

UNIVERSIDAD CARLOS III DE MADRID

GRADO EN INGENIERÍA TELEMÁTICA



Resumen en inglés para paso a plan 2011:

**“Despliegue de un Sistema de Comunicaciones Unificadas en
un Entorno Empresarial”**

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Leganés, Junio 2013

Abstract

In the business environment there is an increase in international relations with the hope to obtain resources, gain a competitive advantage and expand globally. With this increase it is necessary to make means of multimedia communications easier and more efficient. In order to unify communications we must institute multimedia tools to help employees, clients, suppliers and partners communicate in an easier and more efficient manner, therefore, saving the company resources.

The main objective of this work is to execute the deployment of a unified communications system in a multinational company. This dissertation specifically details how the deployment of the system meets the needs of the company and the tasks and processes carried out in the implementation of the system. This kind of system provides the company with the demanded new means of communication that are necessary in today's business environment.

The unified communications system is based on the solution provided by Cisco, as it already provided the IP telephony infrastructure for the company. Throughout this document details will be provided about the features the deployment of this solution will provide for unified communications services.

This project consists of several phases spread over different chapters of this report. First an explanation will be presented that defines the requirements of the system and the design analysis that was conducted prior to deployment. Secondly the report details technical implementation and deployment of the system in a working business environment.

After completing the technical deployment, tasks such as project management, strategies for moving from the testing phase to public use within the company and analysis of the usage of the platform will be detailed. The review of the quantitative data gathered by monitoring the deployment, drawing conclusions and creating improvement strategies. This data leads to results that will encourage the use of unified communications systems.

Introduction

In the following dissertation a single solution for multimedia services in one platform is presented. The new platform is incorporated within the company to better the efficiency of the employees, improve the work being done and to provide the company advantages in the terms of saving resources.

This paper aims to provide an overview of the processes and steps involved in deploying a unified communications system. The stages of design, requirements analysis, deployment, enter in production strategies and monitoring production has been performed in order to deploy a system that meets the needs of the company.

An added value is the analysis and study of the usage of the platform and the impact on the company. Monitoring the platform allows the study of how much each service is being used. Furthermore, the data obtained provides a statistical basis for devising strategies for improvement and even measures the success of the actions taken in improving the experience for the employees.

Motivation

The evolution of communications is booming, as is the use of multimedia solutions. It is now possible to contact any person at any time regardless of location. This is due to services such as instant messaging, presence (information about the availability of the person you want to contact), and the ability to call multiple people with both video and audio.

In the business environment international relations are also increasing. Businesses are hoping to obtain resources, increase their competitive advantage and brand their company on a global level. This makes increasing the efficacy of multimedia communications a necessity.

IP-based solutions represent substantial savings and economic resources as well as a wide range of new features. The provided services on the data network allow the ability to add new features and services that weren't possible before. Furthermore, combining these services and functionalities creates tools that are indispensable for a company.

In a multinational business environment, as in this case study, having a platform that integrates services that provide direct benefits to the company such as video/audio conferencing, IP telephony, softphone, instant messaging and presence are useful. Combining these different technologies into a single application has resulted in what is called Unified Communications.

Unified Communications services integrate multiple independent platforms that until now had been individual and independent applications. The seamless integration Unified Communications systems adds is huge in terms of efficiency, saving resources and the experience for the end-user.

Unified Communications is a new concept that provides users and organizations a new way to communicate more efficiently. Saving the company the two most valued resources in today's enterprise: time and money.

The company in which the solution is deployed is a multinational company. Installing this system for this company will allow:

- Savings on travel expenses: there is no longer a need to travel for every meeting. You can replace this kind of meeting with audio and video conferencing.
- Increased efficiency: the employees are able to use multiple means of communication.
- Reduce "human latency": reduce time spent trying to keep in contact with people.

The unification of services such as instant messaging, IP telephony, presence, video conferencing, etc. allows the employees of the company to know the availability status of their fellow coworkers, define the time to contact them, or choose the most productive method of communication, therefore, avoiding the issue of wasted time.

All of these advantages contribute to the optimization of business processes and reduce the consumption of resources, which betters the organization's productivity, as well as that of the group and the individual. Therefore, the deployment of this platform meets the main goal of the department where the project has been developed (Department of Communication and Collaboration), to provide the user with new ways of communication and new ways of working and managing processes. This allows the company to focus more time and energy on the processes that require more interaction and collaboration.

Objectives

The execution of this final project aims to show an overview of the process of designing and deploying a unified communications system in a multinational company.

