

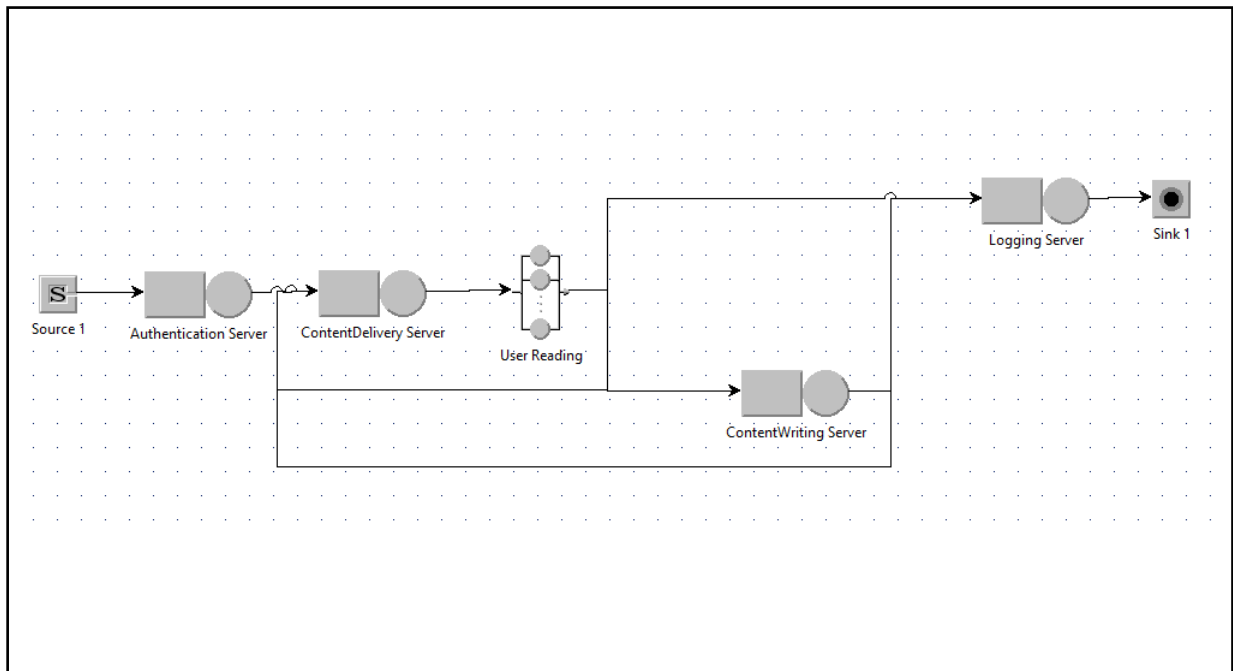
Name:

A) Service times

Name of service center	Service Time (S_k)
<i>AuthenticationServer</i>	0.02
<i>ContentWritingServer</i>	0.4
<i>LoggingServer</i>	0.09995

B) Simulation results

Screenshot:



Name of service center	Utilization	Throughput
<i>AuthenticationServer</i>	0.00789	0.3965
<i>ContentDeliveryServer</i>	0.40	1.3495
<i>ContentWritingServer</i>	0.04	0.1116
<i>LoggingServer</i>	0.0393	0.3933

Average System Response Time:

Average time that a student is waiting for a reply from the system during a learning session:

C) System upgrade

Name of service center	Minimum number of resources	Utilization	Throughput
<i>AuthenticationServer</i>			
<i>ContentDeliveryServer</i>			
<i>ContentWritingServer</i>			
<i>LoggingServer</i>			

Average System Response Time:

Bonus points:

$$D_4 = 0.48 \text{ s} = V_4 \times S_4 = \frac{C_4}{C} \times \frac{B_4}{C_4} = \frac{B_4}{C} = \frac{B_4}{X \times T} = \frac{U_4}{X}$$

$$U_4 = D_4 \times X = 0.48 \text{ s} \times 0.3956 = 0.189888$$

$$X_4 = \frac{U_4}{S_4} = \frac{0.189888}{0.4} = 0.189888$$