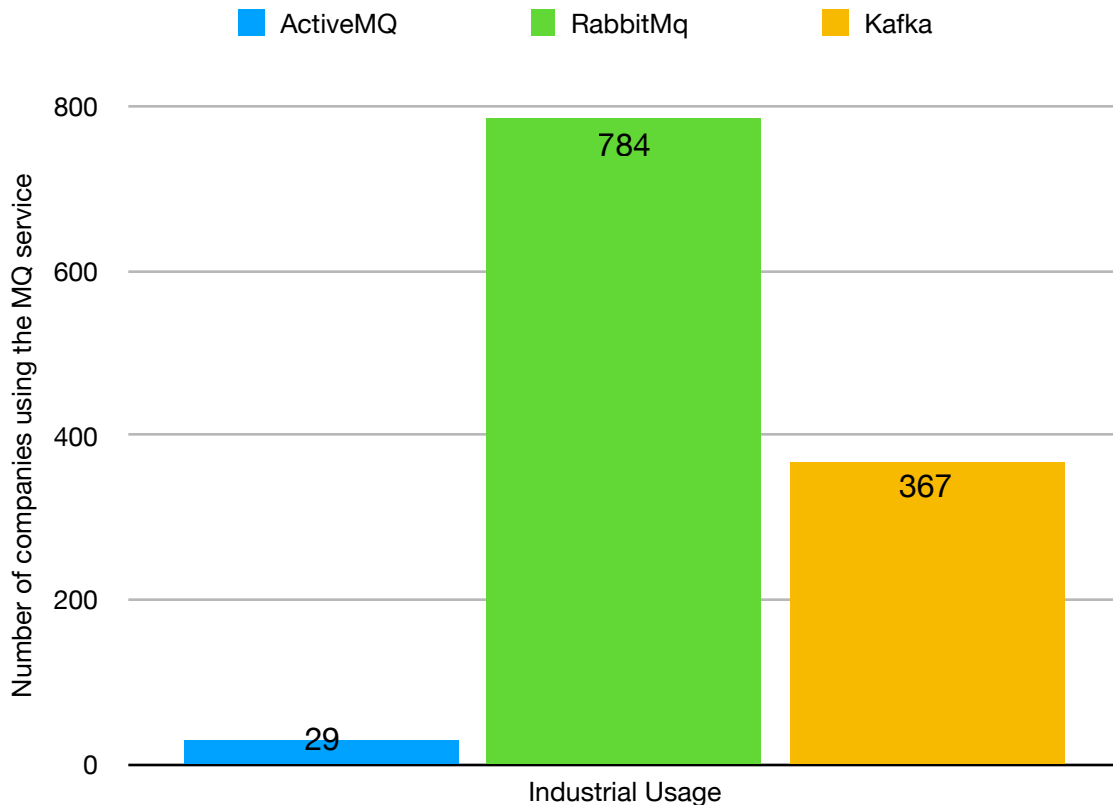


Thoughts about message queueing protocols

Software Engineering

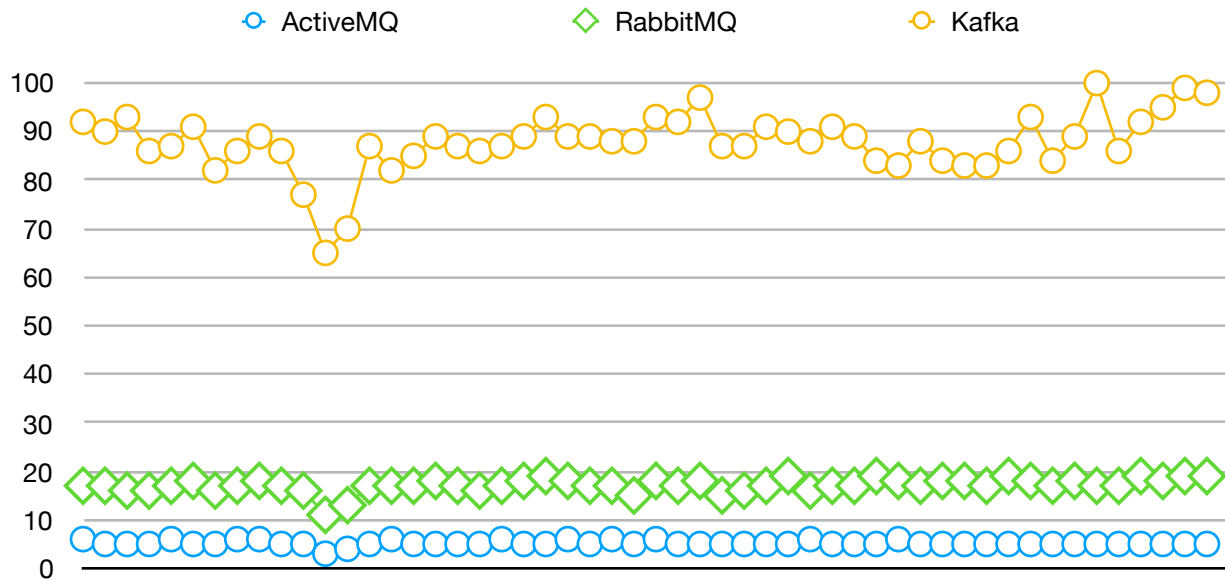
- Industrial Usage



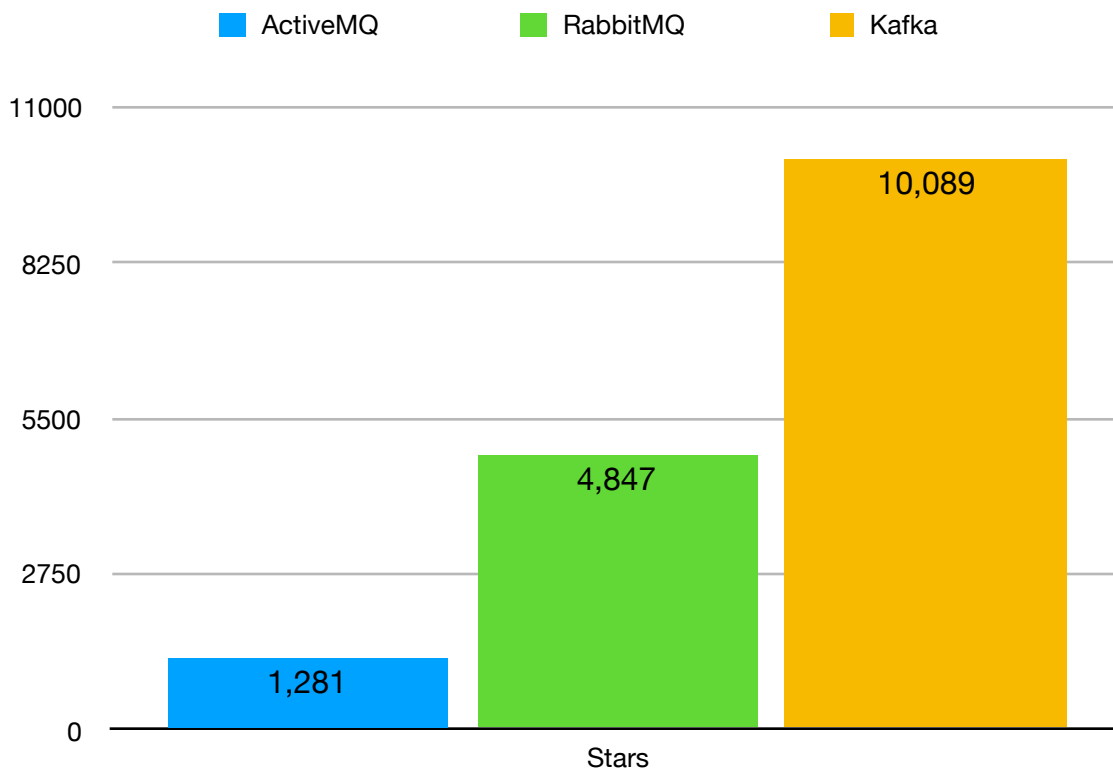
- RabbitMQ is the most popular in the industry, despite Kafka having better performance.
 - This can be because, Kafka was late to the market, and by then rabbitMQ had already taken over the market share from activeMQ
 - This can be because a majority of the companies that were previously using ActiveMQ found it very complex.
 - The switching costs associated to rabbitMQ are very low
 - It is simple, flexible, and has several tool integrations available

Popularity In search

- Looking at the google internet search for the topics directly related to RabbitMQ, Kafka, and ActiveMQ it can clearly be seen that In the past year, the most popular message queueing service has been Kafka.



- This fact can be further supported by the fact that Kafka has the highest number of stars (amongst the three) on Github, translating to very high preference amongst developers.

