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1. Introduction

Polycom InstantDesigner™ release 2.0 is a revolutionary new way for A/V integrators and consultants to quickly and accurately design audio and video conferencing systems and sound reinforcement applications, with Polycom Vortex® audio and video products. A new addition to our Conference Composer™ design software for Windows®, the patent pending Polycom InstantDesigner guides the system designer through the steps required to create high performance Vortex audio conferencing and sound reinforcement solutions.

The A/V integrator or consultant simply chooses the necessary inputs, outputs (including the new Polycom VSX™ 7000 or VSX 8000 video codecs) and optionally the sound reinforcement zones needed for the desired system, and Polycom InstantDesigner automatically selects the appropriate Vortex devices necessary to implement the system, maps the inputs and outputs to the devices, and creates the Conference Composer design files required to implement the design. It is easy to upload these design files to the Vortex devices to complete the configuration. All of this can be done within a matter of minutes.

The Polycom InstantDesigner handles all the details of creating zone to zone gains for sound reinforcement, configuring the acoustic echo cancellers, interfacing to common audio and video equipment, bussing between devices, configuring presets, creating volume control macros, and preconfiguring logic ports for push to talk microphones.

Polycom InstantDesigner will change the way audio and video conferencing systems are designed. The immediate benefits of using Polycom InstantDesigner include

- Dramatically reduced design time – from hours to minutes (or less) which means more profit to the A/V designer
- More consistent A/V designs – there is now a “Vortex expert” included with every product purchased
- More satisfied end-users due to quicker and better installations
- Reduced learning curve for A/V specialists to confidently design larger systems for any type of application.

Read more to learn how Polycom InstantDesigner will change the way you design audio and video conferencing systems.

2. What Polycom InstantDesigner does for you

Polycom InstantDesigner release 2.0 encapsulates the design expertise of the Vortex engineering team and the experience of thousands of successful audio and video conferencing installations. We have learned both the easy way and the hard way what works and how to best use the Vortex products. By making Polycom InstantDesigner available to you, the A/V specialist, we want to make your job easier and allow you to spend more time doing the things that can help your
design and integration firm be more profitable. To give you an idea of how much
the design process can be accelerated, below is a partial list of what Polycom
InstantDesigner will do for you. With just a few mouse clicks, Polycom
InstantDesigner will automatically:

- Select the Vortex equipment necessary to implement the system
- Map the input and output equipment to Vortex inputs and outputs (e.g.,
  lectern microphone is input 1 on Vortex EF2280:00)
- Set the input and output gains in the Vortex required to interface to the
  selected input and output equipment (e.g., most video codecs typically
  require 10dB of input gain, and 5dB of output attenuation)
- Configure the automatic microphone mixer for linked operation for larger
  systems
- Create all the matrix crosspoints necessary to use the resulting system
  (e.g., local audio is sent to the remote site and remote audio is played back
  into the room)
- Create loudspeaker zones for sound reinforcement and allow you to specify
  the microphones that are part of that zone and reinforced into other zones
- Make it easy to modify the zone to zone crosspoint gains needed for sound
  reinforcement across zones
- Configure all the bussing across linked devices (e.g., local microphones are
  automatically sent to all devices), including sound reinforcement zone gains
- Configure the acoustic echo cancellation (e.g., the echo canceller reference
  is configured and all linked devices are configured to use the bus reference)
- Customize the text labels for all inputs and outputs including the bussing
  signals
- Save the settings to Preset 16 and set the power-on preset on all devices
- Create macros for muting, unmuting, and volume control
- Create logic assignments making it easy to connect push-to-talk
  microphones or other hardwired control systems
- Create a project summary of the wiring connections and necessary
  equipment
- Create formatted PDF reports of your system configurations
- Create a zone to zone sound reinforcement summary report
- Create a signal routing report so you can see how the signals are routed
  and bussed to create the appropriate sound reinforcement zones
- Create DXF drawings of your designs
- Upload the Conference Composer project to your Vortex devices
The list keeps growing and growing. Imagine what you can do with Vortex products now – perform more conference designs with your current team, create new conferencing applications, build more expertise within your team, etc. If you haven’t tried the Vortex products – you can’t afford not to.

