

An Alternative to the Erlang Traffic Model

A Rule of Thumb Approach to Calculating Staffing Requirements in Call Centers

The most common approach to calculating headcount in a call center is based on the Erlang model described in this [Call Center Planning article](#). This model is very useful not only in calculating staffing and telephone lines requirements, but also in forecasting service levels and gaining insights into the customer experience. However, the Erlang model requires some preparations to collect call statistics and service levels, and the use of call center calculator software, such as [EasyErlang](#).

While this approach is necessary for detailed and accurate planning, call center planners and shift supervisors often need a quick back of the envelope method to approximate headcount. One easy to use method is based on the general rule that headcount increases by the square root of the increased call load:

$$N = R + \sqrt{R}$$

Where: N is the headcount; R is the call load in Erlang units.

Example:

Traffic of 100 calls per hour (CPH) with an average handling time (AHT) of 5 minutes equals a call load R of 8.33 Erlangs ($R=100*5/60=8.33$). The headcount required to handle this traffic is:

$$N = 8.33 + \sqrt{8.33} = 11.22$$

Rounding the result up, this traffic requires 12 CSRs.

This method works well for call center of any size. However, as it ignores the random nature of call arrivals, it works better when call arrival is fairly uniform and service level requirements are not very aggressive. Adding a variable a can help adjust the results to the specific characteristics and requirements of each call center. Use a to increase the headcount for a call center with rigorous service level requirement, or to decrease it if service levels are relatively lax.

$$N = R + a\sqrt{R}$$

Further Reading

- [The Origin of the 80/20 Rule](#)
- [Are Abandoned Calls Important?](#)
- [Service Level Calculations](#)
- [Advanced Topics in Call Center Staffing](#)
- [Introduction to Traffic Modeling and Resource Allocation in Call Centers](#)
- [Benchmarking in Call Centers](#)
- [Does Self-Help Really Help?](#)
- [Service Level Elasticity](#)
- [An Alternative to the Erlang Traffic Model](#)