Distributed IP Telephony System with Call Admission Control

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Extended Abstract

In the last years, many enterprises are using VoIP (Voice over IP) instead of traditional telephony, due to its added features and cost savings. The deployment of software-based solutions in which a simple PC assumes the role of the old PBX has given a boost to this technological change. Small and Medium Enterprises (SME) can save costs by adopting free software solutions and substituting dedicated links by the use of Internet to connect offices. Obviously, these systems have to provide a QoS (Quality of Service) similar to the one provided by traditional ones. An accepted method for evaluating conversation quality is MOS (Mean Opinion Score).

We have built a system that allows us to control telephone traffic, implementing a CAC (Call Admission Control), and set up calls by means of Internet, while maintaining QoS features. This system reduces costs especially for international calls, when the offices are in different countries. (See next figure). Additionally, it permits to share offices' lines, decreasing the blocking probability for calls.
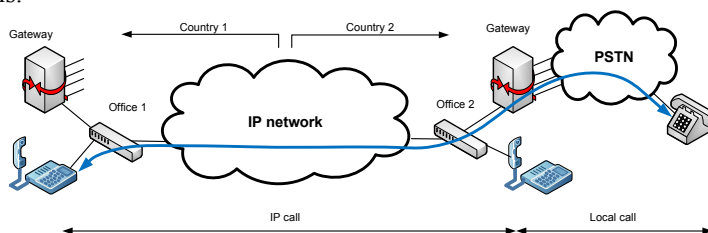
The telephony control system makes some traffic measurements, in order to establish a maximum number of simultaneous calls for each office. The main objective is to assure an adequate QoS for VoIP calls, but this will imply to reject some of them. Thus, our system allows us to reduce the blocking probability of the offices' lines, but increasing Internet traffic. But if we do not want the blocking probability to grow up, we have two possibilities: reducing background traffic or increasing IP bandwidth, which will be normally cheaper than increasing the number of traditional telephone lines.

The system is being tested in a virtualization platform. This is a good way to deploy a complete network scenario in a single physical machine. A battery of tests has been carried out on the platform in order to measure system parameters and to calculate the MOS values. Obtained results are good enough in order to assure the conversation quality experienced by users.