TEST REPORT POLYCOM CMA

GENERAL

Testing period

First quarter of 2010

SW version

Client: CMA Desktop (CMAD) 4.1.1.1010 Windows XP /Vista 32 Bit
Server: CMA 4000 Server 4.01 (Windows Server 2003)

Device class

Client server system for H.323

License terms

gradable number of at least 100 and at the most 400 users at the same time in steps of 100
user licenses for CMA registration for hardware systems and the CMA Desktop Client

Scope of delivery for the test

Polycom CMA 4000 Server: Converged Management Application Server as 19" rack component,
Standard Dell Server
Polycom V2IU 4350, Polycom V2IU 5300LF-S10: NAT/Firewall Traversal system solution

Bandwidth

Client: the client does not allow individual bandwidth adjustment.
Server: the possible bandwidths for clients can be assigned user related via various sites which are
created at the CMA server. We tested with bandwidths up to 1920 kbps.

CONCEPTIONAL BASICS

The Firewall/Traversal NAT solution is not as uncomplicated as described. The correct functional
mechanism is tied to several preconditions.

If both sides use NAT, the mechanism must always be identical, otherwise it will not work (e.g.
H.460). The used VBP (Video Border Proxy) systems are nothing else than H.323 Application Layer
Firewalls (checking the content for H.323 relevance). They are installed in the DMZ, at which a
public and a private address are used in the respective direction. The according ports for H.323
must be unlocked beforehand, of course.

The VBP are only active during a H.323 connection, which means that the ports are open. When no
conference is held, the VBP prevent every data traffic. The ST series models follow the H.460
standard with a necessary gatekeeper registration.

The E series models can be used in two scenarios. On the one hand, they enable a local gatekeeper
registration of the end devices. The connection is then set up between and by the E series. On the
other hand, also devices not registered can be linked by the E series.
INSTALLATION AND INITIAL OPERATION

Client:
The client can be provided for all users at the CMA server and is downloaded there. The installation goes without complications. The IP address of the CMA server must be entered once during the client configuration. The login data user name and password can be saved permanently.

Server:
The initial installation by two employees of the companies MVC and Polycom included the operation and configuration of the CMA server.

In the second test phase, the configuration of the firewall components was carried out remotely.

During the whole period of testing, following different configurations were tested:

1. configuration of the CMA server without Neighboring
2. configuration of the CMA server with Neighboring
3. Firewall Traversal functionality with H.460

When configuring the CMA server without Neighboring, only the authentication functionality of the CMA server can be used for all clients that have to be registered. Server functions such as Provisioning, management of bandwidth and Reporting, for instance, are not available.

On server side, so-called Sites are defined, which are assigned to single users. Here, the IP address range of clients that have to register and the gatekeeper used are determined among other things. It is possible, for instance, to define one site per research institute with the according information.

When configuring the CMA server with Neighboring, the full functionality of the CMA server is available. The server’s own gatekeeper is used. As Neighboring gatekeeper, the DFN Country gatekeeper was used and configured accordingly. This guarantees that the CMAD clients can use the DFN video conference infrastructure. A connection can be set up via E.164 and IP to H.323 devices and to the Codian MCU. In the test, the Country gatekeeper pointed towards the zone of the VCC 00493514633. The Presence information, which are provided by the server, are accessible also by the HDX series after registration at the server. The VSX series is only visible without Presence information, since this functionality is not yet implemented in the VSX series.

Following functionality is provided by the CMA server:

- **Management:** Management support for end devices as well as for conferences, with realtime monitoring and central diagnosis option
- **Scheduling:** Booking functions for Polycom MCU of the RMX series, via Outlook, Lotus Notes and web interface, Active Directory link possible for resource access (rooms or contacts)
- **Gatekeeper:** Maximum of 5000 registered users and 3000 concurrent calls, user authentication and client registration, access authorization, regulation of bandwidth, intelligent wiring, Presence administration
- **Directory:** User data base connection respectively implementation according to LDAP/H.350 (optional).

The initial operation of the two firewall components was carried out in a second test phase. A Polycom V2IU 4350 and a Polycom V2IU 5300LF-S10 system were provided. The V2IU 4350 device is identical in construction to the VBP E series (Video Border Proxy), the V2IU 5300LF-S10 is identical to the VBP ST series. The VBP ST model supports the H.460 standard with necessary gatekeeper registration. The VBP E models are designed for CMAD registration without gatekeeper registration. Usually, both Video Border Proxy are used together.

For the VBP connection, two different IP networks had to be provided. In our configuration, these were two public IP networks.

In our test scenario, the registration of the CMAD clients was carried out at the ST model of the Video Border Proxys. The VBP ST then built up the connection to the CMA server.
Operation

Client:
The design of the client highly reminds of the PVX. The polycom skilled user gets along quickly due to that. However, the handling is designed very clearly in other respects, too. Only starting and ending a data presentation is somehow done slightly cumbersome. The according menu item first opens a further, additional window from where the desired process can be carried out. A direct menu item without further intermediate display would be the better solution.

The client enables calls via IP and E.164 Alias to other H.323 devices. The bandwidth can not be adjusted at the client, it is determined centrally by the server.

Server:
The server of the CMA series can take various management tasks. They are designed as extensive control center and therefore are very powerful in functions. The web surface offers correspondingly many menu items, which certainly need some time of practice.

The menu structure is structured clearly. After menu item call up, once again a navigation appears in one frame of the window, which reoffers tasks concluding with regards to content for editing. It is an alternative way that finally leads to the same adjustment options as the menu call up.

For planning and carrying out video conferences, several options are available. The management functions of the VC rooms can be displayed. The possible integration in MS Outlook or Lotus Notes was not tested.

The server can be configured in a way that it offers the user software updates automatically when they are available.

The users can be assigned to user groups which own different rights. The possibilities of a group are exclusive, which means that a user which is permitted everything must be member of all groups.

Audio/Video

Client:
The audio quality was very good in most of the tested connections. In conferences with LifeSize Room and Sony XG-80, however, only the G.711 codec was used in both directions, which does not completely accord anymore to the state of the actual technical possibilities.

The video quality was always very good in connection with Polycom and Tandberg devices, otherwise good. Mirial Softphone 7.0.14 (for MAC as well as for Windows) does not receive video from the CMAD client. Only a freeze image from the beginning of the transmission is displayed. The CMA Desktop Client always sent VGA with H.264. The reception naturally depends on the technical preconditions of the remote system and ranges from CIF format to 720p with constant use of H.264.

Data presentation

Client:
CMAD enables the transmission of the complete desktop surface including mouse pointer. The quality of the data presentation according to H.239 was always very good in slide presentations with one exception. The Sony XG-80 could not receive data presentations, but sent in very good quality. The switch times between the slides and the resharpening times are less than one second in almost all cases. For practical use, the slide presentations are always acceptable and useable.

The transmission of an SD video works without restrictions only with the Tandberg 990 and Emblaze VCON xPoint. In all other tested connections, the practical use is only possible with a high fault tolerance of the viewer or not at all possible technically. Testing is absolutely necessary before every eventual use at the moment.

The transmission of an HD video is not recommendable at the moment. Only with the TANDBERG 990 this works completely without problems, otherwise nothing comes in or a framerate which can not be used reasonably.
Client:
The connections to the Codian MCU in the DFN Video Conference service all ran in very good and stable quality. For the audio, G.722.1C (Siren 14) is used. The Polycom CMA Desktop Client sends H.264 with VGA and receives H.263+ with 4CIF.

The data presentation is very well usable for slide presentations, the transmission of SD and HD videos is possible, but not recommendable practically for reasons concerning the quality.

Firewall
We tested the Firewall/Traversal solution with two different member institutions of the DFN and one non-member institution. In doing so, different Firewalls were used, which are differently restrictively configured. As different the Firewalls and their configurations are, as different the results are. In one member institution, a video conference could be carried out without restrictions with the CMAD client there and other registered CMAD clients. Also the dial-in in a DFN multipoint conference went well per E164. A connection to a H.323 device from their own institution, however, did not work.

In the second member institution, the registration at the CMA 4000 server failed already. The reason for that is that the Firewall of this institution does not possess a H.460 functionality.

At the third testpartner, two Firewalls are used, which are configured restrictively in a different way. With the office network secured by the Firewall, a video conference connection between the CMAD client there and the CMAD client at the VCC could be set up. With the CMAD behind the developer's Firewall, a connection was established, but the audio and the video data were disabled.

The Firewall tests confirmed that there is an extra effort of configuration in the according DFN member institutions.

CONCLUSION

The Client-Server model of the Polycom CMA is a software easily to be operated from the user's point of view, which is applicable and useable within a short period of time. For a practical use, the quality of the connections is always given in the audio / video field. Also slide presentations are possible without problems, the transmission of videos must still be checked carefully before use at the moment. Embedding components of the H.323 region and the transition to them is possible without problems.

The effort of the server side, on the opposite, is huge in a heterogeneous environment. The administrative effort accumulates permanently per user, also the server adjustment takes much longer than one work day. In an environment such as the DFN community with the different scenarios, security policies and application requirements, a configuration by a central institution is however hardly practicable. The system is constructed and suitable rather for companies with only one person responsible and with uniform equipment of the end devices.

Documentation

Manufacturer: Polycom
Distributor: MVC

We thank Mr. Paetzold (Polycom) and Mr. Bauer (MVC) for the configuration of the CMA server and the Firewall components.