Upload Fee Formula

S. Shirmardi, A. Arbabi

May 28, 2022

1 Upload fee

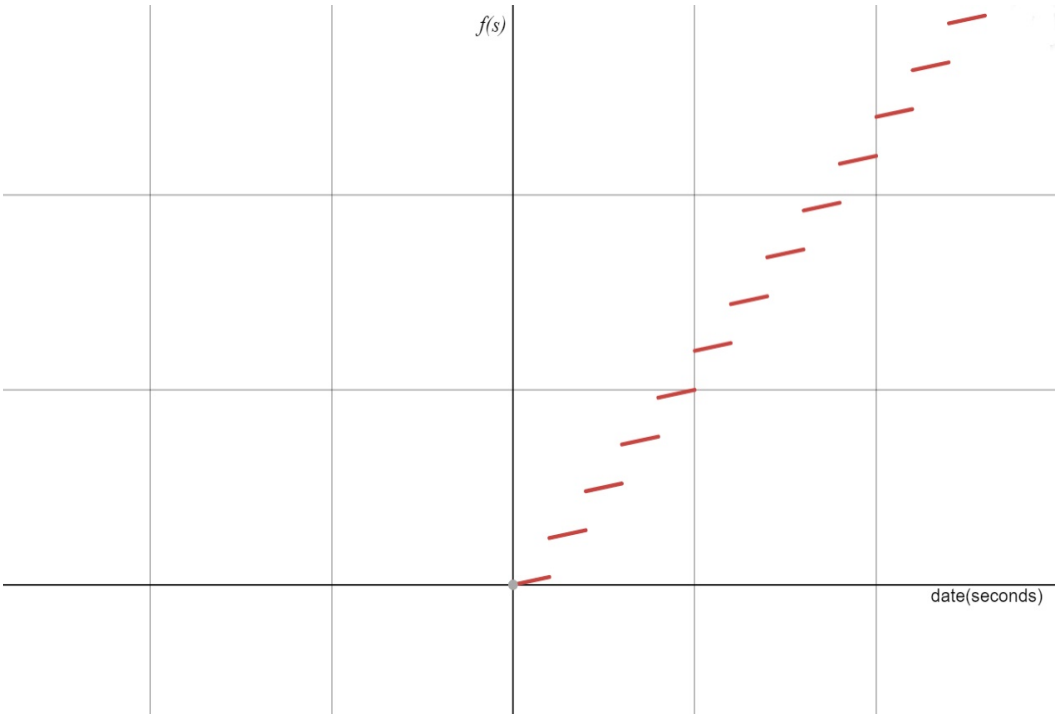
Fee is the function that generates the entire amount of upload fee:

$$Fee(s_c, t, s) = f(s_c)(1 + \sum g(t, s)) \tag{1}$$

for this entire report, s is the size of last uploaded files and t is the time difference between the last upload date and current upload date and s_c is the current file size.

Definition. $f(s)$ is the upload fee based on current file size and α is the base upload fee amount.

$$f(s) = \alpha s + [s] + \alpha \tag{2}$$



Definition. $g(t, s)$ is the coefficient of $f(s)$ based on the number last uploaded files by the user and it's calculated as follows:

$$g(t, s) = h(t)k(s) \tag{3}$$

where $h(t)$ and $k(s)$ measure the impact of time and size and are described in the next section.

2 Influential factors

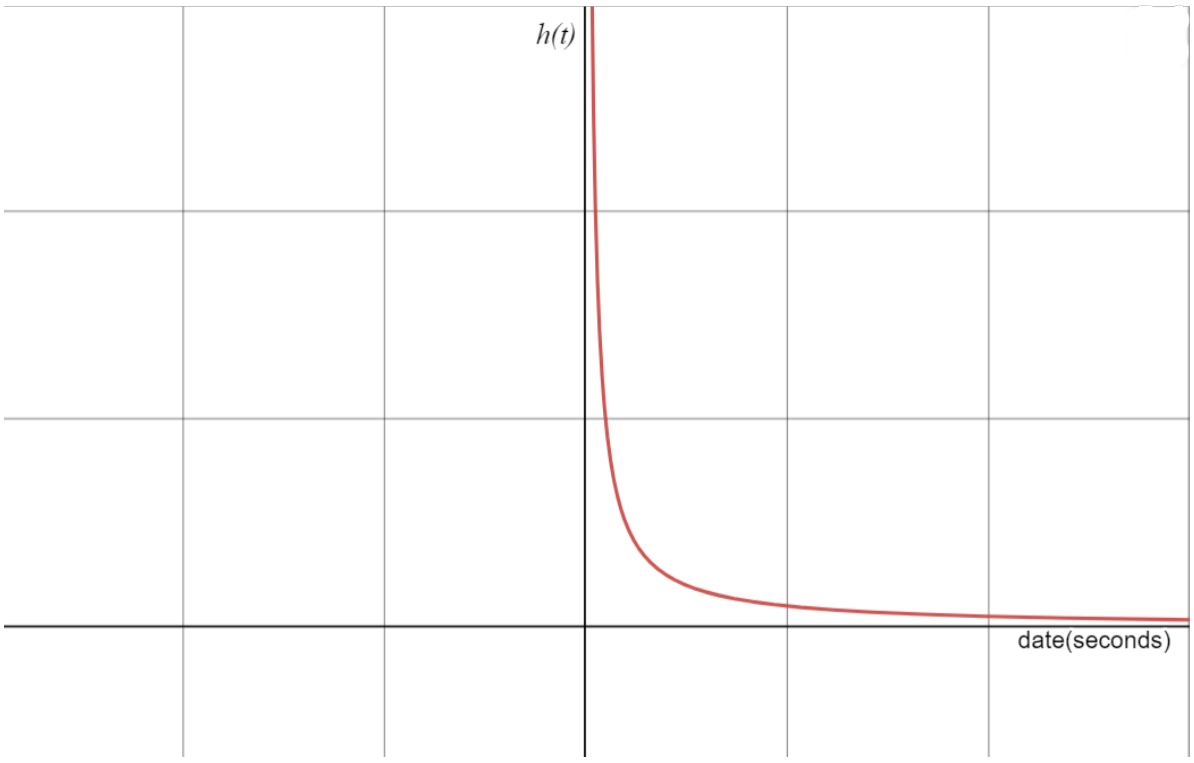
In this section, we will describe the impact of the number, date and size of a user's uploaded files on the fee.

