



RESEARCH ARTICLE

Self-Adaptive Context Data Distribution Infrastructures for Mobile Systems

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Abstract-Context awareness is a property of mobile devices that is defined complementary to location awareness. It is essential to leverage the deployment of novel services in mobile systems. It allows dynamic adaptation of services according to the current execution conditions. Currently it suffers from ineffective context data delivery mechanisms, which introduce extreme overhead over bandwidth constrain wireless fixed infrastructures. In heterogeneous mobile devices the situation is even worse with reduced processing power and low bandwidth wireless connections. In existing reactive replication does not properly work if all close MNs have their caches full. To overcome this problem in this work we presents a new data caching algorithm that exploits peculiar aspects of context distribution for limited data lifetime and interests similarity between nodes in physical distance, to appropriately select the data to evict when necessary. We proposed a middleware called Context Data Distribution Infrastructures (CDDIs), capable of delivering context data to all interested devices, while hiding communication failures, infrastructure heterogeneity, and resource constraints. We propose a new caching algorithm, called Adaptive Context-aware Data Caching (ACDC) with a quantitative comparison of reactive and proactive strategies is proposed, specifically in terms of maximum and average resource usage. This gives insight in choosing the best strategy when designing a system, considering constraints of available bandwidth and storage for heterogeneous wireless modems and data caching techniques to effectively.

Keywords: Mobile Cellular Network, MANTET, Data Catching, Data Distribution.

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