

**Synchronizing Contacts
between Android OS & Mac OS X**

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Abstract

Personal related user data is stored among many devices like smartphones, tablets and personal computers, just to name a few examples. Along with the increasing availability of such devices, in particular mobile devices, the need to synchronize data among these has become more important than it has been in the past. Various mobile devices and computers, running on numerous operating systems make it challenging to provide a solution that suits all. A common attempt is the use of webservices to eliminate a direct device to device communication. The trade-off, which involves using available services such as Google mobile [1] or the upcoming iCloud [2] service, is privacy and security. Personal and private information is sent through the internet and kept permanent on storages provided by the services. This project fills a gap in this segment, to ensure a higher rate of security and privacy, by providing a synchronization mechanism between mobile devices using Android OS and desktop computers using Mac OS X.

The objective of this project is to provide a simple solution that enables wireless synchronization of contacts with minimum user interaction by following the design principles of both operating systems. The overall project provides the ground work for further, more enhanced and advanced synchronization between devices running the targeted operating systems..

The methodology used during this project varies in a broad range of different sources. The most reliable information sources have been the different Application Programming Interfaces (API) of the operating systems, software development kits and frameworks used. The understanding of these strong technical APIs has been supported by the use of books, blogs, podcasts and video records of conferences, such as the World Wide Developer Conference 2011 (WWDC) [3] and the Google I/O Developer Conference 2011 [4]. Complete source code examples from the used APIs were used to help understanding the usage and concepts behind them. Following the spirit of open source and sharing knowledge, support websites such as Stackoverflow [5] or mailing lists [6, 7, 8] were of great help in understanding concepts and getting to know to brand new fields and improve background knowledge in this area.

The provided solution that has been developed integrates both operating systems by making use of the underlying individual design concepts. On Android OS the synchronization is performed within a Service, running on a separate process, which enables it to be triggered either by an SyncAdapter[9], following the general synchronization mechanism, or by an Activity [10]. Using first approach, user interactions are reduced to a minimum. On Mac OS X, the SyncServices [11] framework has been used, which is also used by Address Book, and has been developed for the use of it. The synchronization process is performed over Wi-Fi [12], using TCP/IP Sockets [13]. The ground work to synchronize the whole set of contact related data, such as related events, groups, email addresses and more is made. The most important attributes, contact name and phone numbers are synchronized. Conflicts raised during synchronization are handled by the SyncServices framework. The final outcome should not be considered as a final product which could be sold directly, but rather it provides the capabilities of doing so in future.