

## Optimal Number and Capacity of Servers

in  $M^{X=\bar{a}}/M/c(\infty)$  Queueing Systems

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### Abstract

The basic objective of the queueing theory is to determine the explicit values for different operating characteristics. Nevertheless, it should be clear that determination of the optimal number and capacity of servers must be of the same or greater importance in the numerous queueing systems in the real and virtual world. Consequently, it will be useful to show the range of server capacity, in server planning, which is optimum to be used by the specific number of servers. Therefore, this study develops an analytical methodology which analysis and plans server requirements in the queue model, with the help of bulk queueing systems and accordingly, convenient graphs are presented. The proposed method may be applied in order to determine the optimum number and capacity of servers within different transportation, communication, manufacturing, banks, management and logistics systems.

*Keywords:* Optimum Number of Servers, Server

Capacity,  $M^{X=\bar{a}}/M/c(\infty)$  Bulk Queueing Systems.