Abstract: Clustering analysis has been a hot area of spatial data mining for several years. With the rapid development of the spatial information technology, the amount of spatial data is growing exponentially and it makes spatial clustering of massive spatial data a challenging task. Aiming to improve the efficiency of the clustering process on massive spatial data, an implementation of parallel Partitioning Around Medoids (PAM) spatial clustering algorithm based on MapReduce is proposed. There are three main aspects of the improvement of the proposed PAM clustering algorithm. Firstly, we use the effective initial medoids searching algorithm to determine the most likely medoids so it can decrease the number of iterations. Secondly, we construct the TIN for the medoids and find the nearest medoids. Each time we use the non-medoids in the clusters of the nearest medoids and the current medoid so it can decrease the number of searches for each iteration. Finally, the PAM clustering algorithm is paralleled in MapReduce process. We design 12 experiments and use the speedup of each group to evaluate the performances of our proposed algorithm. The results show that the proposed algorithm can process massive spatial data on commodity hardware effectively and scales well.