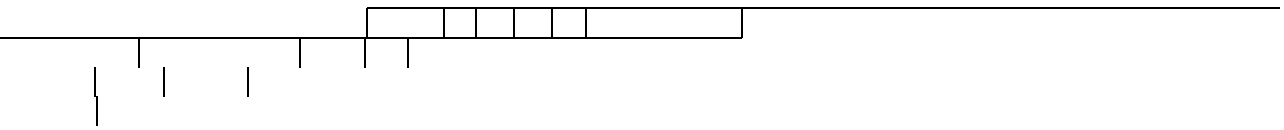


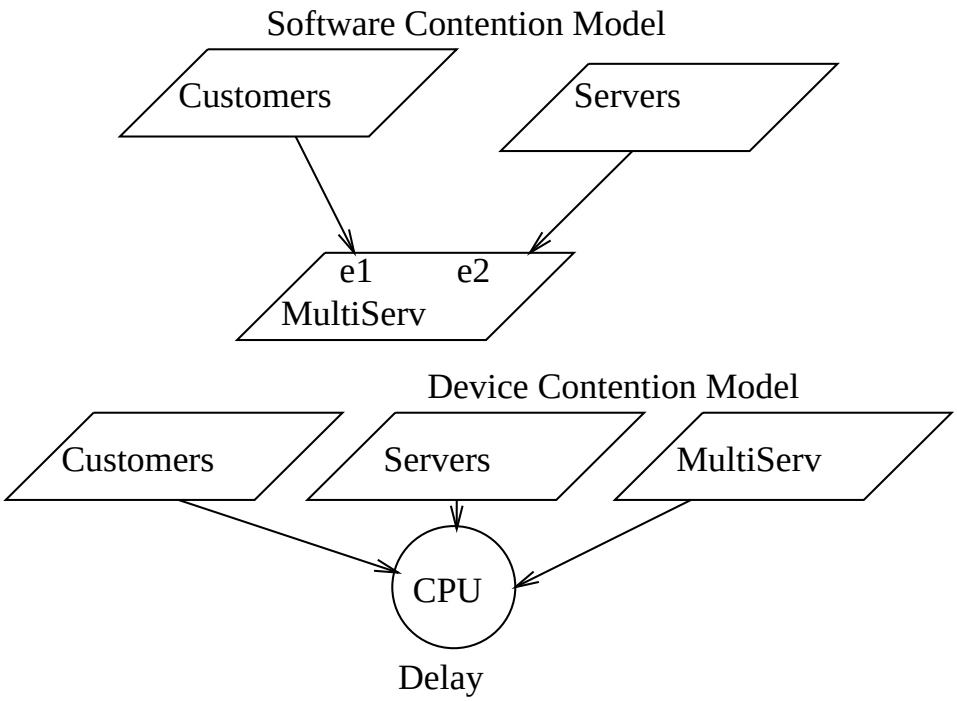
Nine Customers Using the Server

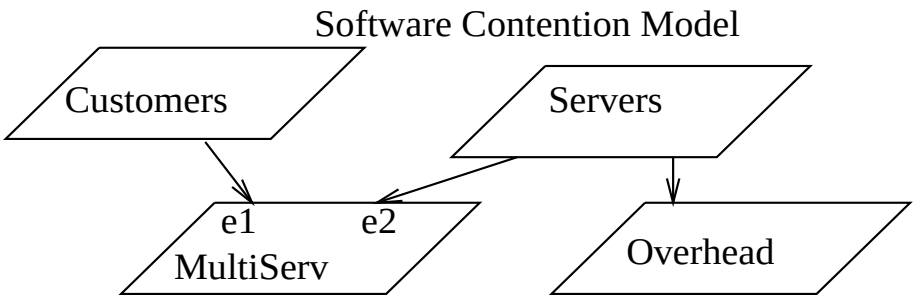


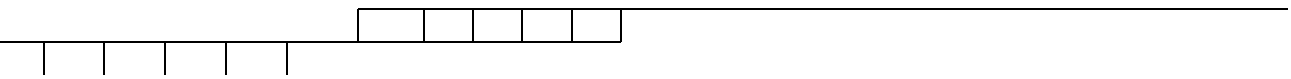
Twelve Customers Using the Server



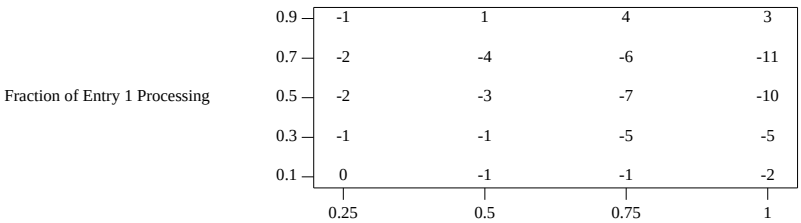



Software Contention Model
Customers
Servers
e1
e2
MultiServ
Device Contention Model
Customers
Servers
MultiServ
CPU
Delay

