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# FOSS service management and incidences

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**Abstract.** The Free Open Source Software (FOSS) solutions have been reaching a high demand, usage and global recognition, not only in the development of applications for companies and institutions also in the management of services and incidents. With the upswing of Information Technology (IT), the development of tools that enable the reporting of problems and incidents on any organization or company is necessary. Every day you need more applications, software generally, that make easier the user's actions. This paper describes the need to use these tools and recount the development of a web application that allows the management of reports and incidents from users of Nova, the GNU/Linux Cuban distribution.

**Keywords:** FOSS, service management and incidences.

## 1 Introduction

The services of Information Technology (IT) are more and more complex, which means that their management is most needed to remain efficient. In recent years IT have begun to rely on technological tools and Service Level Agreements (SLAs), which has allowed the development of a more efficient work, streamline their processes and transactions and have information for decision-making in real time.

In order to improve support and management in the area of information have been developed in the world the Systems and Service Management Incidents; technologies that manage incidents and routine requests for new services. These systems provide a set of interrelated components, which owe their existence to the needs of IT services and the human factor that has been increasingly demanding quality management. In Cuba, this subject has not been materialized on a large scale in all enterprises and institutions. The University of Informatics Sciences (UCI) has not been exempt of this situation, this affects their important change process, starring Free Open Source Software (FOSS) solutions. Because the importance of the migration process and the need to maintain with maximum efficiency the functioning of all the girded areas in the process, it has become necessary to have tools to support it.

In Cuba has been developed the GNU/Linux distribution Nova oriented to novice users who are facing a migration process from Microsoft Windows to GNU/Linux.

Once the operating system provides its services in the country, it is impossible that their developers give support to all the questions raised by the users, considering that in many cases these concerns can be clarified or solved using new technologies.

In correspondence to the problem presented, the work will be focused on the presentation of the NovaDesk web application, its features and functionalities.

## **2 Development**

### **2.1 Technologies of incidences and services management**

In order to develop a system to manage the incidents that could present a user in its work with Nova was developed an investigation about the management of services and incidents and associated technologies.

The Office of Government Commerce in the United Kingdom [1] defines the management of services as a set of specialized organizational capabilities which provide value to customers in the form of services. The services provide value to customers and facilitate achieve their objectives at less cost and less risk, because the responsibility is assumed by the contracted company [1]. Some of the technologies of services management and incidences are the Service Desk, Help Desk and Call Center. The Call Center can be defined as a place where telephone communications are concentrated in a company [2]. A Help Desk is a part of the technical support group established by an organization to keep their computers running efficiently [3].

The Service Desk have been perceived traditionally as a group of specialists who collect everything and who, hopefully, have the appropriate technical skills to answer practically any questions or complaints. As is represented in Information Technology Infrastructure Library (ITIL) [4], this discipline of Service Desk has evolved to the point that can be executed with a high degree of efficacy [5]. Differs from a Call Center or Help Desk in order that it have a larger scope and is more focused on the customer, because it is responsible to facilitate the integration of business processes on IT infrastructure [5]. One of the most important processes developed by the Service Desk is the management of incidents. For this reason the Service Desk should be supported by Help Desk technology that performs this type of management by excellence.

### **2.2 Development of NovaDesk**

After completed the study of the technologies discussed above and considering that ITIL proposes the use of the Service Desk was decided that this would be the technology to be used. It was then performed an investigation of the open source tools that allow the services management and incidences. It was presented the problem of the low existence of open source applications based on this technology. So the system was initially developed in the Help Desk OneOrZero (v1.8). But the base technology was changed due to several setbacks among which were that the last version of this system (v2.5.1) did not allow it to be used freely.

Due to the amount of skills and to be containers of features that make possible the implementation of the processes and be able to satisfy greatly shortcomings identified in OoZ three options were selected: IRM Information Resource Manager, GLPI and ExoPHPDesk. It was made a comparison and concludes that the most suited to the needs expressed was GLPI.

GLPI is the Information Resource-Manager with an additional Administration-Interface. It has enhanced functions to make the daily life for the administrators easier, like a job-tracking-system with mail-notification and methods to build a database with basic information about your network-topology. GLPI is under the GPL license. The principal functionalities of the application are the precise inventory of all the technical resources and management and the history of the maintenance actions and the bound procedures [6].

GLPI has a group of characteristics [6] among which are: multi-entities and multi-users management; multiple authentication system (local, LDAP, AD) and multiple servers; permissions and profiles system; complex search module; export system in PDF, CSV, SLK, PNG and SVG; management of problems; tracking requests opened using web interface or email; SLA with escalation (customizable by entity); Assignment of interventions demands to the technicians; statistics reports by month, year, total in PNG, SVG or CSV; management of a basic system of knowledge hierarchical. Furthermore, this system has a large number of advantages among which include: reducing costs, optimizing resources, rigorous management of licenses, high quality, satisfying usability and security.

### **2.3 Functionalities of NovaDesk**

Besides the features of GLPI, NovaDesk has a group of features among which are: chat room for technicians, which allows exchanging problems and solutions between them; email notification of monitoring incidents; improved attention through user's chat; edition of chat conversations that provide solutions for uploading to the knowledge base; statistical monitoring of time spent in chat; management reporting assignment; account registration, introducing obligatory and optional fields for the user; password recovery for registered users; user validation; display data from the hardware which users are working through a query of the OCS inventory database and management of the fields of incidence, allowing to adapt to the infrastructure of the organization.

NovaDesk also has an expert system that allows the management of its knowledge base. This system has several functions within which are: manage rules and questions of expert system; manage and identify the category of the problems; fill the knowledge base; identify problems; show answers and solutions of problems; send the solutions of problems by email and in the case in which the expert system does not identify the problem proceed to register as a new incident.

After implemented the expert system has been developed an analysis of their behavior that consisted of verification, validation and evaluation. This process allow to check that the behavior of the expert system is similar to the behavior of a human expert and because of this, the expert system can diagnose the problems presented by

users in their work with Nova at the same way that would be performed by a human expert.

#### 2.4 Importance of services management and incidences with NovaDesk

There are a large number of issue tracking system and bug tracking system like Bugzilla, Jira, Redmine, Mantis, WebIssues. When comparing NovaDesk with these tools, it demonstrates that all are at the same level.

The development of NovaDesk has allowed the management of incidents presented by the users to interact with Nova. It has enabled this process more pleasant and accessible to the user, because it can clarify their doubts in different ways, either using the chat, the expert system or recording a new incident. It is also a tool that has been customized for this function and adapts to all companies and Cuban institutions that wish to face a process of migration to free and open source software. NovaDesk also uses the Apport [7] service of the operating system and enables automatic report generation with the information provided, classifying this information on the category of the report and automatically assigning this incident to the group of developers of Nova.

### 3 Conclusions

NovaDesk provides great benefits to users of Nova, because it enables them to make reports related to deficiencies and disagreements. The purpose of this tool has been to optimize the system functionalities based on the registered incidents and give immediate response to the users concerns. The added features and the change of OOBZ by GLPI are the basis for achieving the maximum expression of the processes proposed in ITIL, the implementation of a future Service Desk. The expert system constitutes a way for users to be able to solve the most common problems that can presented without the dependency of a human expert.

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