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FORMULAS

You should know for

PERFORMANCE TESTING

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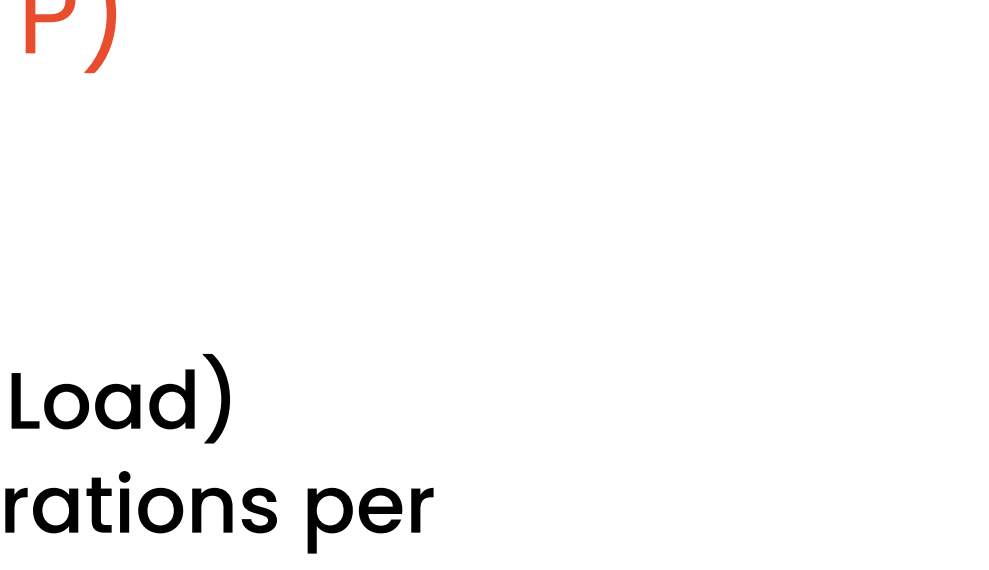
Little's Law for Web Applications

$$U = IR * (IRT + TTT + P)$$

where:

- U = No. of Users (User Load)
- IR = Iteration Rate (Iterations per second)
- IRT = Iteration Time i.e. Time to complete one iteration
- TTT = Total Think Time
- P = Pacing



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2 Little’s Law for Web Services

$$U = T * (IRT + TTT)$$

where:

- U = No. of Users (User Load)
- T = Throughput (Requests/calls per second)
- IRT = Iteration Time i.e. Time to complete one iteration
- TTT = Total Think Time

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Concurrent User (per hour)

CU = (NSavg * SDavg) / 3600

where:

- CU = Concurrent Users
- NSavg = Average number of sessions per hour
- SDavg = Average Session Duration (in seconds)

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4 Response Time

$$RT = ND + SPT$$

where:

- RT= Response Time
- ND = Network Delay
- SPT = Server Processing Time

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5 Network Delay

$$ND = NPD + QD + TD + PD$$

where:

- ND = Network Delay
- NPD = Nodal Processing Delay
- QD = Queuing Delay
- TD = Transmission Delay
- PD = Propagation Delay

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Service Time

$$ST = BT / N$$

where:

- ST = Service Time
- BT = Busy Time
- N = No. of transactions/requests processed during the busy time