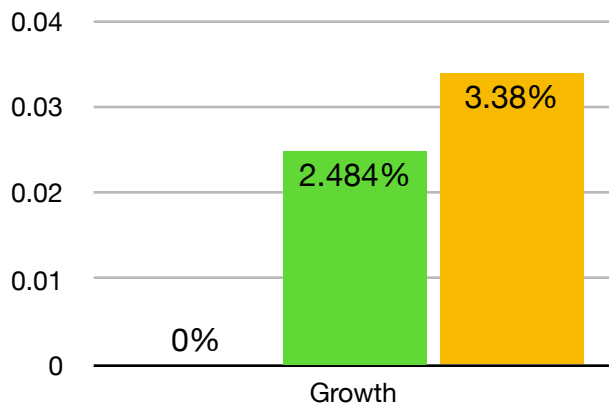


- This statistic is important to know, as it can help us with the growth trend towards a particular message queuing broker, which should be higher for Kafka, given its increased popularity amongst developers.
 - For example, a comparison is made between the industrial usage of the message queuing broker, as it was in the beginning of the semester and as it can be seen now.

	RabbitMQ	Kafka	ActiveMQ
Industrial Usage (Beginning)	765	355	29
Industrial Usage (Now)	784	367	29
Growth	2.484%	3.380%	0.000%

- As hypothesized, the growth in the number of companies using Kafka has 1% more increase than in RabbitMQ. This has resulted in more tools being developed for the integration with Kafka.