To meet this objective the following aspects will be described:

- Provide entire multimedia services for the company in compliance with business requirements.
- Installing a whole unified communications platform on a platform of existing IP telephony. This project will involve the whole company, divided into five locations scattered throughout Spain. At these locations there are over 8400 users who will use the services of presence, video/audio conferencing, desktop sharing, telephone control, instant messaging and voicemail.
- Analyze solution requirements based on the needs of the business. Then from this analysis then choosing the best commercial solution that meets those needs and demands.
- Implementation of the entire server infrastructure within the existing network architecture of the company. It is important to note that the business environment requires a strict adaptation to the caseloads and standards of each location.
- Keeping track of usage of the services by users, studying the impact they use these services in both the user and the network. For this there is a server monitoring system and services, providing data tables that can analyze, filter and structure to obtain quantitative results we provide value metrics.

Context of the Final Project

The initiative of this dissertation emerged from a period of an internship conducted in an aerospace company, which subsequently developed the project. The department where I completed this internship was hosting communications and collaboration in the area of Information Technology. After commencement of the internship I saw the possibility of using one of my experiences there for my dissertation.

During the development of the project I played an active role. From the initial steps to the final deployment I was involved in all processes.

In addition, my role has involved active participation in the following: architecture meetings, design, and monitoring. My work encompassed all the stages of the deployment of the platform. Among the tasks I completed are: project management, statistical analysis (which was used heavily during the pilot phase), deployment of the client software, strategizing enter in production strategies, monitoring, updating to newer versions of the software and support of the platform.

Note that all the development realized during the internship was under the supervision and with the support of the Communications and Collaboration department.

The particular names and dates have been omitted to avoid breaching the privacy and security of the company. Instead the use of generic nomenclature has been used to reference elements and dates pertaining to the project. However, the data represented is in fact factual and corresponds with the actual data found within the company.

Conclusions

The main objective of this dissertation is to show an overview of the processes involved with the design and deployment of a unified communications system in an enterprise environment. After the completion of the main deployment the bulk of the project came to an end and thus the most important conclusions for aiding in future work have been drawn.

First, regarding the technical deployment and infrastructure services the following has been concluded:

- During the phase of solution design all objectives were clearly established and met. Users are successfully using the platform in its' entirety. The software is easy and friendly to use, therefore, resulting in good user acceptance.
- The Cisco solution was chosen as it had the ability to integrate with the IP telephony servers. This led to substantial labor savings. Also, the fact that the entire platform is administered from one component allows for simplified configuration and management.
- The deployment of infrastructure services was successful, the company currently supplies all services in three main locations, this has not resulted in malfunction or user latencies, in fact, there is no difference materially from connections from main locations infrastructure.
- The server deployment model based on machine virtualization can be considered a remarkable technical achievement. There is currently an application that manages all virtual machines hosted on different physical servers. The experience of hosting all unified communications servers as virtual machines deployed on a physical host has been a benefit in terms of efficiency, comfort and complexity when performing maintenance, monitoring and management of servers.

- Having the monitoring tool has allowed us to track the usage of the platform. This allowed us to learn more about users in order to make sure that functionality was being used and determine how we could promote usage. From this information we can devise strategies to communicate to users how to make better use of the tool or provide any information about certain features that are used less.
- The development of the user communication and support in the production output has given me another perspective of project development. I believe that the need for good technical deployment is as important as good strategies for enter in production and leaving the software in the hands of the users and customer support for the project to succeed.
- Thanks to the good work done in the project multiple users can connect from other company locations using their phone extension and meet even though they are thousands of miles away. This is something I noted as being very beneficial because they can call their usual contacts as if they were in the office and also save on phone bills from roaming when traveling outside Spain.

Future Actions:

Currently the remaining tasks are completed to extend unified communications capabilities to other users of the company, and parallel work on actions to solve problems in search of better working experience.

Future actions can be classified as follows:

- **Technical Actions**

These types of actions look to add better technical practices of new functionalities with the aim to better the experience for the end user.

- **Update** to successive versions of the software application in order to improve user experience.
- **Error detection** and response.
- **Jabber integration** with other collaboration tools that are ongoing in the company, for example, Cisco WebEx Meetings Server, videoconferencing rooms or tele-presence systems.
- **Mobility**: Integrate the application on mobile devices such as smartphones and tablets.

- **Federate** the platform with other domains to add users from other divisions of the company.

- **Adoption Actions**

These actions are directly related with the communication with the end user. They gain perspective about what can be done to better user experience. These future actions will involve:

- **Internal communications:** Send periodic communication (2 or 3 times a month), indicating the latest information about the application and usage data, to have the experience of a user who has noticed how improved efficiency when using UC and some tips and information to help the user the application.
- **Best practices:** prepare guidelines on how to use each of the services and the best way to use them. For example, tell users that when traveling it is preferable to use Ethernet or Wi-Fi instead of 3G to make audio or video calls. Also to look for the presence counsel before contacting a user, so you will know if it is more convenient to call, use IM or send an email.
- **Demonstrations:** In the first stage of deployment (December 2012) demonstrations were performed at *Sede 1*, the company intends to continue with this initiative when the softphone is completely deployed in the rest of the company.
- **To publish a portal on the intranet** where the user has all the information about the tool, the initiatives being taken by the department and other projects or tools that may be of interest.