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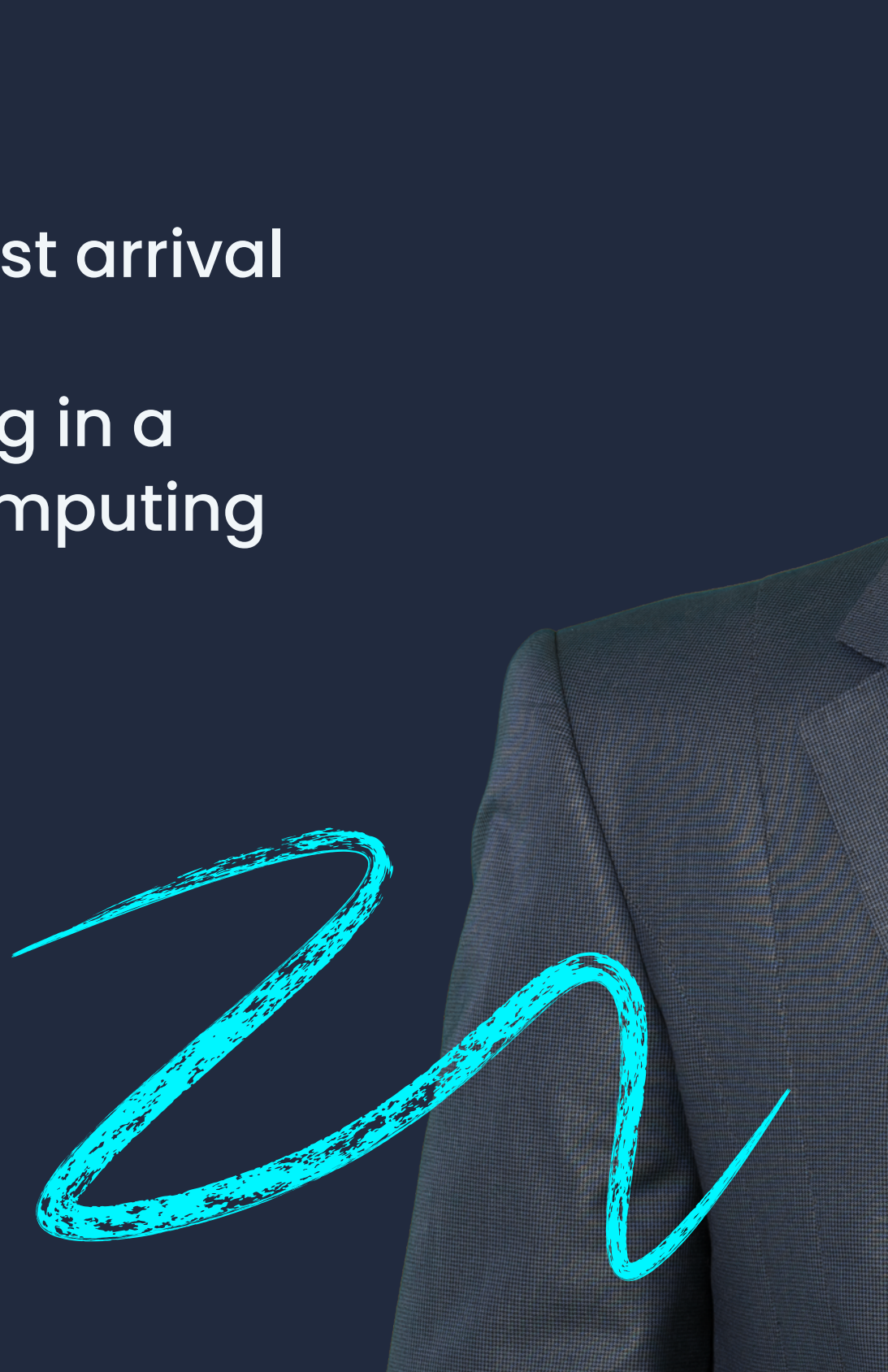
7 Queue Length

$$QL = X * QT$$

where:

- QL = Queue Length
- X = Throughput; Request arrival rate
- QT = Time spent waiting in a queue for access to computing resources



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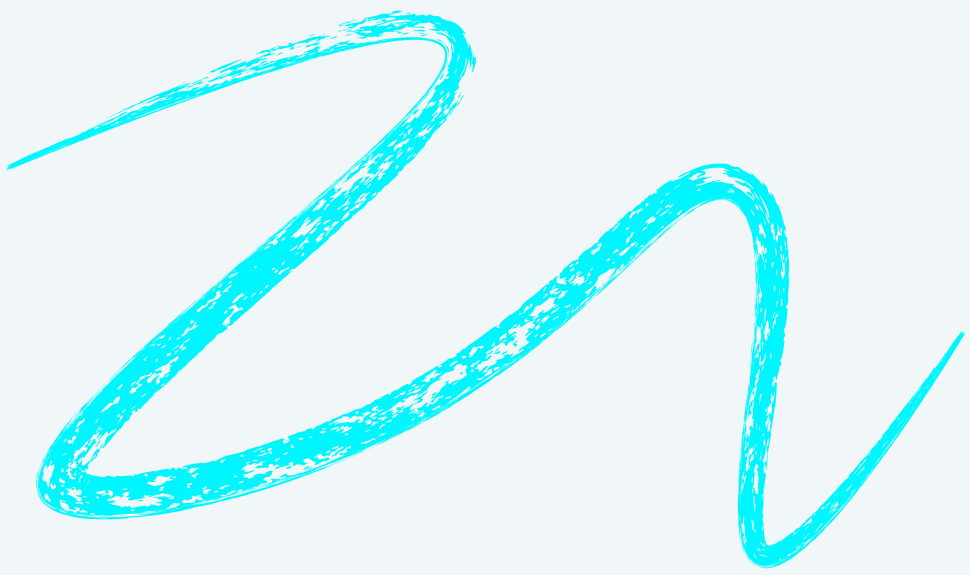
Throughput (Rate)

$$X = N / T$$

where:

- X = Throughput (in seconds)
- N = No. of Request or Calls
- T = Total Time (in seconds)



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Utilization

$$Ut = BT / T$$

where:

- Ut = Utilization
- BT = Busy Time
- T = Total Time (in seconds)

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10 Average Utilization

$$Uavg = (X * ST) / M$$

where:

- Uavg = Average Utilization
- X = Throughput
- ST = Service Time
- M = Average Number of Servers

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SPECIAL THANKS TO

PerfMatrix

Passionate for Performance Testing

https://www.perfmatrix.com/

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