Sit back, grab a cup of coffee, and learn how we are trying to make your job easier.

3. Getting Started with Polycom InstantDesigner

To use Polycom InstantDesigner simply start Conference Composer. You will be presented with the screen shown in Figure 1.

![Conference Composer startup screen.](image)

Figure 1. Conference Composer startup screen.

From here there are three choices

1. *Autoscan for Devices* retrieves the settings from the Vortex devices and puts them into Conference Composer – this requires that you be connected to a Vortex via an RS232 connection.

2. *Create Project with Polycom InstantDesigner* begins the instant design process.

3. *Open Existing Project* opens a previously designed Vortex project.

Selecting *Create Project with Polycom InstantDesigner* will start the Polycom InstantDesigner process and bring you to the screen in Figure 2. If you are already running Conference Composer you may start Polycom InstantDesigner by
selecting Polycom *InstantDesigner* from the Project menu or using the keyboard shortcut of Ctrl-i.

Please note that at any step in the Polycom *InstantDesigner* process, the Polycom *InstantDesigner* information can be saved to disk by clicking on the floppy disk icon. This is a useful and recommended step in case changes need to be made to the configurations within Polycom *InstantDesigner* after the initial design process is complete.

Clicking the help icon will provide a step by step instruction guide for using the *InstantDesigner* software.

![Polycom InstantDesigner welcome screen](image)

**Figure 2.** Polycom *InstantDesigner* welcome screen.

From a high level perspective as shown in Figure 3 there are two paths through the *InstantDesigner* software, depending on whether sound reinforcement is required.
Figure 3. The steps of using the InstantDesigner software – either 6 steps or 9 steps are required depending on whether sound reinforcement is required for the design.

As we shall see, there are either 6 steps (without sound reinforcement) or 9 steps required to design the complete audio and video conferencing system.

Click Next to start the wizardry of the Polycom InstantDesigner.

**Step 1 – Select Inputs**

The first step of Polycom InstantDesigner is to select the types and quantities of inputs that are required in the audio design. The types of inputs that can be selected include:

- Microphones – including table, ceiling, lectern, and wireless microphones
• Program audio – including both stereo and monaural consumer and professional playback devices such as DVD players and VCRs
• SoundStation VTX 1000™ for wideband telephony
• PSTN Telephone line interfaces for narrowband telephony interfaces
• Video codecs – including Polycom VSX™ 7000, VSX 8000, ViewStation®, and iPower™

Select the types of input, such as Microphone and Table, choose the quantity, adjust the text label, and then click Add Input. This will add the selected items to the Selected Inputs text box as shown in Figure 4.

![Polycom InstantDesigner Step 1 – Select Inputs.](image)

In this application note, we will design a system that includes 12 table microphones, a lectern microphone, two wireless microphones, a VSX 8000 video codec, an analog phone line, stereo program audio, a monaural recorder, and an assistive listening device. This room might look like the room in Figure 5.
Figure 5. A typical 3 zone room including 12 tabletop microphones with imaginary lines showing the different loudspeaker zones.
Please note that at any time during the Polycom *Instant* Designer process you may save your design to an *Instant* Designer template file (*.idt) by selecting the floppy icon on the lower left of the screen. The design specifications that you have created up to that point can be restored from a saved file by selecting the folder icon on the lower left of the screen. These Conference Composer template files are different from the files that Conference Composer creates and can be used to share your design intent with your team, subcontractors, etc. before the complete Conference Composer project file is created.

After the input selections have been made, select Next to go to Step 2 – Select Outputs.

![Select Inputs](image.png)

**Figure 6.** Sample input selection with 12 table microphones, a lectern microphone, 2 wireless microphones, stereo program audio, telephone interface, and a Polycom VSX 8000 video codec.

