

Unified Communications System

This paper attempts to cover the basics of Unified Communications and how it works. To start with, let's understand how unified communications servers fit into the traditional communications networks of telephone, voice mail, fax, and email.



Introduction

Unified Communication is the transformation of traditional communication methods like messaging, telephone, voice mail and fax with new electronic communication methods such as email, and instant messaging. In simple words, unified communication is a term that refers to the integration of a variety of typically communication systems, both fixed and mobile, and the use of these methods to enhance collaboration. Communication media that can

be integrated into a unified communication system includes email, voicemail, fax, instant messaging, white boarding, audio conferencing, video conferencing and web conferencing. A Unified Communication System allows access to messaging applications through a variety of devices like PCs, video phones, wireless handheld devices or telephones, from both internet and intranet. It will allow you to respond quickly to any type of incoming communication – whether you are onsite or remote. Emails and voice

mails will be available anytime and anywhere on different devices irrespective of your location.

Any device can receive notifications sent to user. Communications happen between users facilitated by location recipient of the message. There are basically two protocols developed to support this communication, namely Session Initiation Protocol (SIP) and Session Description Protocol (SDP). These protocols are designed to work on IP network and support TCP, UDP, DNS and other internet protocol.





Figure 1 Unified Communication System

Unified Communication Components

For unified communication to function seamlessly, various components like Call manager, Voice gateway, Analog gateway and most importantly, a client device on which the client will access all the emails, calls, messages and other communication services is a necessary requirement.

Call Manager

Call Manager is the brain of this complete network. Without a call manager, no other device can perform their function properly. All the client-end devices will be registered in the call manager first. This helps the call manager to know the exact number of devices in the network along with their positions.

Voice Gateway

Voice gateway is another major component in unified communication. Its major function is to connect the private network or the intranet to the outside world. All the calls and

messages, either from outside the network or for the outside world, go through this device.

Analog Gateway

Even after having many new technologies, we fall back on older technologies like Analog phones. But as unified communication works on IP network, so there is a requirement to convert these analog phone signals. Analog gateway is used to convert these signals and all the analog phones connect to this device.

Client Devices

This is another important component of unified communication system. All the communication happens on these devices. Client devices can be either a phone or a PC.

Operation

The working of Unified Communication System is very simple. As discussed above, it has some major components that are required to perform day-to-

day operations. Together, these components form a network for an organisation.

As shown in the above figure, we understand how the devices connect to form the complete network. The end client devices which consist of analog phones, mobiles, video phones, computers, etc are connected with the call manager. We require analog gateways to convert analog signal that comes from analog phones and all analog phones are connected to the analog gateway. This gateway is then further connected to the call manager. Other client devices like computers, video phones and other wireless devices like mobiles are connected to the call manager. All these devices first get registered at the call manager, so that call manager gets the complete information about the devices and its geographical location. The call manager connects with the voice gateway so that the organisation call or messages can go outside.



