ABSTRACT
With the flourishing of the Internet, many network-capable devices have been created with different communication protocols hindering the interoperability of them. In addition, the disparity of their service protocols also makes it difficult to exchange and share services among them. Fortunately, OSGi and Jini are proposed as the open software architectures that enable the delivery and management of multiple applications and services to all types of networked devices. Therefore, this thesis proposes an OSGi-Jini gateway model to solve the problem of service interoperability between OSGi and Bluetooth devices using the Jini as the middleware. This way, OSGi fixed services and Bluetooth mobile services are interchangeable and the utilization of network resources is maximized. The proposed OSGi-Jini gateway is composed of OGSi server, Jini server, OSGi translator, and Jini translator to manage the device connection and service translation between OSGi requests and Jini requests. Furthermore, a Jini-Bluetooth gateway is employed in addition to an OSGi-Jini gateway to solve the problem of service interoperability among OSGi and Bluetooth devices. Finally, a prototype system of the proposed OSGi-Jini gateway is built as a testbed for the interoperability of a Jini-based MP3 player application and an OSGI-based English dictionary application. The result shows the proposed OSGi-Jini is both feasible and satisfactory.