**Step 2 – Select Outputs**

The second step of Polycom *Instant* Designer is to select the outputs that will be used. By default, some outputs will already be selected, such as a telephony output and a video codec output, if their respective inputs have been selected. This automatic selection is shown in Figure 7.

The types of outputs that may be added to the system include:

- Assistive listening
Audio amplifier channels – including monaural and stereo amplifiers
Recording outputs – including monaural and stereo outputs
SoundStation VTX 1000
PSTN Telephone outputs
Video codecs – including Polycom VSX, ViewStation, and iPower

Audio amplifier channels are the monaural audio channels that are used to drive loudspeaker zones in the room. Multi-channel amplifiers are often used in practice and can be specified by increasing the quantity field once the audio amplifier channel has been selected. If stereo program audio is used with the system, a stereo amplifier should be selected, even if the stereo pair will built from two channels of a multi-channel amplifier. This will simplify the automatic sound reinforcement routing in the next step. In the current example three zone amplifiers (labeled Front Speakers, Mid Speakers, and Rear Speakers) have been selected in addition to a stereo amplifier for the stereo program audio.

As with the input selection, select the type and quantity of outputs that are needed for the design. In the design example in this application note the output selection will look like Figure 8.

After the output selections have been made, click Next to go to Step 3 – Sound Reinforcement Zones.
Figure 8. Sample output selection with a telephone output, video codec output, stereo audio amplifier for program audio, three mono amplifiers, mono recording output, and a mono assistive listening output.

Step 3 – Sound Reinforcement Zones

The next step for InstantDesigner is to determine whether to use sound reinforcement zones as shown in Figure 9. Sound reinforcement allows the designer to create loudspeaker zones, place microphones into these zones, and control the amount of reinforcement of the microphones into neighboring loudspeaker zones. Microphones that are placed in a loudspeaker zone are NOT reinforced into the same loudspeaker zone – the microphones will only be reinforced into other loudspeaker zones.

Answering No to question posed in Step 3 will move the designer to the next step in the process, Select Devices. This step is described in the section entitled Step 6 – Select Devices.

Answering Yes to the question posed in Step 3 will show the screen in Figure 10, emphasizing that microphones from one loudspeaker zone will be reinforced into other loudspeaker zones with the blue microphone audio and green microphone audio indicating different loudspeaker zones. Answering Yes also increases the number of steps in the process from 6 to 9 as additional information is required to properly configure the loudspeaker zones (see Figure 3).
Figure 9. Step 3 where the designer does NOT want to use sound reinforcement.

Sound reinforcement enables you to send audio from microphones in your room to speakers in the same room. This is done to amplify someone speaking into the microphones for listeners in the room.

Do you want to use sound reinforcement zones in this configuration?

- No, DO NOT use sound reinforcement zones (Default)
- Yes, use sound reinforcement zones with a mixer or zone matrix (Advanced)

Figure 10. Step 3 where the designer does want to use sound reinforcement. Notice the microphone and loudspeaker audio in the two zones.

Sound reinforcement enables you to send audio from microphones in your room to speakers in the same room. This is done to amplify someone speaking into the microphones for listeners in the room.

Do you want to use sound reinforcement zones in this configuration?

- No, DO NOT use sound reinforcement zones (Default)
- Yes, use sound reinforcement zones with a mixer or zone matrix (Advanced)
Once the designer has decided whether to use zoned sound reinforcement, the next step, if reinforcement is required, will be to define the zones as shown in Figure 11.

**Step 4 – Create Zones**

Reviewing the screen in Figure 11, notice that three amplifier zones were created, matching the selection of three amplifier channels selected in Step 2. The zones are labeled Zone 1, Zone 2, and Zone 3 and they include the amplifier channels: Front Speakers, Mid Speakers, and Rear Speakers, respectively, corresponding to the amplifier channel names selected previously. Please note that the stereo amplifier channels are not included as zone amplifiers in the sound reinforcement steps of Polycom InstantDesigner.

