Chapter 2
Rembassy: Open Source Tool For Network Monitoring

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ABSTRACT
Even though monitoring tools are essential to the management of communications networks, Open Source applications still confront their potential users with considerable problems. This work analyses the limitations of the currently existing tools and presents the development of a new tool that solves most of those problems. The tool is based on a new architecture of objects and remote method invocation and allows both centralized and distributed monitoring. Its configuration through web interface, its support to monitoring templates, and its flexibility make it particularly interesting for a large number of users in search of a strong but easily configurable system. The proposed extension system is based on plug-ins and it is highly innovative because of its power and simplicity. Finally, the configuration simplicity and other essential improvements of the proposed system are successfully tested in a real environment.

INTRODUCTION
Monitoring applications are fundamental in network management, because they monitor the state of the various components that make up an information system by notifying the user of dis-tinct problems and incidences. This monitoring can be divided into two main groups, depending on whether the system analysis is carried out to locate future problems (proactive) or if it is limited to locating existent problems (reactive).

However, in the context of Open Source, a complete and flexible application that satisfies the needs of large number of users is still lacking.
Features that are expected from and provided by modern monitoring applications, such as execution-time configuration through web interface, support for distributed monitoring, monitoring templates, etc, either do not exist in the available open source applications, or present considerable limitations. Also, and in spite of the fact that these are open code applications, it remains very difficult to modify them in order to incorporate some of the above features, partly because many of the applications would require important changes in the application architecture.

This work presents a new monitoring application that solves many of the mentioned problems: the development of Rembassy can be followed on the open web portal http://rembassy.sourceforge.net.

Firstly, Rembassy simplifies the interaction of the user by means of an intuitive web interface that allows us to both configure the system and consult the state of the monitored elements. It does not rely on a complex configuration based on text archives that is used in most of the existing applications. Instead, it provides great flexibility, supports both centralized and distributed monitoring schemes, and offers the remote access and configuration of agents that allow us to monitor elements that are not available through the network.

Rembassy’s distributed monitoring features convert it into a system that can be scaled up to large networks. Also, thanks to its hierarchical object structure and the monitoring templates at various levels, configuring Rembassy is easy, even in environments with a large number of machines and services to monitor.

Finally, we would like to mention its plug-ins system, which is remarkably superior to that of other Open Source tools and simplifies the extension of the tool and its adaptation to the needs of each individual user.

The present article is structured as follows: we start by analysing the most important characteristics of the existent Open Source monitoring systems and identifying their major shortcomings; we continue by describing the architecture proposed to resolve these problems and presenting a real case study; finally, we present the conclusions and the future lines of research.

STATE OF THE ART

In spite of numerous efforts in recent years, during which the Open Source monitoring applications have improved considerably, a number of limitations persist and essential features are still lacking or are too complex for many users.

This work analyses various open source applications, in particular a subset of the most complete and/or popular ones, whose characteristics can be seen in Table 1.

We have been able to detect a set of limitations that are common to most of the currently existing Open Source applications:

- **Monitoring limitations**: distributed polling remains one of the weak points of Open Source monitoring systems. Many tools do not even support it, and those that do are hindered by configuration difficulties or characteristics limitations.
- **Complex configuration**: In most applications, the configuration is carried out by means of text archives. Creating or modifying these archives requires a more or less profound knowledge of their syntax, and even an expert user may need to consult a handbook to configure the application. The more complete an application is, and the more elements it allows us to monitor, the more complex are its archives. Also, applications that support distributed polling require the configuration of each node separately, which complicates the configuration even more. Finally, in these applications configuration is a static process that requires the re-initiation of the system.