

# Gatekeepers in general – A short introduction

Kewin Stoeckigt

*Joint Computing Center and Institute of Plasmaphysics, Max-Planck-Gesellschaft  
kfs@rzg.mpg.de*

## Abstract

*Videoconferencing becomes more and more important at RZG and IPP. Therefore there was a need to setup an RZG zone, which means a gatekeeper. Gatekeeper are very important for videoconferencing if there should be the ability to communicate with other VideNet participants. Gatekeeper have a complex structure and therefore an introduction is given with this paper.*

## 1. Introduction

*Since the invention of telephones by A. G. Bell (1847-1922) and the increasing demand of communication since that time, phonebooks become very important.*

In this or in a similar way you could start an introduction of a novel about gatekeepers. But a gatekeeper is much more than just a phonebook.

A gatekeeper is defined in the ITU H.323 standard. Gatekeepers are, as well as videoconferencing terminals and/or MCUs, important. Today gatekeepers changed their role from a simple phonebook to a powerful entity in videoconferencing over IP. The next paragraphs should give a short introduction about gatekeepers in general. This means it will be explained how the ITU defines a gatekeeper, and furthermore it will be shown how gatekeepers can be used in the day-to-day videoconferencing.

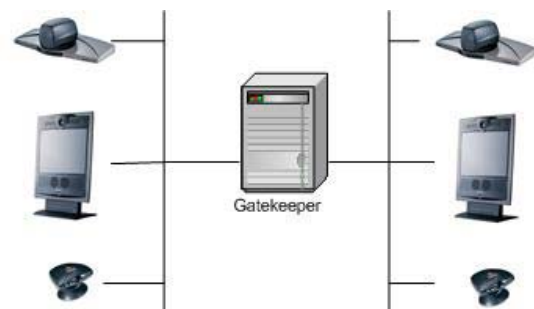
## 2. Definition

A gatekeeper is optional device which can be used in an H.323 ↔ H.323 communication<sup>1</sup>. The ITU defines 10 different tasks<sup>2</sup> which are the requirements for a full compliant H.323 gatekeeper. These requirements are:

- Address Translation
- Admission Control

- Bandwidth Control
- Zone Management
- Call Control Signalling
- Call Authorization
- Bandwidth Management
- Call Management
- Alias Address Modification
- Dialed Digit Translation

More or less all of these requirements are important for the communication; but for the day-to-day use Admission Control, Zone Management, Call Control Signalling and Call Management are more important<sup>3</sup>. Before these four tasks are explained, it should be mentioned where a gatekeeper is located in the communication process.



**Figure 1: Gatekeeper H.323 Zone**

It is shown, that the gatekeeper is in the "middle" of the communication. If a client has access to a gatekeeper, the client sends a RRQ message to the gatekeeper. If the client is authorized to register the gatekeeper sends a RCF message or a RRJ as reject message.

### *Admission Control*

Admission Control is indispensable for our day-to-day communication. The RZG and IPP offer this service for members of the RZG and IPP as well as MPG and

collaborative research members like EFDA or the HGF. Therefore a restricted access to our gatekeeper was/is necessary. It is necessary to mention that the Admission Control is used, once a client is registered. The Admission Control controls the calls, NOT the registration.

How does the Admission Control works?

The admission control can be configured in the gatekeeper. Once a client requests a call, the client sends an ARQ message to the gatekeeper. The gatekeeper verifies<sup>4</sup> the IP address, the H.323 alias and the E.164 number. If the client is authorized to use the gatekeeper for calling, the gatekeeper sends an ACF in response. If the client is not authorized to use the gatekeeper, the client receives an ARJ.

#### *Zone Management*

The Zone Management is used for the control and management of the different videoconferencing entities which are located in the same Zone. A H.323 Zone could be explained as an equivalence of an area code. Videoconferencing entities which belong to the same zone have the same "are code", the Prefix. This prefix consists on two parts, a country code and the area code. The RZG owns the zone 140. The code is 0049 for Germany. These numbers, also called E.164 numbers, follow the GDS defined by the VideNet group. The GDS is a telephone like representation of H.323 numbers. The GDS has the following scheme:

#### *Call Control Signalling*

Call Control Signalling is very important. Without this control, a communication becomes impossible. The Call Control Signalling process is invoked by a TCP request of the caller. The caller sends<sup>6</sup> a setup message to the client. If a gatekeeper is involved, the caller does not send the request directly to the client, the request is sent to the gatekeeper. The gatekeeper uses different translation functions, to resolve IP, alias and E.164, and forwards the request to the specified client. Once the client has received the setup message, it can respond with an Alert, Signalling or busy message.

<country code><zone><number>

Example<sup>5</sup>:

0049 140 1234

It must be alluded that the gatekeeper used by the RZG has no Zone Management. The zone management is handled using prefixes during the client registration process.

#### *Call Management*

The Call Management is used for handling several calls using a gatekeeper. The ITU [1] defines the Call Management by saying "For Example, the Gatekeeper may maintain a list of ongoing H.323 calls. This information may be necessary to indicate that a called terminal is busy and to provide information for the bandwidth management function."

### **3. Summary**

Summarized a gatekeeper is a phonebook for video calls which is used by the clients. The gatekeeper resolves the request and sends the necessary information which are needed for the communication to the client. It is obvious, that a gatekeeper has much more options which can be used. Further information about gatekeepers and their general functionality can be found in [1,2 chapter 2.1 and 2.2]

### **4. References**

- [1]: ITU-T Recommendation H.323, *Packed based multimedia communication system*, ITU, 11/2000
- [2]: Stoeckigt, K., *Videokonferenzen aus sicheren Netzen*, GWDG Göttingen, 2002
- [3]: Stoeckigt, K., *Videoconferencing & Firewalls, GnuGK - A cheap solution for everybody*, 2. VCC Workshop, TU Dresden, 2002