The microphones were automatically evenly divided into the loudspeaker zones with 4 microphones being placed into each loudspeaker zone. If the design requirements differ from this default, the microphones may be easily moved to the desired zones by selecting Manually Define Sound Reinforcement Zones and dragging the microphones into the appropriate zone.

A presenter zone was automatically created because presenter style microphones (lectern and wireless microphones) were selected in Step 1. The presenter zone has no amplifier associated with it, but includes the three microphones (lectern,
wireless microphone 1 and wireless microphone 2) that are used for reinforcement into the entire room through the three amplifier zones for this example. If the design requires that the presenter microphones be physically located in a loudspeaker zone (due to room layout constraints or design preference), it is possible to either add these microphones to an existing zone (Zone 1, 2, or 3 as shown in Figure 12). Please note if the presenter microphones are moved into Zone 1, these microphones will not be reinforced into Zone 1 but will be reinforced into Zone 2 and Zone 3 with the reinforcement levels to be specified in the next step.

Figure 12. The presenter microphones (lectern, wireless 1, and wireless 2) were moved to Zone 1 in this figure.

Continuing this example, we will leave the presenter microphones in the presenter zone and the other microphones in their respective zones as shown in Figure 11. The next step is to specify the amount of the sound reinforcement required across zones.

**Step 5 – Set Zone Gains**

Step 5 (when using zoned reinforcement) allows the designer to specify the levels used to reinforce microphones into different loudspeaker zones. As shown in Figure 13, the microphone zones on the left include the microphone definitions for each zone – holding the mouse over the zone name will show which microphones are in that zone. The amplifier zones on the top represent the loudspeaker zones.
– holding the mouse over the zone name on the top will show which amplifier is in that zone.

By default each zone of microphones is mapped to the remaining loudspeaker zones with a gain of -30dB. In this zone matrix view, the columns are summed to create the outputs to the loudspeaker amplifier zones. For example, in Figure 13, the reinforcement for Zone 1 is the sum of the microphones in Zone 2 (attenuated by 30dB) the microphones from Zone 3 (attenuated by 30dB), and the presenter microphones (also attenuated by 30dB). Please note that the microphones from Zone 1 are NOT included in the output for Zone 1 and consequently the crosspoint is grayed out to minimize the occurrence of acoustic feedback from a microphone in a zone being reinforced into the same zone.

![Figure 13. Default Zone gain matrix for this example.](image)

The reinforcement levels from microphones to loudspeaker zones can be adjusted by left clicking on the appropriate crosspoint and adjusting the slider that appears on the left. Figure 14 shows setting the Zone 2 to Zone 1 reinforcement level to -18dB.

The amount of reinforcement required will depend on the room design, the physical separation between zones, and the style and placement of microphones and loudspeakers. A conservative reinforcement level is recommended as a starting point to minimize the incidence of acoustic feedback within the room. After configuring the devices with the specified room reinforcement level, it is possible to change the reinforcement levels either in the Vortex devices by
manually adjusting crosspoint gains, or by re-running the *InstantDesigner* and adjusting the zone matrix and re-uploading the configuration file to the Vortex devices.

![Image of InstantDesigner interface](image)

**Figure 14.** The reinforcement level for the microphones in Zone 2 to loudspeakers in Zone 1 is set to -18dB.

In Figure 14, the reinforcement level between adjacent zones was adjusted to -18dB and the reinforcement level between zones two zones apart was -12dB. These zone gains will be used to create the routing and mapping through the Vortex matrix and bus matrices.

After the reinforcement levels have been specified, the next step is to determine the equipment required to implement the design. If sound reinforcement was used, this will be step 6; if sound reinforcement was not used, the next step will be step 4.

**Step 6 – Select Devices**

The next step for *InstantDesigner* is to select the Vortex devices that are required to implement the system. The two criteria for automatically selecting these devices are minimum cost or minimum rack space. Minimum cost selects the equipment with the lowest list price while minimum rack space selects the equipment that requires the fewest rack spaces. The default method is to choose the equipment that has the minimum cost, but there are times where the minimum rack space selection may be preferable. For many systems, but not all, the two results are the same.
There is also an option for manually selecting the equipment in case there is specific equipment to be used in the installation. To use this option, select Manual and then select Add Device to add devices to the selection. To delete devices, select the device and click Delete Device. Please note that if you manually select devices and then select Automatically Select Devices, your manual selections will be overwritten with the automatic selection.