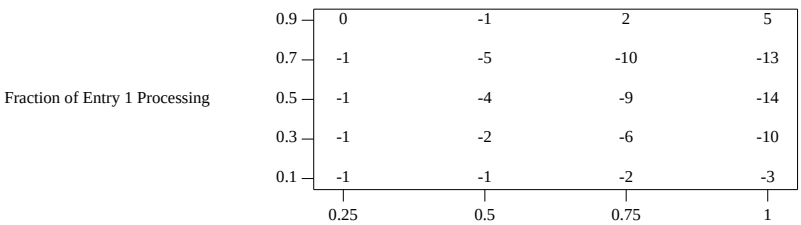

Software Contention Model
Customers
Servers
e1
e2
MultiServ
Overhead



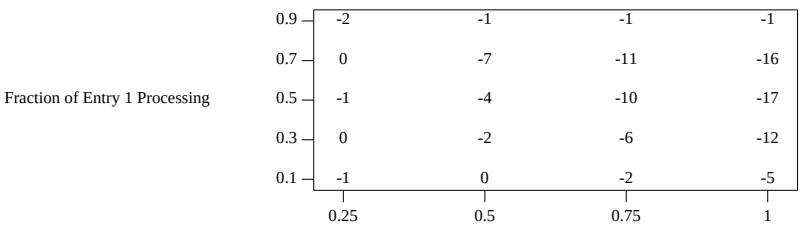
Two Customers Using the Server



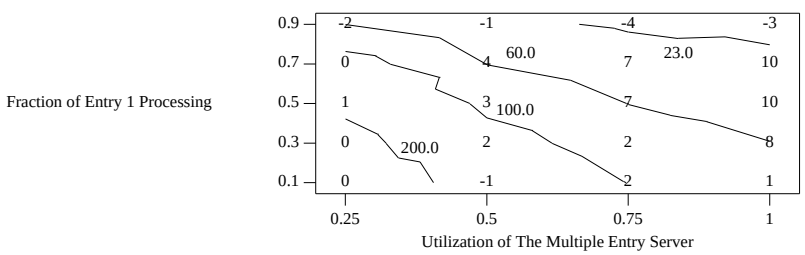
Three Customers Using the Server



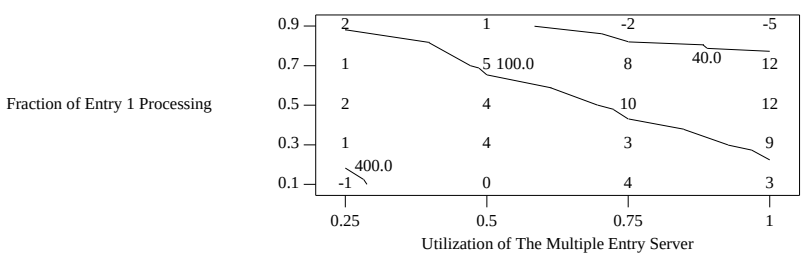
Five Customers Using the Server



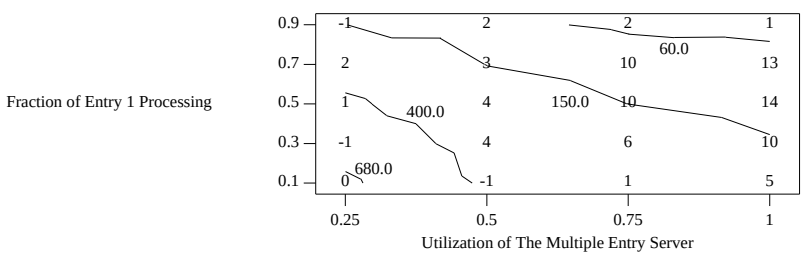
Two Customers Using the Server

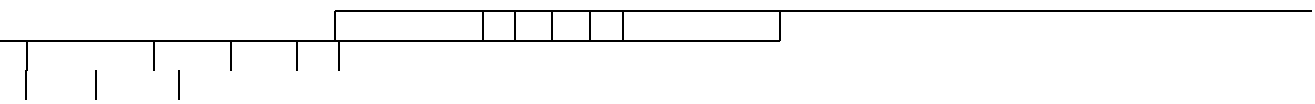


