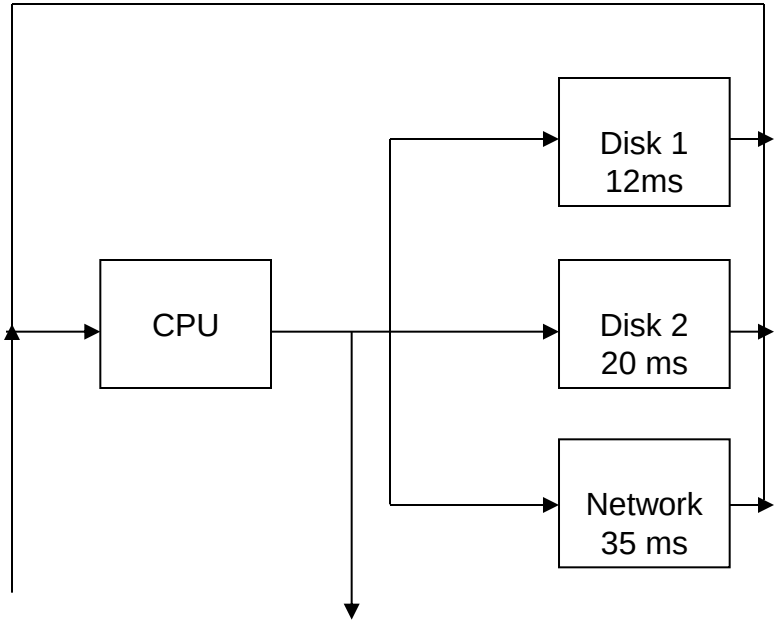
Performance Questions

COMP755

Performance Example



web page requests:	8,976
requests to disk 1:	26,928
requests to disk 2:	94,248
requests to the network:	13,464
CPU utilization:	26%

The time values represent the average service time for that unit. A performance monitor was run for a 60 minute period. The above data was collected.

Questions

1. What is the percent utilization of each device?
2. What is the bottleneck device?
3. How much total CPU time does each transaction consume?
4. What is the minimum response time for a transaction on this system **without** queuing?
5. What is the minimum response time for a transaction on this system **with** queuing?
6. What is the maximum number of transactions that the system can process in an hour **without** queuing?

Completed Table

action	measurement	Lambda	Service time	Vi	util	Vi*Si	1/Vi*Si	Tq	Vi*Tqi	1/V*Tq
web page requests	8,976	2.5		1.00						
CPU utilization	26%	39.9	0.0065	16.00	26.0%	0.104	9.590	0.009	0.141	7.096
requests to disk 1	26,928	7.5	0.0120	3.00	9.0%	0.036	27.778	0.013	0.040	25.284
requests to disk 2	94,248	26.2	0.0200	10.50	52.4%	0.210	4.762	0.042	0.441	2.269
requests to the network	13,464	3.7	0.0350	1.50	13.1%	0.053	19.048	0.040	0.060	16.554
Transaction time						0.403			0.682	
maximum number of transactions	17143	4.76								

Questions

1. What is the percent utilization of each device?

see the table

2. What is the bottleneck device?

The device with the largest utilization

3. How much total CPU time does each transaction consume?

The V*S of the CPU, 0.104 seconds

Questions

4. What is the minimum response time for a transaction on this system **without** queuing?

Sum the V*S for all devices

5. What is the minimum response time for a transaction on this system **with** queuing?

Sum the V*Tq for all devices

6. What is the maximum number of transactions that the system can process in an hour **without** queuing?

1/(V*S) of the bottleneck device