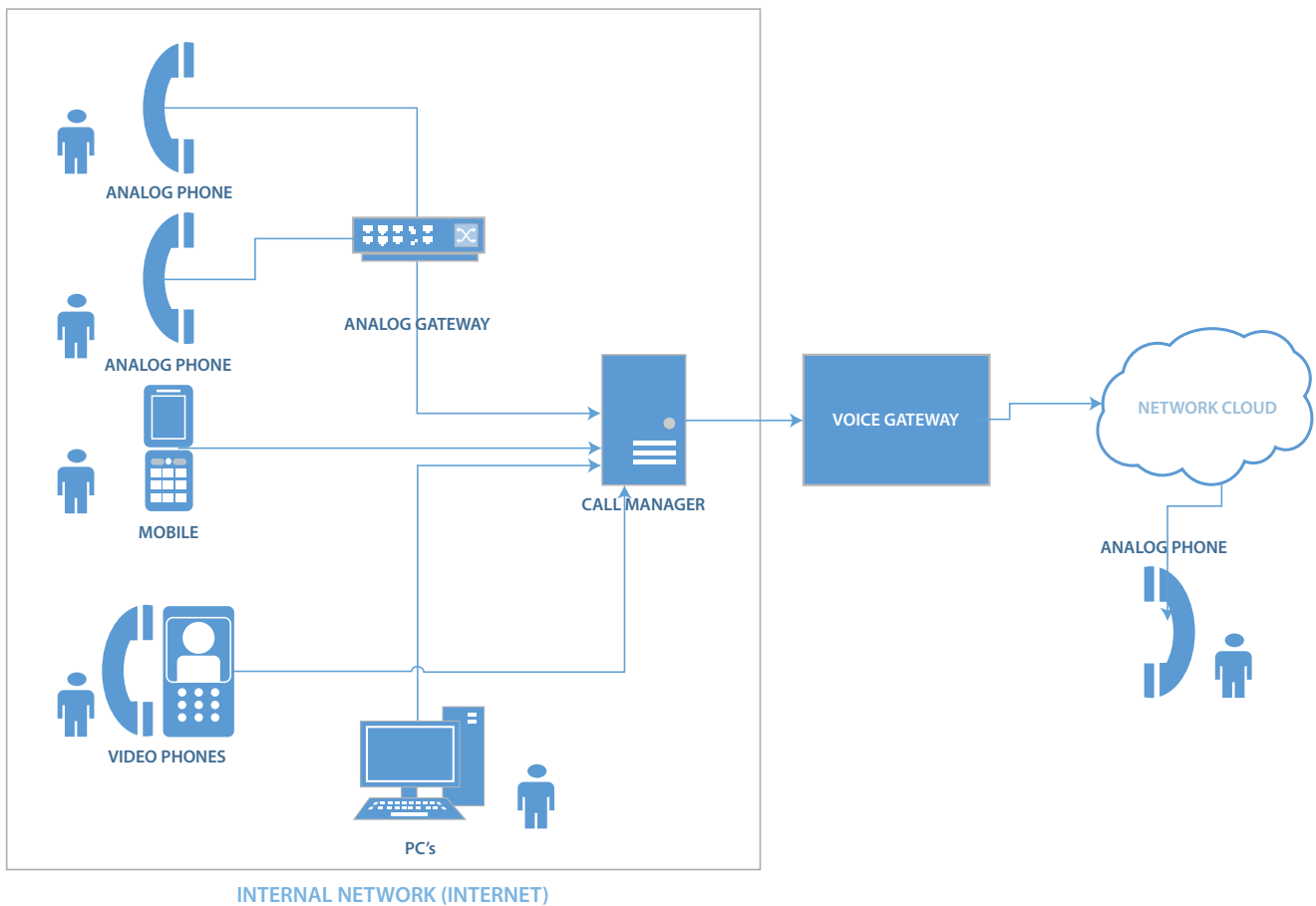


Figure 2 Network Architecture

Unified communication helps in communicating to the users through different end devices, irrespective of their geographical locations. If a client present in the organisation wants to connect within the organisation, the signal first reaches the call manager. As all the devices are already registered with the call manager, he knows where the call is originating and its eventual destination. If the destination of the call is within the organisation, it directly connects both the devices, so that communication can take place seamlessly. If the call is for outside the private network, then the call manager sends the signal to the voice gateway responsible for all the outside world connectivity. The

voice gateway then connects the call with the outside world and via PRI lines to the destination phone. The call manager, in this case, acts as brain of the network.

Let's take a scenario where the call manager is down. In that case ideally complete networks must go down, but that is not the case. Basic calling functionality still exists. In case, someone from the organisation wants to make a call, the voice gateway performs the function by acting as a bridge, allowing the user to connect with the destination. In the meantime, the call manager starts functioning normally. This helps in keeping the SLA too.

Benefits of Unified Communication System

- One single, flexible infrastructure
- Reduced cost
- Improved productivity
- Mobility
- Multi-device rings
- Simplified billing

Summary

In today's day and age, Unified Communication Systems plays a very critical role. Features that a unified communication system provides are highly desirable. Unified communication systems can be deployed securely as long as proper precautions are in place.

-Nikhil Sharma

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