In this example, the automatic method of selecting devices was used and the resulting equipment list consists of 2 Vortex EF2280’s and 1 Vortex EF2201 as shown in Figure 15. In addition to the device selection, this window shows the number of unused microphones, line inputs, line outputs, and telephone connections that are presently unused with the equipment selection. In our example, there is 1 microphone input, 6 line level inputs and 16 line level outputs available.

Select Next to go to Step 4 – Connecting Inputs and Outputs.

![Figure 15. Polycom InstantDesigner Step 6 -- Selecting the devices shows the automatic equipment selection.](image)

**Step 7 – Connect Inputs and Outputs**

The next step for Polycom InstantDesigner is to determine how to connect the inputs and outputs to the actual device inputs and outputs. This process is done automatically, but the signals can be manually moved around – when not using sound reinforcement – by selecting Manually Connect Inputs and Outputs and dragging the appropriate input or output to the desired location.
After mapping the inputs and outputs to the device inputs and outputs, Select Next to go to Step 8 – Reports.

**Step 8 – Select Reports**

When using sound reinforcement, there are two new reports that are available for the system designer – a zone matrix report, and a signal routing report. These report options are shown in Figure 17.
Figure 17. The zone reports that can be generated when using sound reinforcement.

The zone matrix report is a spreadsheet that summarizes the zone reinforcement gains for the inputs and outputs. An example of this report showing the zones, zone inputs and outputs, zone reinforcement crosspoints, and the devices that inputs are connected to is shown in Table 1. The zone matrix report is created at Step 9 at the same time the complete Conference Composer design file is created.
In addition to the zone matrix report, Table 2 shows a part of the zone routing spreadsheet illustrating how the Zone 1 loudspeaker output is created from microphone signals, codec, and phone add audio.

In this example, the Zone 1 output is built from the Zone 3 microphones (attenuated 12dB), the telephone from the EF2201, the Zone 2 microphones (attenuated by 18dB), the presenter microphones (attenuated by 8dB), and the VSX 8000 video codec audio.

The report in Table 2 also shows the details on how the signals are bussed – for instance the presenter microphones are transmitted on the X bus from EF2280:01 and input to EF2280:00 on input XB1, attenuated by 18dB and then fed into the main matrix of EF2280:00 and summed together with the other signals to create the Zone 1 loudspeaker output.
Table 2. An example of the zone routing report showing how Zone 1 is built from the presenter microphones, Zone 3 microphones, Zone 2 microphones, the remote telephone audio, and the remote video audio.

<table>
<thead>
<tr>
<th>Zone : Amplifier</th>
<th>Gain</th>
<th>Signal</th>
<th>Zone : Amplifier</th>
<th>Gain</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1 : Front Speakers (EF2280:00 Output 1)</td>
<td>-12</td>
<td>Zone 3 : Table Mic 9 (EF2280:00 Input 5)</td>
<td>-12</td>
<td>Zone 3 : Table Mic 10 (EF2280:00 Input 6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-12</td>
<td>Zone 3 : Table Mic 11 (EF2280:00 Input 7)</td>
<td>-12</td>
<td>Zone 3 : Table Mic 12 (EF2280:00 Input 8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>SubMix Phones (EF2280:00 Input PM0)</td>
<td>0</td>
<td>Zone 1 (EF2280:00 Input WM1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Bus Phones (EF2280:00 Input PB0)</td>
<td>0</td>
<td>Zone 2 (EF2280:00 Input WB1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Zone 2 (EF2280:01 Output W)</td>
<td>0</td>
<td>Zone 2 : Table Mic 5 (EF2280:01 Input 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Zone 2 : Table Mic 6 (EF2280:01 Input 2)</td>
<td>0</td>
<td>Zone 2 : Table Mic 7 (EF2280:01 Input 3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Zone 2 : Table Mic 8 (EF2280:01 Input 4)</td>
<td>0</td>
<td>Zone 2 : Table Mic 9 (EF2280:01 Input 5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Zone 1 (EF2280:00 Input XM1)</td>
<td>0</td>
<td>Presenter (EF2280:00 Input XB1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>SubMix Mono (EF2280:00 Input YM1)</td>
<td>0</td>
<td>Bus Mono (EF2280:00 Input YB1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Bus Mono (EF2280:01 Output Y)</td>
<td>0</td>
<td>From VSX 8000 (EF2280:01 Input Y)</td>
<td></td>
</tr>
</tbody>
</table>
These new sound reinforcement reports complement the existing summary reports and cad drawings that are created automatically by Conference Composer.

