Arrival rate (Î»): Mean number of arrivals per unit time (usually per hour or day).
Example analysis of an M/M/1 queue
λ: the arrival rate (the expected time between each customer arriving, e.g. 30 seconds); μ: the reciprocal of the mean service time (the expected number of consecutive service completions per the same unit time, e.g. per 30 seconds);
Service rate (Î¼): Mean number of customers that can be served at 100% utilization by each individual server per unit time (usually per hour or day). At the individualÂ workstation level, the service rate will equal capacity.
Simple M/M/1 example
The server has an exponential service time distribution with a mean service rate of 4 customers per minute, i.e. the service rate μ=4 customers per minute. As we have a Poisson arrival rate/exponential service time/single server we have a M/M/1 queue in terms of the standard notation.
Replacement models are concerned with the problem of replacement of machines, individuals, capital assets, etc. due to their deteriorating efficiency, failure, or breakdown.

It is evident that the study of replacement is a field of application rather than a method of analysis. Actually, it is concerned with methods of comparing alternative replacement policies.

Alternatives: "May be it's in the basement, let me go up stairs and check." - M. C. Escher

The various types of replacement problems can be broadly classified in following categories:

Replacement of items whose efficiency deteriorates with time, e.g., machine, tools, etc.
Replacement of items that fail suddenly and completely like electric bulbs & tubes.
Replacement of human beings in an organisation or staffing problem.
Replacement of items may be necessary due to new researches and methods; otherwise, the system may become outdated.

2020-07-04