4. Prototype implementation

In this section, we illustrate the implementation of the testbed used for validating the proposed service architecture, in particular the end-to-end signaling architecture for MBS over WiMAX. Thus, we focus on the entities involved in the signaling process only and exclude those belonging to the data path, such as the MBSC-ETL, that has already been described in the literature [2][13][14].

The testbed has been designed to provide a multicast IPTV service as an instance of a typical MBS over WiMAX service. In what follows, “TV channel” and “multicast session” share the same meaning.

Five main entities are involved: MBSC-SS, which is the core of the proposed signaling service architecture, MBSC-DB, ASN-GW, client, and MBS Source.

4.1. MBSC-SS

The MBSC-SS is the key functional entity that orchestrates all the components used to enable, create, and manage the MBS IPTV streaming service. In order to fulfill the requirements illustrated in Section 2.3, the Mobicents JSLEE (MSLEE) has been selected to implement the central signaling server. It handles all the incoming SIP signaling messages from the MBS clients and the ASN-GW. In addition, it performs user authentication, service subscription, session join/leave, periodic check of active users, and their authorizations.

The MSLEE service, running in the same MBSC-SS where the signaling logic resides, has been implemented in a single SBB, called MessageSbb. As mentioned above, all the SIP sessions used in our architecture are stateless, differently from the typical INVITE--initiated VoIP call dialogs [29]. Thus, the SBB has been configured to process all incoming SIP events fired by the SIP RA as a root SBB. Specifically, each incoming SIP request is processed by a different MessageSbb entity, which is