**OVERVIEW**

Period
May 2016 - December 2017

**SW-Versionen**
1.1.0, 1.2.1, 1.3.1

**Device class**
The device Polycom RealPresence Desktop is a office or small group system, which can be attached directly on the top of the monitor or on the wall. It is very compact and the connections were also reduced to the absolutely necessary minimum, so that for example only one monitor can be connected to the device. The integrated camera is a PT camera with a 80 degree visual field. There are two microphones integrated in the case and there is also the possibility to connect a remote microphone from Polycom to the device.

**Scope of delivery**
The Polycom RealPresence Debut will be delivered with a codec, an integrated camera, a remote control, a wall bracket and all necessary cables for the basic operation.

**Protocols and bandwidths**
The device enables calls through **H.323** and **SIP** up to a bandwidth of 4096 kbps. The data transfer is realised by using **H.239** or **BFCP**.

**Other**
The camera has no optical zoom, but it has a implemented four times digital zoom.
**INSTALLATION**

Because of the compactness of the device and the clarity of the connections, the installation of the device and the connection to all components is quite simple to implement. In the simplest case it is sufficient to connect the HDMI, the Ethernet connection and the power supply. A power supply may be dispensed if a PoE will be used. The enclosed documentation can be used if required. A further positive feature is that no proprietary connections were installed. Directly at the device only the basic settings to the IP network or to the bandwidth can be edited. All further settings (for example gatekeeper, encryption) have to be done via the self-explanatory web surface of the device. At this point the standard login has to be changed immediately.

Additionally to the already mentioned HDMI outputs (Version 1.3), Ethernet connection (100 Mbit) and the power supply, the Polycom RealPresence Debut has another HDMI input for data presentations, a RJ11 port for an additional remote microphone and a USB 2.0 port. The audio will be transmitted mandatory via the HDMI output, a additional issue for example a jack is not proposed.

**TEST**

**Start / Power consumption**

The Polycom RealPresence Debut takes about 35 seconds after switching on the power until it maintains the operational readiness. Switching from the standby mode to the operation mode takes 3 seconds. The typical annual power consumption is around 29 kWh. A possiblity to turn off the device is not available, it can only be unplugged.

**Operation**

The device can be operated by a supplied remote control. Which is well structured and very intuitive to use. Only the missing button to start and end the transmission of a data presentation would be more helpful. There is the possibility to start the data presentation automatically as soon as the HDMI receives a signal, or the transmission of the data presentation can be controlled at the menu.

The surface of the Polycom RealPresence Video is clearly arranged and constructed in a self-explanatory manner. The device resembles the user interfaces of other Polycom products like RealPresence Desktop, RealPresence Video or the RealPresence Group. The surface limits itself to the necessary functions, most of the settings have to be done via the clear and self-explanatory web interface of the device.

Because of only one monitor port the available display layouts for the simultaneous display of video and data presentation are very important and useful. It can be chosen between full screen, two same big pictures, picture-and-picture and picture-in-picture (various positions of the pictures).

A statistic of the transmitted datas can be displayed by pressing the -* button during the call.

**Audio**

The audio quality of the Polycom RealPresence Debut was rated in about 3/4 of the tests as "Very good". In about 1/5 of the tests the oldest by the ITU standardized basic codec G.711 has been negotiated. Its subjective perception of the voice quality corresponds to an ISDN telephone connection, hence the audio quality at using the codecs was rated as "okay". The rest of tests the audio quality was rated as "good". Except of the already mentioned G.711, the Polycom RealPresence Debut was using the codecs G.722.1, G.722.1C and Siren LPR.

Some problems with short audio dropouts occurred in transmitting direction at the connection to the Polycom RealPresence Group 500. There was also a partly delay between sound and image in receiving direction at the connection to the Panasonic KX-VC-1600.

There were also some problems with the audio codec negotiation to the LifeSize Team, Sony PCS-XG80, LifeSize Icon 450 and the LifeSize Icon 600 when the encryption was activated. A precise description can be found at the section "encryption" below.

**Video**
The video quality was rated in about 4/5 of the tests as "very good". At almost every other connections the quality has been rated as "good", only in receiving direction at the connection to the LifeSize Team 220 the rating "okay" was reached. Great weaknesses became apparent at the connection to the Polycom HDX 8004. At this connection the receiving picture of the Polycom HDX 8004 was sometimes frozen at simultaneous receiving of a data presentation. H.264 or H.264 High Profile were used as videocodec. The used resolution was at minimum 720p, from about a half of the test the resolution was at 1080p. At a simultaneous transmission of a data presentation, the video resolution was reduced constantly to 720p, because the available bandwidth had been splitted into a video and data presentation channel.

Data presentation
The Polycom RealPresence Debut leaves overall a good impression in the field of data presentation. A continuous resolution of minimum 720p and as videocodec H.264 or H.264 High Profile were reached in the data channel. In about half of the tests the data presentation was transmitted in 1080p. At the transmission of moving contents exists a need of improvement, especially at the transmission of HD movies.

The transmission of static content was rated with one exception as "very good". At the connection to the Polycom HDX 8004 occured heavy image errors and the image buildup of the slide contents at the transmission were very slow or could not be completed, so that in this case the rating was "bad". Also the receiving of static slide content at the connection to the Polycom RealPresence Debut was a bit distorted, that means the slides were showed wider than they actually were.