**Step 9 – Finish**
The final step for Polycom *Instant*Designer shows the equipment list and signal connections for your review. The equipment and signal connection summary can be saved as a text file by clicking the **Export Summary** button. Device inputs and outputs that are not used are not listed in the design summary.

To create the Conference Composer design file, click **Next**.

![Design Summary](image)

Figure 18. Polycom *Instant*Designer Step 9 of 9 – Finishing a design with sound reinforcement.

4. **Instant**Designer Results
The final result from the Polycom *Instant*Designer is the Conference Composer configuration file (*.ccp) that can be uploaded to the Vortex devices. The result of using Polycom *Instant*Designer with our design example is shown in Figure 19. The A/V specialist can simply set the device ID’s of the Vortex devices to match the device ID’s in the project, connect the required Vortex devices together, and upload the results to the Vortex devices for final system testing and configuration. This process is described in Section 5.
The Conference Composer file contains the appropriate Vortex configuration for all input, automixer, matrix mixer, output, bussing, macro, and logic settings as described next.

Figure 19. Polycom *InstantDesigner* automatically generates the Conference Composer project file that can be uploaded to Vortex devices.

**Input Settings**

The Polycom *InstantDesigner* configures table top microphones to have phantom power enabled and to have 48dB of gain (mic mode provides 33dB of gain, and then an additional 15dB of gain is applied). Ceiling microphones are configured to have 58dB of gain and to have phantom power enabled.
Wireless microphones do not use phantom power and will have an input gain that depends on whether they are mic level mode or line level mode.

Video codecs and other consumer-level audio equipment are automatically configured to have 10dB of gain on the input and -10dB of gain on the output to match the 0dBu nominal levels of the Vortex devices. The VSX 8000 codec interfaces at 0dB input and 0dB output gains due to the use of professional signal levels and balanced audio connections on the VSX 8000.

**Matrix Settings**
Polycom InstantDesigner automatically configures the matrix, the zone to zone reinforcement gains, the acoustic echo canceller references, and the bussing (when multiple Vortex devices are required). All microphone audio is sent to the remote participants (video codec, telephony, etc.), and remote audio is sent to the loudspeaker, and program audio is sent to left and right program audio loudspeakers. The text labels that were initially selected are automatically used as the text labels within Conference Composer.

Microphones are bussed appropriately to ensure they are available to all connected devices and at the appropriate reinforcement level.

**Macro Definitions**
Polycom InstantDesigner will configure each Vortex device with a set of macros that can be used for volume control of microphones, program audio, muting and unmuting microphones, amplifier volume control, etc. In our example, the macros are shown in Figure 20, and the complete set of macros that are created for the Vortex EF2280 in this example is shown in Table 3.
Figure 20. The macro tab in this example shows the set of macros that were automatically created for Vortex EF2280 (device ID 00) by Polycom InstantDesigner.
Table 3. The macros that are created automatically for an EF2280 by the Polycom *Instant Designer*.

<table>
<thead>
<tr>
<th>Macro Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mics Up</td>
<td>Increases the volume of the microphones by 1dB</td>
</tr>
<tr>
<td>Mics Down</td>
<td>Decreases the volume of the microphones by 1dB</td>
</tr>
<tr>
<td>Mics Mute</td>
<td>Mutes the microphones in all linked Vortex devices</td>
</tr>
<tr>
<td>Mics UnMute</td>
<td>UnMutes the microphones in all linked Vortex devices</td>
</tr>
<tr>
<td>Program Up</td>
<td>Increases the program audio inputs by 1dB</td>
</tr>
<tr>
<td>Program Down</td>
<td>Decreases the program audio by 1dB</td>
</tr>
<tr>
<td>From Codec Up</td>
<td>Increases the incoming codec signal by 1dB</td>
</tr>
<tr>
<td>From Codec Down</td>
<td>Decreases the incoming codec signal by 1dB</td>
</tr>
<tr>
<td>Amplifier Up</td>
<td>Increases the program audio amplifier volume by 1dB</td>
</tr>
<tr>
<td>Amplifier Down</td>
<td>Decreases the program audio amplifier volume by 1dB</td>
</tr>
<tr>
<td>Amplifier Mute</td>
<td>Mutes the outputs of the program audio to the amplifier</td>
</tr>
<tr>
<td>Amplifier UnMute</td>
<td>UnMutes the outputs of the program audio to the amplifier</td>
</tr>
</tbody>
</table>

These macros may be executed via RS232 commands to the Vortex devices as outlined in the command set document and in the Conference Composer Help file. Typically, a control system such as an AMX® or Crestron® would send these commands to execute the appropriate function. To mute the microphones in this example, the control system would send the command

**F00MACROX2.**

where  is a carriage return.

This would execute Macro 2 in the Vortex EF2280 with device ID 00. Macro 2 in this case would cause the microphones on both Vortex EF2280's (ID's 00 and 01) to be muted.

To unmute the microphones, the control system would send the command

**F00MACROX3.**

The way the macros are configured for the Vortex devices, it does not matter whether macros 2 and 3 are executed on the Vortex EF2280 of device ID 00 or device ID 01 – either device will mute or unmute the microphones on the other device through the use of the BROADA command to forward the command to the other linked Vortex devices.
**Logic mappings**

In addition to creating the macros for many common functions, *InstantDesigner* also creates logic input pin mappings that can execute these macros through simple contact closures, such as the contacts from push-to-talk microphones or toggle and push button switches that are wired to the logic ports on the devices.

In our example, the logic mappings are shown in Figure 21. Each microphone input has an associated pin on the Vortex logic input port on the rear panel. In this example, the table microphone 1 mute contact closure is wired to pin 1 with the ground pin of the push-to-talk microphone connected to pin 25 of the logic input connector. In this example, when input 1 is shorted to ground (pin 25), Macro 3 will be executed – unmuting the microphones. When input 1 is opened, Macro 2 will be executed – muting the microphones.

While muting microphones with push-to-talk microphones is important, knowing the status of whether the microphones are muted is even more important. *InstantDesigner* takes care of this for the A/V specialist by creating default logic output status mappings that can be used to drive the LED on the microphone so that the LED is “on” when the microphone is active (unmuted) and the LED is “off” when the microphone is inactive (muted). The default mappings are shown in Figure 22. Notice there are additional logic output mappings that can be used to show the gating status of a microphone – if the microphone is gated “on”, the LED could be turned on for that microphone.

For more information on how to wire push-to-talk microphones to the Vortex, open the help file within Conference Composer and review the Application Notes section for a detailed explanation.
Figure 21. The default logic input definitions showing the microphone inputs and their associated macros for muting and unmuting.
5. Uploading to Vortex Devices

Once Polycom InstantDesigner has created the complete Vortex configuration for the desired audio design, the next step is to upload the settings to the Vortex devices. When the system design requires more than one Vortex device, the first step is to set the device ID’s of the devices to the settings that Polycom InstantDesigner designates for those particular devices. The device ID settings can be found on the left panel of the Conference Composer screen where each device in the project is listed with its device ID. In this example, there will be a
Vortex EF2201 at device ID 00, a Vortex EF2280 at device ID 00*, and a Vortex EF2280 at device ID 01, as shown in Figure 23.