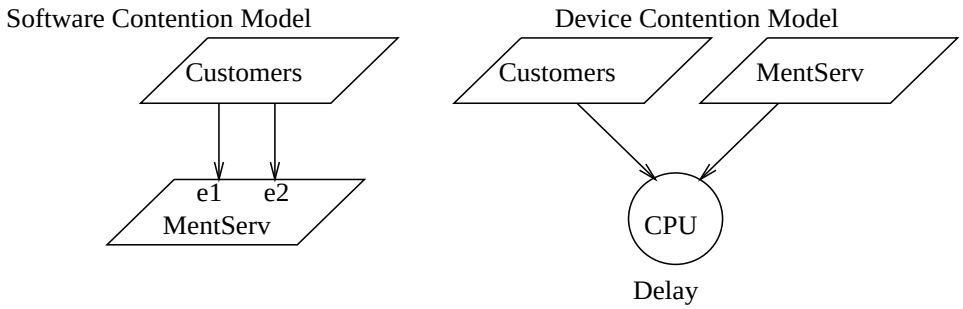
Three Customers Using the Server

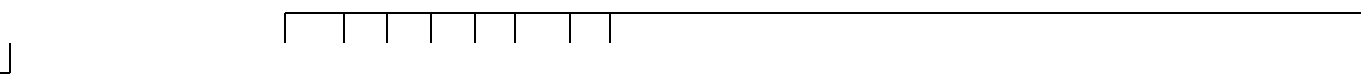


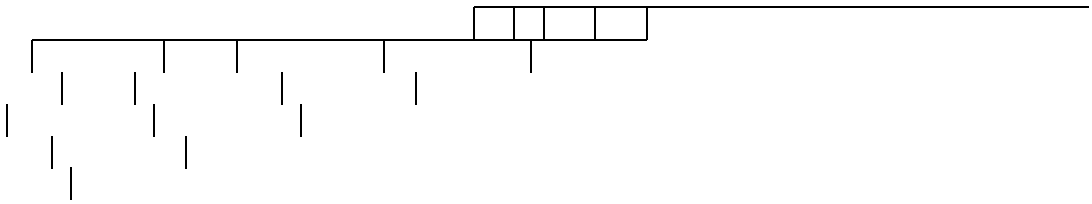
Five Customers Using the Server

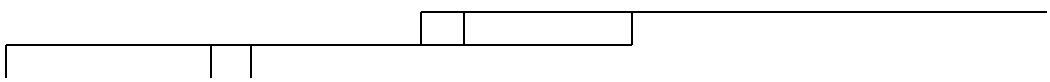


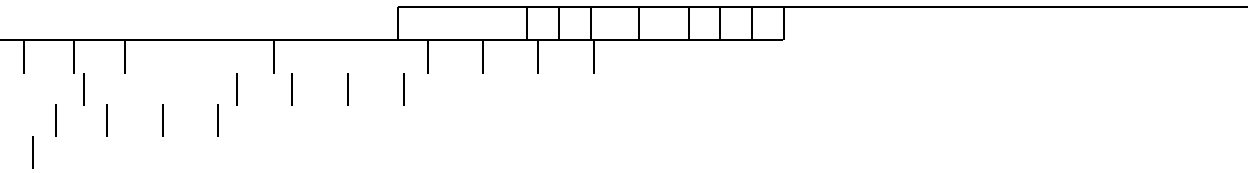


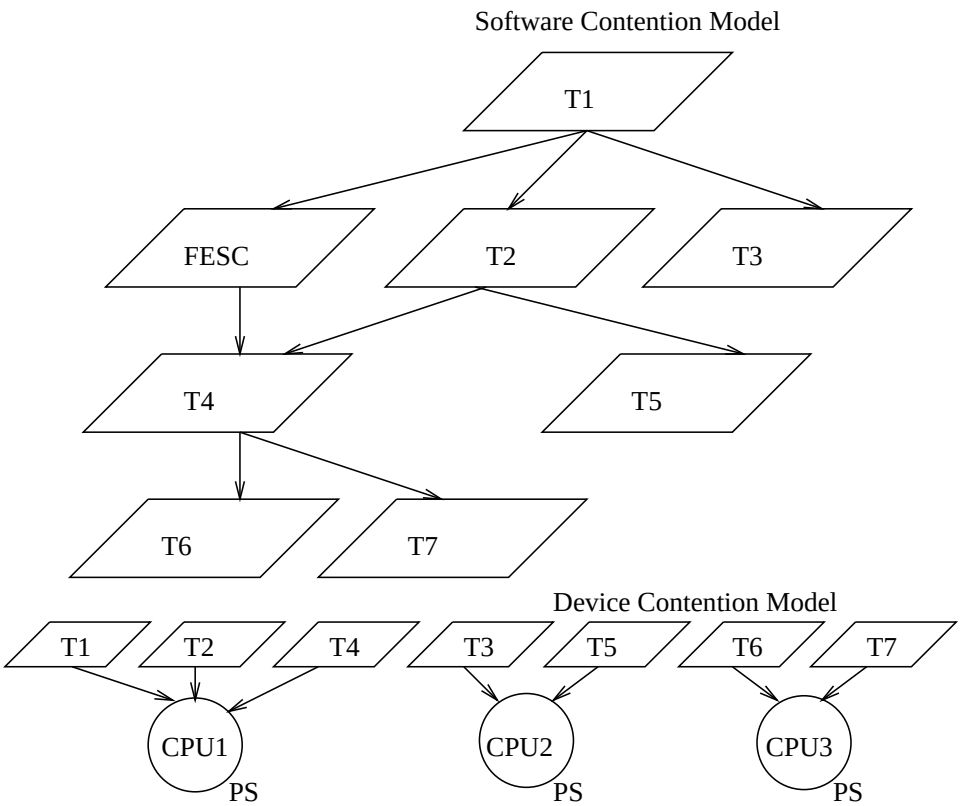

Software Contention Model
Customers
e1
e2
MentServ
Device Contention Model
Customers
MentServ
CPU
Delay

