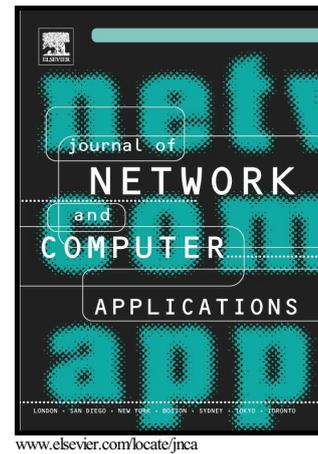


Author's Accepted Manuscript

Supporting Mobility-Aware Computational Offloading in Mobile Cloud Environment

Warley Junior, Adriano França, Kelvin Dias, José N. de Souza



PII: S1084-8045(17)30232-1
DOI: <http://dx.doi.org/10.1016/j.jnca.2017.07.008>
Reference: YJNCA1939

To appear in: *Journal of Network and Computer Applications*

Received date: 22 December 2016
Revised date: 6 May 2017
Accepted date: 8 July 2017

Cite this article as: Warley Junior, Adriano França, Kelvin Dias and José N. de Souza, Supporting Mobility-Aware Computational Offloading in Mobile Cloud Environment, *Journal of Network and Computer Applications* <http://dx.doi.org/10.1016/j.jnca.2017.07.008>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

Supporting Mobility-Aware Computational Offloading in Mobile Cloud Environment

Warley Junior^{a,**}, Adriano França^{a,*}, Kelvin Dias^{a,*}, José N. de Souza^{b,*}

^a*Informatics Center, Federal University of Pernambuco, Recife, Brazil*

^b*Computing Department, Federal University of Ceará, Fortaleza, Brazil*

Abstract

Mobile Cloud Computing (MCC) enables resource-constrained smartphones to run high processing and storage intensive applications through public clouds or cloudlet code offloading. However, handover support in the MCC context has not been thoroughly explored, since most works do not address the device's mobility during the offloading operation. This paper presents the Mobile Offloading System (MOSys), which supports seamless offloading operations during user mobility between wireless networks. To this end, MOSys benefits from the software-defined networking (SDN) paradigm for mobility management and remote caching techniques to reduce the offloading response time. Also, middleware is responsible for ensuring code and data offloading, profiling service, cloud discovery and application deployment. To evaluate the proposed system and to analyze mobility impact on the offloading performance, several experiments were conducted using different smartphones categories and benchmark applications, on three scenarios. Our results have shown that the MOSys' mobility management application is energy efficient, especially considering the low-cost smartphone category, while remote caching proved to be an attractive alternative for reducing the offloading response time.

Keywords: Mobile Cloud, Mobility Management, Seamless Offloading, Remote Caching, Software-Defined Networking

1. Introduction

Since 2009, statistics indicated that mobile devices should become the dominant computing platform [1] as the number of application downloads reached 2.52 billion. More recently, nearly 60% of the world's population already owned a smartphone, and furthermore, according to the Statistics Portal¹, the number of smartphone users is expected to surpass the five billion mark by 2019.

*Corresponding author

**Principal corresponding author

Email addresses: wmvj@cin.ufpe.br (Warley Junior), ahmf@cin.ufpe.br (Adriano França), kld@cin.ufpe.br (Kelvin Dias), neuman@ieee.org (José N. de Souza)

¹<https://www.statista.com/>

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات