[AN011]

ADVANCED NETWORK DEVICES

Sound Masking

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## Static Electric Warning

TROUBLESHOOTING AND ADDITIONAL RESOURCES

Complete Support Site with User Guides & Help: http://www.anetdsupport.com/
Additional App Notes: http://www.anetdsupport.com/AppNotes
Customer Feedback Survey: http://www.anetdsupport.com/survey
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Sound Masking

OVERVIEW

AND devices include built-in sound masking capabilities. The device generates the sound locally, so it doesn't use network bandwidth.

Creating a peaceful environment in healthcare and other facilities can eliminate unwanted distractions. Such environments will always experience constant noises and commotion, but with sound masking technology, any office building or facility can control these unwanted distractions.

New or existing buildings can install the speaker system, or if you already have AND products, you can simply enable and control sound masking.

Examples Shows Round Dual Ceiling Speakers
(works for almost any AND speaker device)

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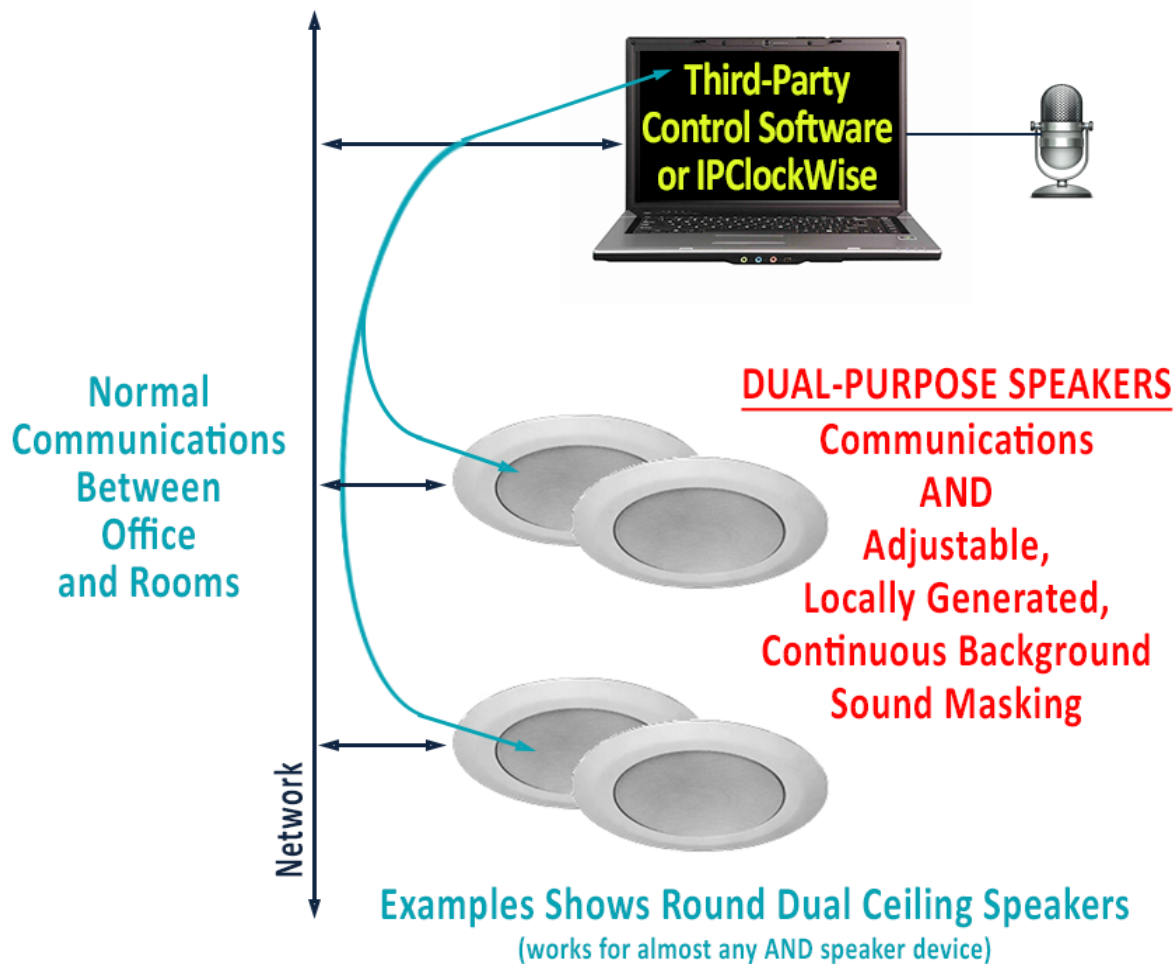
All AND products have the capability to produce background noise for sound masking. Achieve the best results by using two or more speakers. You can set the background noise parameters in a configuration file, or by accessing the device's web page interface.

For the web page settings, select **Device Settings → Audio** to find the *Background Noise Settings* section. Find an example of the configuration file settings listed at the end of this application note. Use the following parameters to control the background noise. Note that the configuration file parameter tag names are listed in parentheses.

Noise Type (noise_type)
White, Pink, Pink2, or Pink3. The pink noise options contain more bass frequencies than the white noise options. Pink2 and Pink3 use the latest algorithms to produce the best background noise. Pink2 and Pink3 also mix the best with other audio. Pink2 sounds like waves, and Pink3 sounds like wind. Set to *Off* to disable background noise.

Noise Undulation Amount (undulation_amount) and Noise Undulation Rate (undulation_rate)
Enable and modify these settings to make the noise change over time.