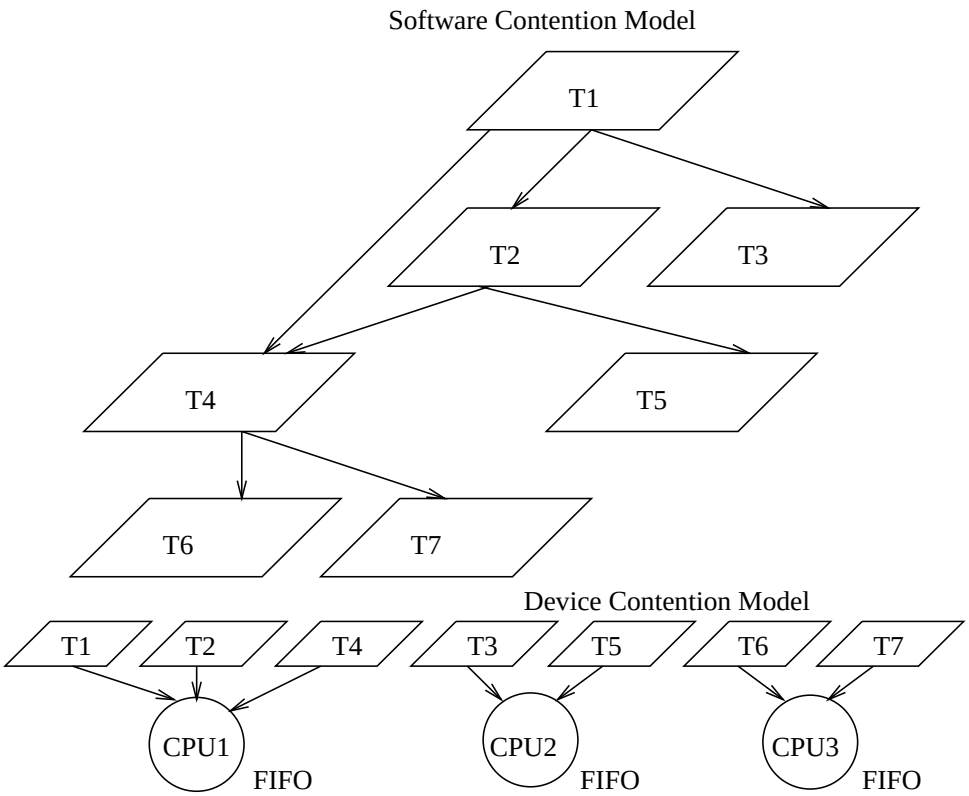


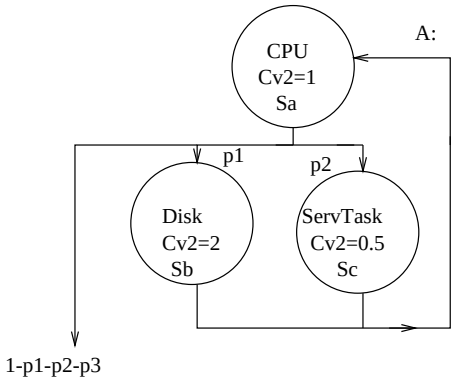







Software Contention Model
T1
FESC
T2
T3
T4
T5
T6
T7
Device Contention Model
T1
T2
T4
T3
T5
T6
T7
CPU1
PS
CPU2
PS
CPU3
PS

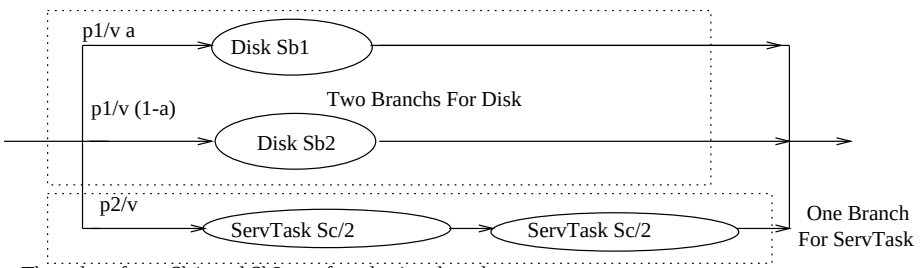

Software Contention Model
T1
T2
T3
T4
T5
T6
T7
Device Contention Model
T1
T2
T4
T3
T5
T6
T7
CPU1
FIFO
CPU2
FIFO
CPU3
FIFO



A: An example of a task's phase. Visits to the CPU, Disk, and ServTask have service times Sa, Sb, and Sc, respectively. Cv2 is the service time squared coefficient of variation. The CPU is the central server.