2.1 Impact of time

For an arbitrary period, T, the function that indicates the impact of last uploading time is described as follows:

$$h(t) = \begin{cases} (\frac{T}{t})^n & t > 0 \end{cases} \tag{4}$$

Note. n is an optional variable and can be set to change the amount and influence of h in the final formula.

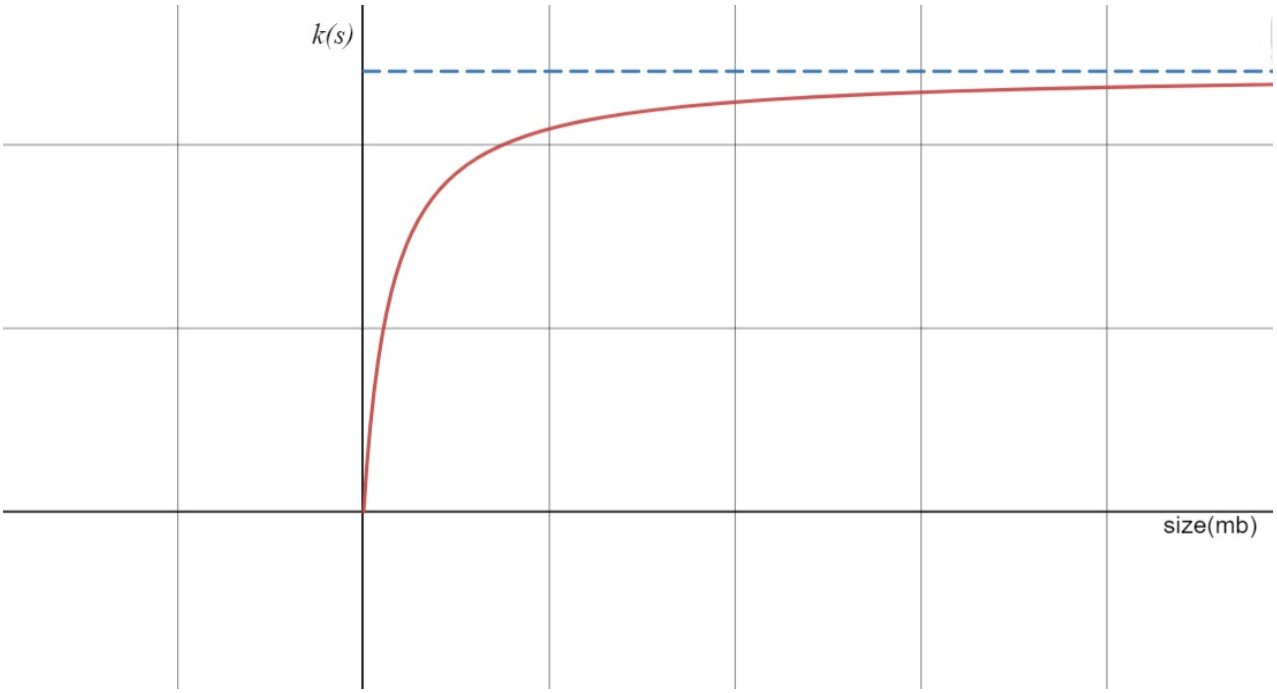


2.2 Impact of size

Let T be the same arbitrary period as the previous section, the impact of the size of the files uploaded (over time) is calculated as described below:

$$k(s) = \frac{-T}{s + \frac{T}{\beta}} + \beta \tag{5}$$

where β is an undecided constant that must be set to balance the plots of the last uploading time and size.



Upload fee schematic

The schematic of $Fee(s_e, t, s)$ is looks like the below: