

A change detection and resource-aware data sensing approaches for improving the reporting protocol mechanism for mobile user./ Annisaa Sri Indrawanti, and Waskitho Wibisono

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Abstrak

Updating mechanism is the most important thing in giving the information for the end-user by sending the data from client to the server. There are several kinds of update mechanisms, one of them is reporting protocol. Reporting protocol sends the data from the client to the server continuously within a certain time period. Sometimes, the data that is sent continuously from the client to the server gives the same information repeatedly to the end-user. Although, there is no need for same information to be sent to the end-user repeatedly. This can cause a large amount of bandwidth usage. In this research, the researcher developed an improvement of reporting protocol mechanism for mobile user using change detection and resource-aware data sensing to minimize the bandwidth and resource usage. The data transmission frequency is reduced by the user activity changes prediction and the data sensing speed is reduced by adaptive data sensing. The results show that the improvement of reporting protocol mechanism adaptively can improve reporting protocol performance. This is shown by the improvement of the bandwidth efficiency up to 36-97%, memory efficiency at 1.5-6% and battery efficiency at 7-13%.

Mekanisme update memegang peranan penting dalam menyampaikan informasi kepada end-user dengan melakukan pengiriman data dari klien ke server. Ada beberapa mekanisme update yang digunakan, salah satunya adalah reporting protocol. Reporting protocol mengirimkan data dari klien ke server secara kontinyu dalam interval waktu tertentu dimana terkadang memberikan informasi yang selalu sama dan berulang kepada end-user. Padahal, informasi yang sama tidak perlu dikirim secara berulang kepada end-user karena menyebabkan penggunaan bandwidth menjadi kurang efisien. Dalam penelitian ini, peneliti mengembangkan sebuah perbaikan mekanisme reporting protocol dengan change detection dan resource aware data sensing untuk menghemat penggunaan bandwidth dan resource. Mekanisme perbaikan reporting protocol yang dilakukan adalah mengurangi frekuensi pengiriman data dengan memprediksi adanya perubahan aktivitas dan posisi pada user. Prediksi perubahan aktivitas dan posisi digunakan sebagai trigger ketika akan melakukan pengiriman data. Hasil penelitian menunjukkan bahwa mekanisme reporting protocol secara adaptif dapat meningkatkan performa reporting protocol. Hal ini ditunjukkan dengan penghematan bandwidth sebesar 36-97%, penghematan memori sebesar 1.5-6% dan penghematan baterai sebesar 7-13%.