The Media Sprinkler

What is the Media Sprinkler?

The *Media Sprinkler* is a GSM telephony gateway that bridges services of the global mobile network (GSM) with the Internet (IP). The main goal of the system is to provide a flexible architecture that helps to develop innovative applications that require the use of mobile phones and short message services (SMS).

Apart from being able to handle SMSs, the sprinkler also acts as a complex audio mixer, capable of routing GSM calls to the traditional phone network or linking calls between different GSM operators. What makes the sprinkler attractive is its portability which enables the possibility of deploying a SMS server without the need of being directly connected to the operator's wired network.

In a nutshell, the Media Sprinkler integrates in a single unit, a connection to the GSM (mobile telephony), the PSTN (fix telephony) and IP network (Internet).

What can be done with the Media Sprinkler?

The *sprinkler* provides a simple way to develop new applications, hiding to the programmer the more complex aspects of dealing with Internet and GSM calls. The possibilities are endless as the platform can easily be adapted within hours to implement any new service. For example, the platform allows:

- The creation of new information services via voice or SMS, suitable for campaigns, media coverage, password reminders, etc.
- The interconnection of GSM phone calls between different operators.
- To record and play pre-recorded messages from and to any voice media.
- To publish SMS content into the Internet (web, mail, Twitter, etc.)

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History

The first version of the system was known as the SMS-G2 (GSM SMS gateway). It was designed during 2007 as part of the communication platform for Drumnet in Nairobi (Kenya). The development of the GSM gateway was founded by the International Development Research Centre of Canada.

The system was deployed as part of the Drumnet initiative, a project of PRIDE Africa that is building agricultural and financial services using SMSs. The first release of the system (February 2008) provided a simple and flexible interface to send and receive SMS via two Kenyan providers (Celtel and Safaricom).

As a result of that experience, a second version of the prototype has been developed . The Media Sprinkler (September 2008) adds new functionalities to the previous version. The system now has the possibility of (1) sending bulk SMS, (2) forwarding SMSs to web services such as *Twitter* and (3) interconnecting scheduled phone calls to any pre-recorded content (playback).

Technology

The media gateway is the result of integrating several open source projects into a low power platform that includes the VoiSmart VGSM PCI card. The core software of the unit runs GNU/Linux (Debian etch 4.0), asterisk 1.4.x (open source PBX) and vstuff 1.0 (vgsm channel driver).
Applications that want to make use of the GSM services, can interface directly with the unit by means of the Asterisk Manager API or a set of high level PHP5 libraries.

Sample applications

As a proof of concept and in order to illustrate the flexibility of the platform and how quickly we can develop new applications, we have written a set of sample applications.

1. SMS bulk scheduler
 The application allows to schedule distribution of bulk-SMS to a selection of phone numbers.

2. Incoming SMS to Email/Twitter
 The application allows the processing of incoming SMS and the posting of the content to a third party Internet site such as Twitter.

3. Automatic GSM call forwarder with playback
 The application allows to schedule calls and playback a pre-recorded message

4. Phone number harvester
 The application allows to identify active GSM numbers and track their status.

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Functionality

The *Media Sprinkler* has all the functionality of the asterisk open source PBX plus all the possibilities that emerge from interconnecting the Internet and/or the PSTN (traditional phone system) to the GSM network.

Current features include:
- Sending and receiving SMS
- UTF8 Support
- Processing of incoming SMS
- SMS to Twitter Gateway
- GSM call forwarding to PSTN, GSM or IP networks
- Playback services
- SMS load balancing by means of huntgroups
- Autonomous deployment (no need of direct wired connection to a GSM SMPP/HTTP gateway)
- Low power (<20 Watts)
- Extension of GSM coverage (~30 Km)
- Call and call identification privacy

Features under development include:
- GSM call forwarding to Skype, Gtalk, etc.
- GSM and SMS billing system

Trials and deployment

The first version of the system (SMS-G2) has been deployed in Kenya during early 2008. The second version presented in September 2008, it is a portable unit that runs on a modified Green gPC TC2502.

The system runs on a low power computer board from VIA (C7 1,5GHz). Cooling is provided by means of a Aero Cool chassis. Two GSM channels are available by means of a vGSM Voismart GSM card.