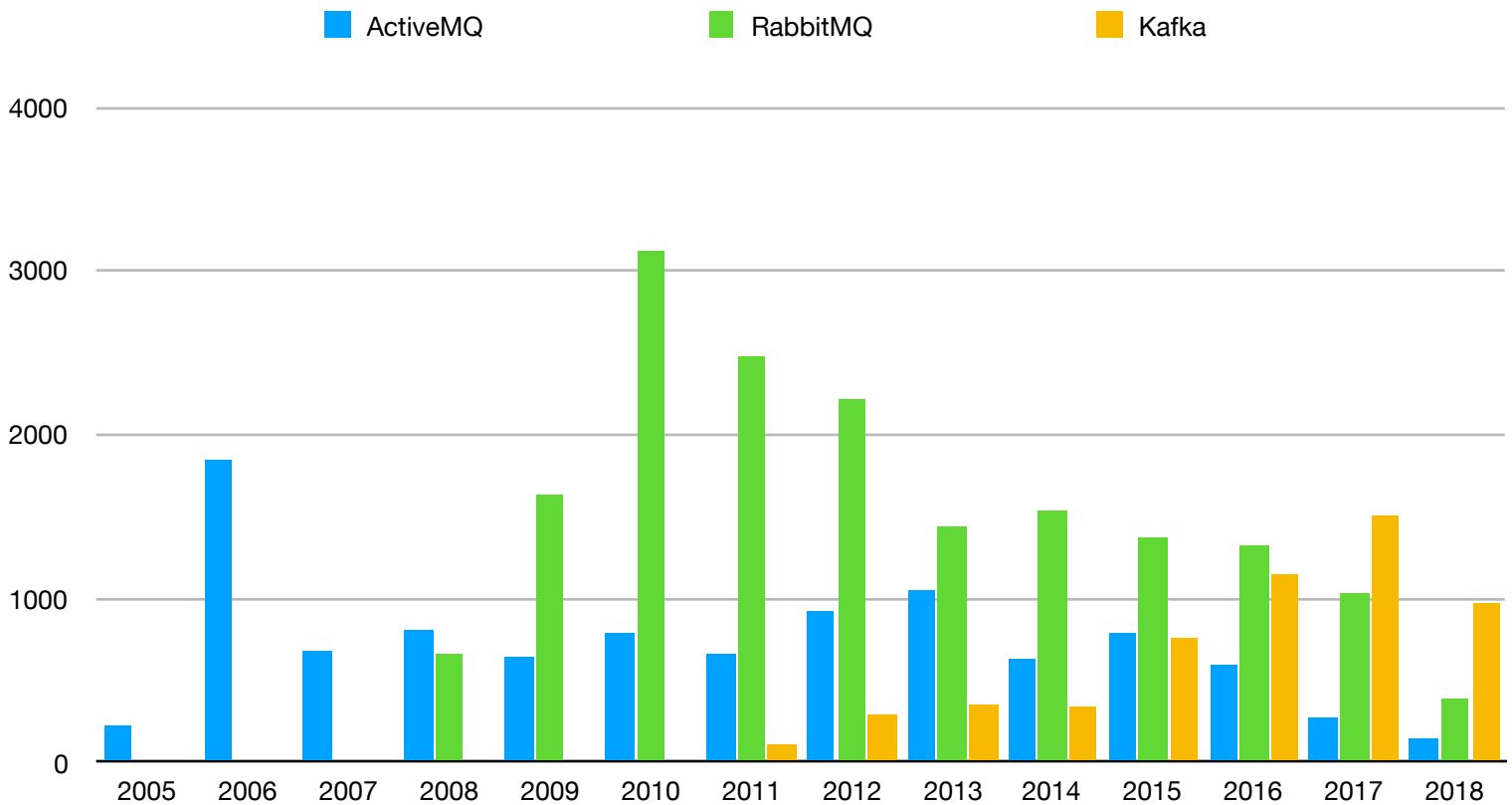
■ ActiveMQ
 ■ RabbitMQ
 ■ Kafka



- Having a look at the country-wise statistics, for each of the message queuing services, It was surprisingly a monopoly for Kafka, since in a total of 66 countries, the most popular message queuing broker being searched on google was Kafka.
 - It was also interesting to know that, even though there were some countries out of the 66, that did not search for either RabbitMQ or ActiveMQ, — like Albania, and Estonia respectively, in contrast Kafka was searched by all of the 66 countries.

Community Statistics

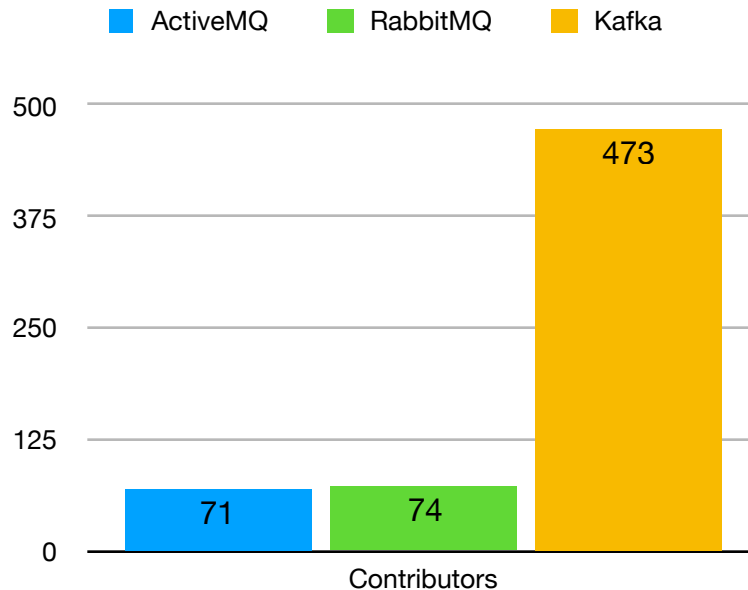
- Commits per year



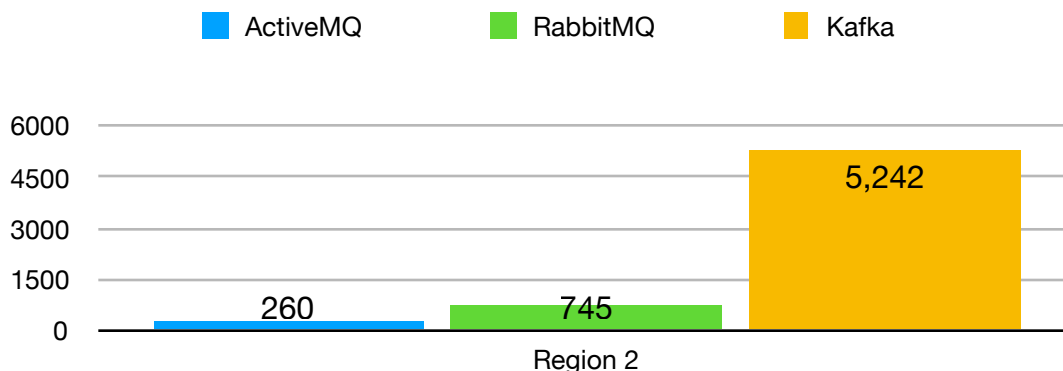
- Based on commits per year for each of the message queuing services, it can be seen that the community for ActiveMQ is becoming less and less active over the years, being the most active in the year 2006, and the least active being this year (2018), which could be correlated with the decline in popularity of the broker amongst developers and organizations alike.
- RabbitMQ's community seemed to be the most active during the years 2009 through 2016. After which it was swiftly taken over by Kafka.
 - It is interesting to know that the number of commits per year for Kafka increased at an average rate of 61% from 2011 to 2017
 - For the same period, RabbitMQ had a growth rate -12%, with activeMQ having a growth rate of -6%.
 - These results further concretely help us understand the reason for growing popularity amongst developers and organizations and their tendency of moving towards Kafka, thereby resulting in a slightly higher growth rate in adoption.