Filter Strength (filter_strength)
Controls the overall character of the noise.
Suggested initial values: Pink = 940, Pink2 = 966, Pink3 = 966 / Range: 0 to 999

Base-Level/Initial Noise Volume (init_volume)
Default volume of the background noise when the device is powered up. Suggested initial value is 3.
Range: 0 to 10

Noise Volume Offset for this Unit (offset_volume)
Per device noise volume offset for peer speakers. This parameter adjusts any background noise volume change command a peer device receives. Note that the noise volume of a peer speaker when powered up includes a combination of the Base-Level + Offset. Maximum volume following offset adjustment is 10. This number can be negative.

Mute During Audio (mute_during_audio)
If set to "Yes" (or 1), the background noise will mute during paging or other audio playback. When using the microphone, the background noise will mute regardless of this setting.

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Allow GPIO Live Volume Modification (button_volume_mod_allowed)

If set to "Yes" (or 1), GPIO inputs 0 and 1 can modify the background noise volume level up and down respectively, in .25 increments. For devices with a display, the noise volume level will display momentarily when changes are made. If the device has peer speakers, the button press will also modify the background noise level on those speakers. When you set the noise level to 0, background noise will stop on the peer speakers, regardless of their respective *Noise Volume Offsets*. Note that you can turn off the controlling device's background noise (*Noise Type* set to "Off"), and the device will still control the background noise of peer devices.

Noise Volume Peer Speaker (id)

A list of AND devices that will allow this device to control their background noise volume. The list can specify the devices by their MAC address (e.g., *20:46:F9:01:02:03*) or their IP address (e.g., *10.10.7.100*). Note that the peer devices must use the same HTTP Control Password (see **Device Settings → Audio** page) as the controlling device.

Additional Notes:
1. When using the microphone, the background noise will mute.
2. Ambient microphone level monitoring and ambient audio level boost features will not work with background noise enabled.

Required configuration:

```
<NoiseGen
     noise_type="pink"
     init_volume="3.000"
     filter_strength="940"
     >
```

Additional configuration examples:

```
 <NoiseGen
    noise_type="pink3"
    button_volume_mod_allowed="1"
    init_volume="3.000"
    offset_volume="-1.000"
    filter_strength="966"
    mute_during_audio="1"
    undulation_amount="medium"
    undulation_rate="slow"
    >
  <Peer id="10.10.6.67" />
  <Peer id="20:46:f9:02:01:03" />
</NoiseGen>
```

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USING IP CLOCKWISE TO ADJUST SOUND MASKING

Once you enable Sound Masking, you may use the IPClockWise software as an alternate method of changing the noise volume level.
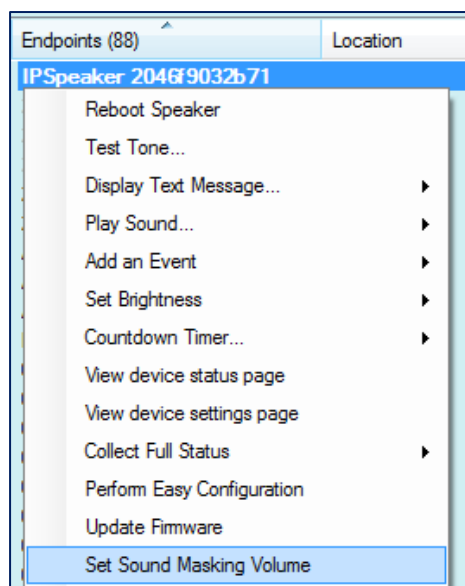
We recommend that you first have each device register to your installation of IPClockWise. Add the following registration URL to your configuration file, and replace your computer IP in place of the example IP address listed below, then reboot to apply the changes:

```
<Servers
     >
   <AND_Exempt url="http://10.10.6.167:8089/" />
</Servers>
```
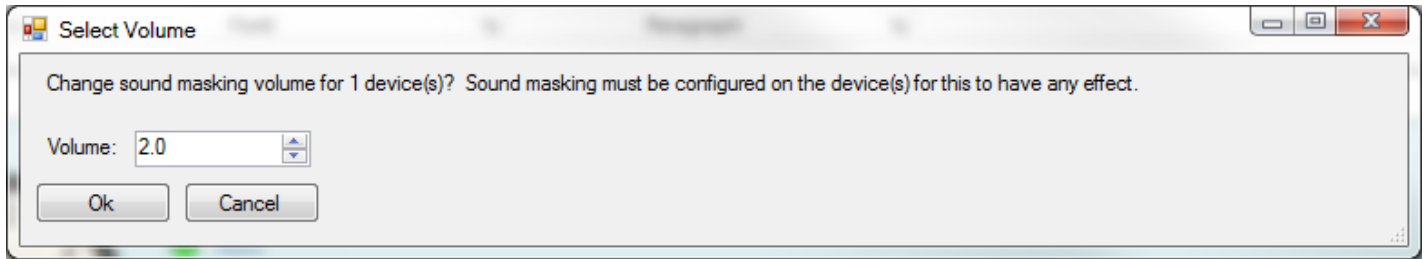
You can also use the web interface to change the Device Settings if no configuration file exists. Select **Device Settings → Servers**, and enter the following string into the first available Server line, again making sure to replace the local computer IP in place of the example IP address listed below. Choose Server Type "AND_Exempt". Press the *Save Changes* button, and reboot the device.

Server Settings		help
	Server URL	Server Type
Server 1	http://10.10.6.167:8089/	AND_Exempt ▼
Server 2		▼

Once the device registers to IPClockWise, it will appear in the Endpoints List. Right-click on any single device or Group and choose **Set Sound Masking Volume** in the context menu, shown here:

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This will pop-up a dialog to enter a value between 0.0-13.0 for the one or more devices selected.

Click OK, which will set the volume level immediately.

(*Note that if at any time the endpoints reboot, they will reset back to the default value set in the config file or web page interface*.)