

FreeBSD Criticality Score

The *Open Source Project Criticality Score* is a score that aims to measure the importance of an open source project. It uses a formula developed by Rob Pike.

$$C_{project} = \frac{1}{\sum_i \alpha_i} \sum_i \alpha_i \frac{\log(1 + S_i)}{\log(1 + \max(S_i, T_i))}$$

For information about the weights and parameters, see the project's GitHub page at https://github.com/ossf/criticality_score.

```
## Fixed values
a <- c(1,-1,2,1,1,0.5,0.5,0.5,1,2) # parameter weights
T <- c(120,120,5000,10,1000,26,5000,5000,15,500000) # thresholds

## Estimated parameter values for FreeBSD
S <- c(335, # Months since project was created
0, # Months since project was last updated
2161, # Count of project contributors (with commits) [1]
10, # Number distinct orgs contributors belong to
934, # Average number weekly commits in past year [2]
2, # Number releases in last year
2064, # Number issues closed in past 90 days [3]
3355, # Number issues updated in past 90 days [4]
6.572876, # Average number comments per issue in last 90 days [5]
699811) # Number of project mentions in commit messages [6]

## [1]
## % git -C /usr/ports shortlog --summary --numbered --email \
## > ~/contrib.txt
## % git -C /usr/src shortlog --summary --numbered --email >> \
```

```
## ~/contrib.txt
## % git -C ~/scm/freebsd/doc.git shortlog --summary --numbered \
## --email >> ~/contrib.txt
## cut -f2- ~/contrib.txt | sort -u | wc -l
## 2161

## [2]
## % echo \
## "$(git -C /usr/ports rev-list --count HEAD \
## --since=last.year) / 52" "+" \
## "$(git -C /usr/src rev-list --count HEAD \
## --since=last.year) / 52" "+" \
## "$(git -C ~/scm/freebsd/doc.git rev-list --count HEAD \
## --since=last.year) / 52" | bc
## 934

## [3]
## https://bugs.freebsd.org/bugzilla/buglist.cgi
## ?bug_status=Closed&chfieldfrom=90d&limit=0
## 2064

## [4]
## https://bugs.freebsd.org/bugzilla/buglist.cgi
## ?chfieldfrom=90d&limit=0

## [5]
## https://bugs.freebsd.org/bugzilla/buglist.cgi
## ?chfieldfrom=90d&limit=0
## At the bottom of the page there is a 'Change Columns' button.
## Click it and add 'Number of Comments'.

## [6]
## % git -C /usr/ports log --grep freebsd | wc -l
## 259182
## % git -C /usr/src log --grep freebsd | wc -l
## 389656
## % git -C ~/scm/doc.git log --grep freebsd | wc -l
```

```
## 50973

## Calculate the score
## 1/sum(a) * sum( a * (log(1+S) / log(1 + pmax(S,T))))
min(1, 1/sum(a) * sum( a * (log(1+S) / log(1 + pmax(S,T))))))

## [1] 1
```