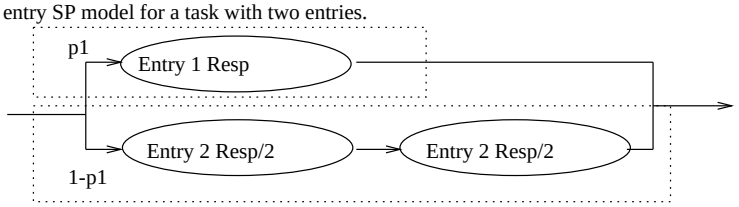
Let v=p1+p2, be the probability a non-central server is visited after a visit to the central server.

B: The phase's corresponding SP model for non-central server events.
p1/v a, p1/4 (1 - a), and p2/v are the branching probabilities.

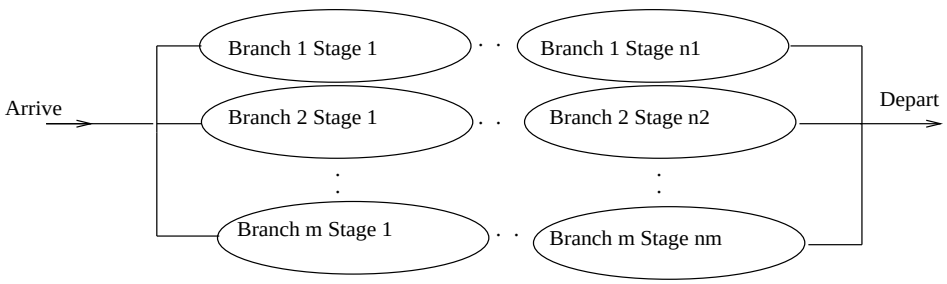


The values for a, Sb1, and Sb2, are found using the rules provided in the procedure for constructing an SP model.

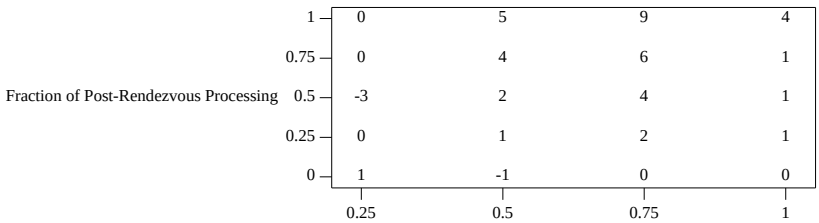
C: An entry SP model for a task with two entries.



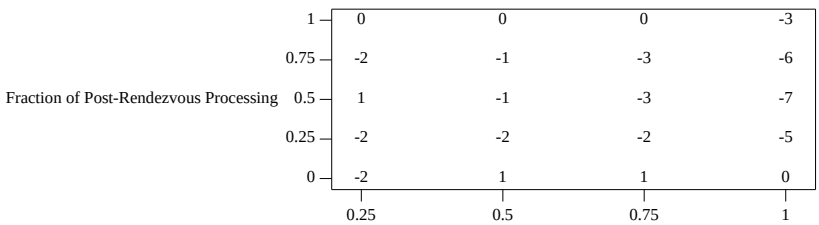
p1 is the probability a caller will choose entry 1.
Entry 1 and 2 have Cv2 of 1 and 0.5, respectively.


Arrive
Branch 1 Stage 1
Branch 1 Stage n1
Branch 2 Stage 1
Branch 2 Stage n2
Branch m Stage 1
Branch m Stage nm
Depart

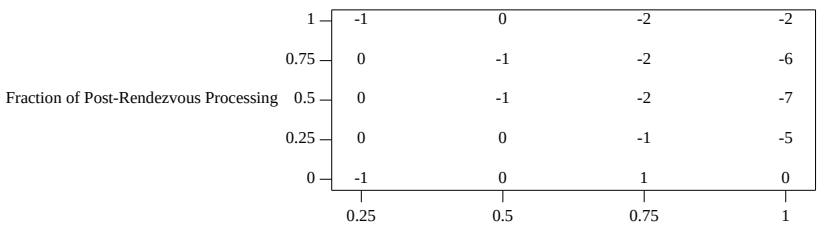
One Customer Using the Server



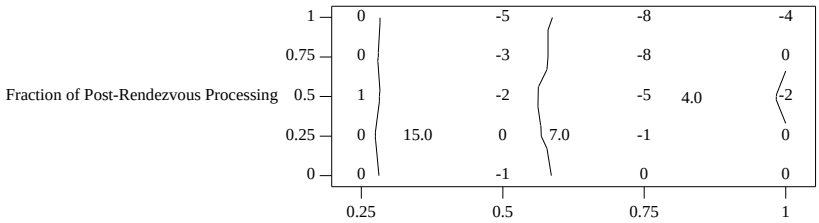
Three Customers Using the Server



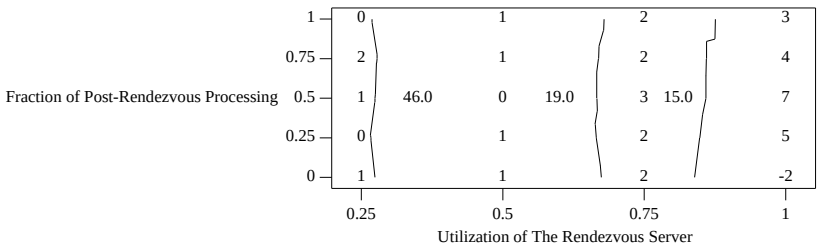