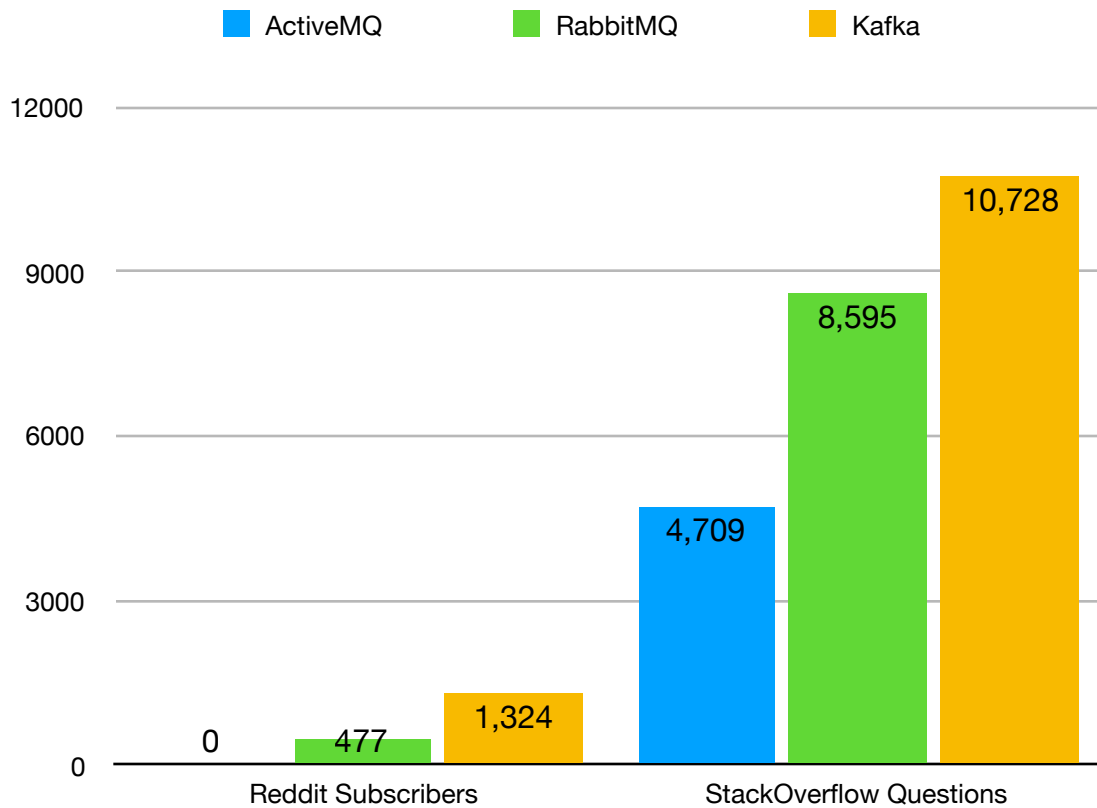
Sunday, November 11, 2018

- Talking about other aspects of community, the retention of contributors very low for RabbitMQ and Kafka where only three and four top 10 contributors respectively still play an important role in the community. In contrast, Kafka has eight of the top 10 contributors still working on the project.
 - It could mean that the community is really helpful in case of Kafka, and that developers are willing to work more on Kafka than other Message brokers.
 - Also, the number of contributors for each of the brokers is a clear indicator of how well received the Kafka community is.



- This could also be a result of the actively accepting pull requests by the community. Kafka community is making sure to include as many developers as possible to grow the community.





- The community support is somewhat reflected in other aspects of community apart from GitHub. For example, relatively speaking, Kafka has much better support on StackOverflow and Reddit than RabbitMQ and ActiveMQ.
 - ActiveMQ doesn't even have a dedicated reddit channel, which is just a discussion topic in the java channel

Conclusion

Having studied in detail and comparing various aspects of the community from different resources, it can be concluded that RabbitMQ is currently the most favored amongst the industry, but there is shift in affinity towards Kafka, both from the perspective of developers and the industry adoption. The rate at which Kafka is growing is much higher than RabbitMQ, which in contrast seems to be slowly declining its growth rate. ActiveMQ on the other hand is least favored from both the developers perspective, and industry perspective given the low adoption rate by industry, and low retention rate for developers.