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Mobile Web Browsing Using the Cloud



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Preface

Smartphones have become a key element in providing greater user access to the mobile Internet. Many complex applications which used to be limited to PCs, have been developed and operated on smartphones. These applications extend the functionalities of smartphones, making them more convenient for users to be connected. However, they also greatly increase the power consumption of smartphones, making users frustrated with long delays in Web browsing. This book surveys existing techniques to address these problems, and shows that one key reason for the delays and high power consumption is due to the local computational limitation at the smartphone (e.g., running java scripts or flash). To address this issue, we introduce an architecture called Virtual Machine-based Proxy (VMP), to shift the computing from smartphones to the VMP which may reside in the cloud. The book illustrates the feasibility of deploying the proposed VMP system in 3G networks through a prototype using Xen virtual machines (in cloud) and Android Phones with ATT UMTS network. This book also includes cloud techniques to address scalability issues, resource management techniques to optimize the performance of the VMs on the proxy side, compression techniques to further reduce the bandwidth consumption, and adaptation techniques to address poor network conditions at the smartphone.

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