The practical applicability of transmitting SD movies was given in about 2/3 of the tests. Limits occured at both, the receiving and transmitting direction. At the connection to the Polycom HDX 8004 in receiving direction was a delay between the video and audio. There were also massive delays at the connection to the Cisco DX80 in receiving direction. This delay continued to expand, that means a double transmission period of the data presentation was accompanied by a twice delay, so that a complete restart of the device was needed.

The sending and receiving of HD movies was at about 1/3 classified as applicably. Generally speaking the low frame rates, the block-building or resharpening prevented a better evaluation. The mentioned errors of the transmission of SD movies also occured at the transmission of HD movies.

Detailed findings can be found in the compatibility matrix.

Camera remote control
The camera remote control worked in the tests except for one exception, with appropriate technology needs of the remote site. During the connection with the LifeSize Softphone, the LifeSize Softphone could not control the camera of the Polycom RealPresence Debut.

Service DFNVideoConference
With the software version 1.3.1 of the Polycom RealPresence Debut works the cooperation with the DFN-MCU correctly. The audio and video quality was very good. H.264 was utilised as video codec and as resolution 720p@30 fps was used in transmitting direction and 1080p@25 fps in receiving direction. As audio codec G.722.1C was utilised. At the transmission of data presentations H.264 was used with 720p.

Until the software version 1.1.0 of the Polycom RealPresence Debut, the Polycom RealPresence Debut did not get an image at the connection to the DFN-MCU. This behavior occured also in the connection to other Cisco devices.

Until the software version 1.2.1 of the Polycom RealPresence Debut, the Polycom RealPresence Debut in connection with the DFN-MCU could only transmit a data presentation if a data presentation was transmitted once (via the DFN-MCU). There were also connection terminations, possibly even connected with a restart of the Polycom RealPresence Debut.

Gatekeeper
The use of Gatekeeper GNU-GK did not cause any problems.

SIP
Calls to the DFN-MCU are possible with the software version 1.3.1 of the Polycom RealPresence Debut via SIP-dialing with the syntax "Konferenz-ID@vc.dfn.de" , without registration at a SIP-registrar. A transmission of a data presentation can be performed in the second channel via BFCP. A SIP-call from the DFN-MCU to the Polycom RealPresence is also possible.
Until the software version 1.2.1 of the Polycom RealPresence Debut in the connection with the DFN-MCU, the transmission of a data presentation in the second channel via BFCP was not possible.

**URI-Dialing**

Calls via URI-dialing by H.323 Annex O are possible with the Polycom RealPresence Debut. The variants "194.95.240.35##Konferenz-ID" or "194.95.240.240##Konferenz-ID" are allowed at the registration to a gatekeeper. Without registration to a gatekeeper is also the @-syntax with "Konferenz-ID@194.95.240.35" or "Konferenz-ID@194.95.240.240" possible. There is also the possibility to use the DNS-name "vc.dfn.de" for 194.95.240.35 or 194.95.240.240.

**Encryption**

With the software version 1.3.1 of the Polycom RealPresence Debut a media encryption has been implemented at all connections. But at the connection to the LifeSize Team, Sony PCS-XG80, LifeSize Icon 450 and LifeSize Icon 600 were problems with the negotiation of the audio-codec, when the encryption was activated. This manifested itself when the Polycom RealPresence Debut was using Siren LPR in receiving direction, but the respective opposite used for example G.711 or G.722.1C. Followed by not receiving any audio signals at the Polycom RealPresence Debut. At a deactivated encryption there was no problem to negotiate the audio-codec.

Until the software version 1.2.1 of the Polycom RealPresence Debut was no call setup at calls from the Polycom RealPresence Debut to the Cisco C40 and to the Cisco EX90 possible. The calls were not completely established (no codecs, no media streams) and the Polycom RealPresence Debut stuck in the phase of the call setup. The device only returned to the normal operating status by separation from the power supply. Also here, the problems could be bypassed by deactivateing the encryption.

**Others**

At the web interface of the Polycom RealPresence Debut are no statistics to the transmitted datas of the current call included.

At the Polycom RealPresence Debut is either H.323 or SIP usable, because in each case the changing of the protocol has to be made at the web interface.

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**CONCLUSION**

The Polycom RealPresence Debut is characterised by a compact design and the simple usability. Thus it is flexible to use and also easy to transport. But the restriction that just one monitor can be connected has to be noted. The problems with the negotiating of the audio-codec in connection with the encryption at a few remote peers restricts the usability significant. It could be necessary to deactivate the encryption to make a audio transmission possible. But this is generally not recommended. In the field of video transmitting the Polycom RealPresence Debut is able to convince. At the transmission of data presentations is a need for improvement in the field of the transmission of moving content.

**Documentation**

We would like to thank Mrs. Lätsch from the company Polycom for the tested device.

Producer: Polycom

Contact person: Mrs. U. Lätsch
<table>
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<th>Supported General Standards</th>
<th>H.323, SIP, H.239, BFCP</th>
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<td>Audio Codings</td>
<td>G.711, G.722.1, G.722.1C, Siren LPR, Siren SAC</td>
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<tr>
<td>Video Compression</td>
<td>H.263, H.264, H.264 High Profile, H.264 SVC</td>
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<tr>
<td>Resolution</td>
<td>up to 1080p with 30 fps at video and 1080p with 15 fps at the data presentation; in the test not simultaneous (video and data presentation in full resolution) achieved</td>
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<tr>
<td>Bandwidth</td>
<td>up to 4 Mbps</td>
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