Five Customers Using the Server



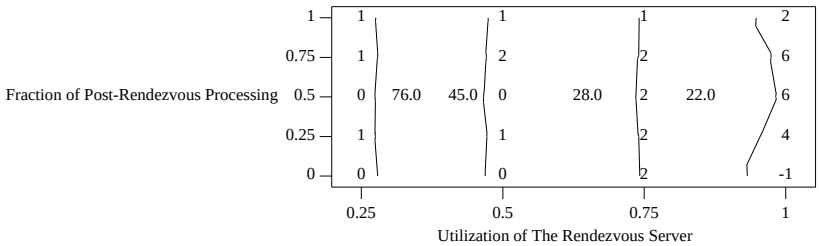
One Customer Using the Server

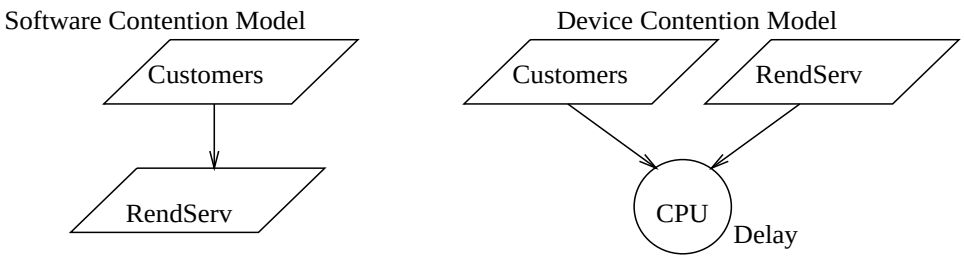


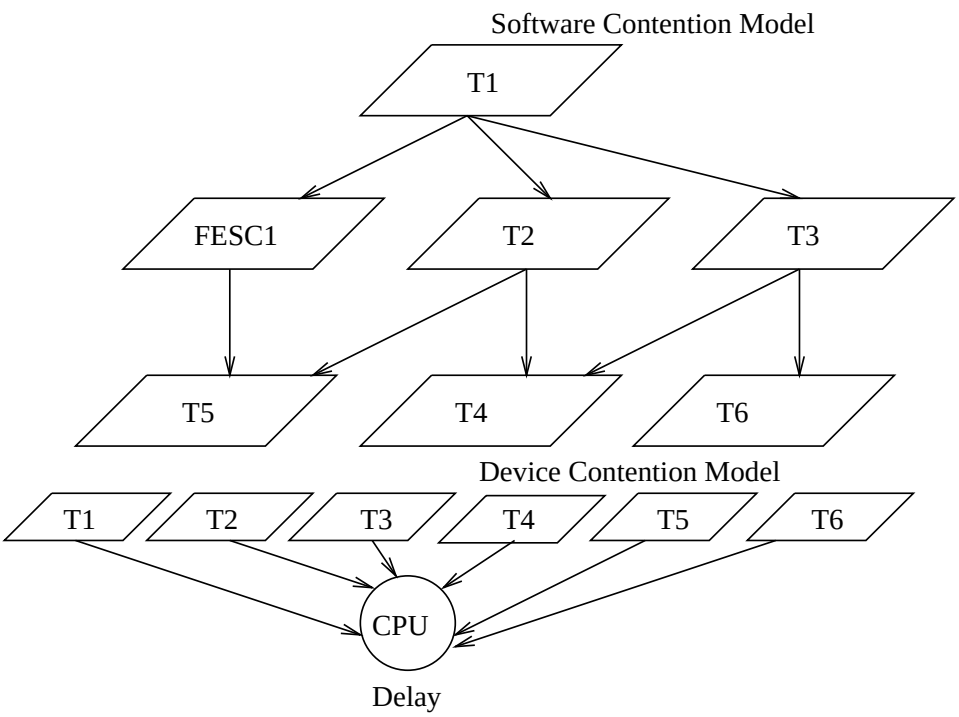
Three Customers Using the Server

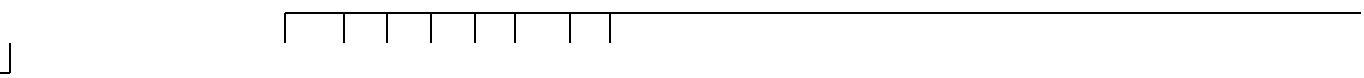


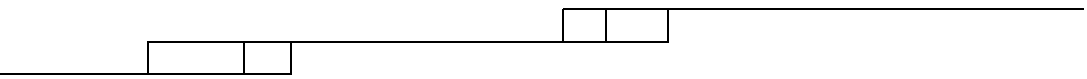
Five Customers Using the Server

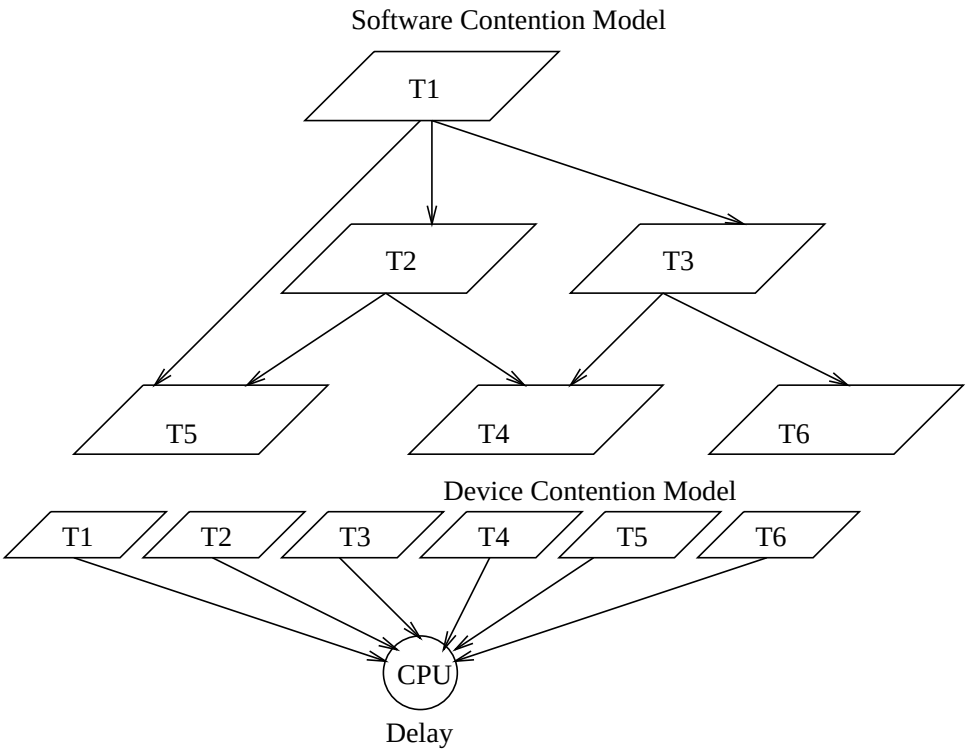


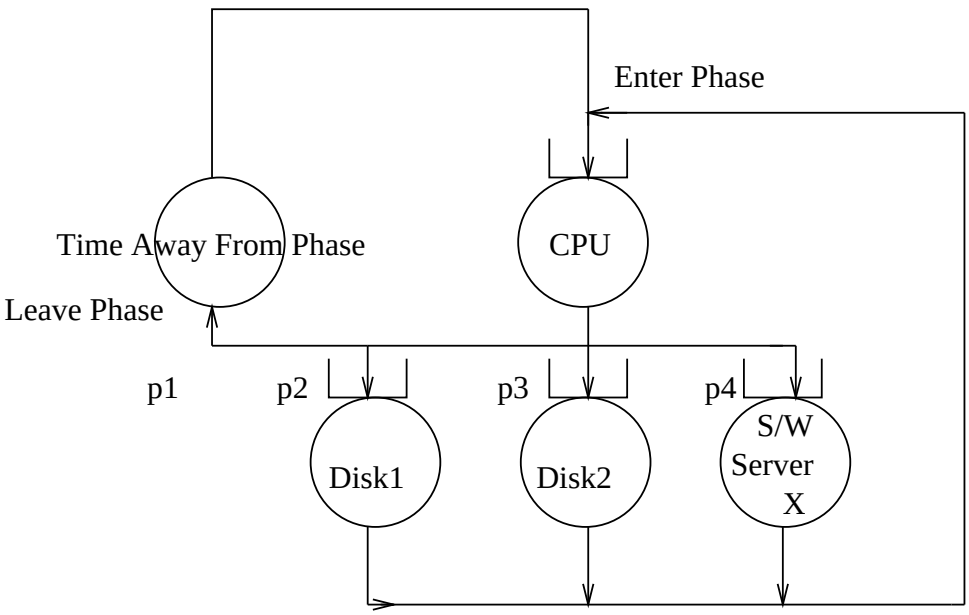
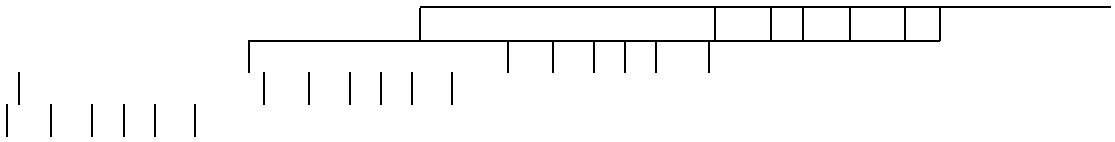

Software Contention Model
Customers
RendServ
Device Contention Model
Customers
RendServ
CPU
Delay


Software Contention Model
T1
FESC1
T2
T3
T5
T4
T6
Device Contention Model
T1
T2
T3
T4
T5
T6
CPU
Delay






Software Contention Model
T1
T2
T3
T5
T4
T6
Device Contention Model
T1
T2
T3
T4
T5
T6
CPU
Delay


Enter Phase
Time Away From Phase
CPU
Leave Phase
p1
p2
p3
p4
Disk1
Disk2
S/W
Server
X