*Vortex EF2280 and Vortex EF2201 units can share a device ID, allowing you to have up to 8 each of these devices in a linked system.

Figure 23. The device ID’s of the Vortex equipment are highlighted in red.

**Setting Device ID’s**

The device ID’s can be configured from the front panel of each device. In this example we simply need to set the device ID on one of the Vortex EF2280’s to 01.
To do this, apply power to the Vortex EF2280 that needs to have its device ID changed. Enter the front panel System Settings by pressing the “up” button on the front panel until System Settings is shown on the LCD. Press the “enter” button to enter this menu tree. Continue pressing the “up” button until the device ID of the device is shown. By default, each device is set to Device ID 00. Press “enter” on the front panel to make the device ID number flash. Press the “up” button to increase the device ID to 01. Press “enter” again to make the device ID stop flashing and to save the new device ID. The device ID has now been set to device ID 01.

**Bussing the units**

Once the device ID’s are set properly, the devices can be bussed together using the supplied EF bus cable. Each device’s EF bus out connector should be connected to the next device’s EF bus in connector. Please note that the last device should NOT be connected back to the first device and that bus terminators are not required with Polycom Vortex devices.

Once the devices are connected, the remaining devices may be powered on. After several seconds, the devices will boot up and display the default LCD menu. If a Device ID conflict message is shown on the LCD, it means that more than one of the same type of Vortex product has the same device ID. Please double-check the device ID’s and recycle power on the devices.

**Connecting via RS232**

Finally, once the devices are bussed together, the Conference Composer design file may be uploaded to the linked devices. Connect an RS232 cable from your PC to the RS232 port on one of the linked Vortex devices. To specify which RS232 port will be used, left click on the device chain, as shown in Figure 24, and select the appropriate transport (such as Com 1, Com 2, etc.) as shown in Figure 25.
Figure 24. To set the appropriate RS232 port, left click the device chain and select the transport as shown in Figure 25.

Figure 25. Select the transport such as Com 1, etc., for your system. This will determine how Conference Composer sends data to and from your devices.

After setting the appropriate transport, to upload the designed file, left-click on the Project name on the upper left of the screen as shown in Figure 26. Next, select the "Send to Device" button as shown in Figure 27. The result will be shown in Figure 28.

Conference Composer will upload the settings to the devices, and then the installed devices will be ready to be used.
Figure 26. To upload the settings to the Vortexes, left click on the project name (highlighted in red) to bring you to the main project page.

Figure 27. Click the Send to Device button on the lower left portion of the screen (highlighted in red) to send the Vortex settings to the Vortex devices.
6. Conclusion

Polycom InstantDesigner is a revolutionary new design tool that can significantly reduce the amount of time required to design audio and video conferencing systems with Vortex products. InstantDesigner release 2.0 includes significant enhancements that greatly simplify the design of sound reinforcement applications, allowing complicated sound reinforcement designs to be easily created. The resulting configuration files incorporate the expertise of the Vortex engineering team to create high quality audio and video conferencing designs.

By simply entering the signal inputs and the signal outputs, Polycom InstantDesigner automatically selects the appropriate Vortex equipment, maps the inputs and outputs to the Vortex devices, creates the inter-device bussing and the zone to zone gains, and takes care of all the other details to create a Conference Composer design file that can be uploaded to the Vortex devices.

To see how Polycom InstantDesigner can make your life easier, download a version of Conference Composer today from the Polycom Resource Center (http://extranet.polycom.com) and see how you can design your next job in less time than it takes to drink a cup of coffee.
7. Technical Support

For support on the Vortex product line, call toll-free (USA/Canada) 888-248-4143, then select option 1, then option 3.

For exclusive Integrator and Consultant focused support (through our PASS program), dial 1.408.474.2048; this number will get you help on video and Vortex products.

For general technical support, dial 1.800.POLYCOM

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