ALGO

Algo IP Voice Paging System for Public Address, Bell Scheduling & Emergency Alerting

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Introduction

The Algo IP voice paging and notification system is a network-based solution which integrates into any SIP enabled telephone system – **all Algo IP products are 3rd party SIP compliant endpoints**. A variety of speakers (wall / ceiling / horn), paging adapters and strobes are available to suit any public address (PA) application requirement whether it is a single room or large enterprise / campus environment.

Any combination of Algo IP endpoint can be deployed from one to many. There is no limit to the scale of the solution. The endpoints are PoE (48V, IEEE802.3af, Class 0) and connect to the network via RJ45. No amplifier is required for Algo speakers. Only a PoE switch or injector is required to power the endpoint, and network connectivity for SIP registration and/or multicast is all that is needed. No other hardware or software is required to operate the paging system. Algo IP speakers and paging adapters support G.711 and Wideband (HD Voice) G.722 codecs, and work with most hosted / cloud and premise-based telephone systems.

Premise Telephone System Configuration
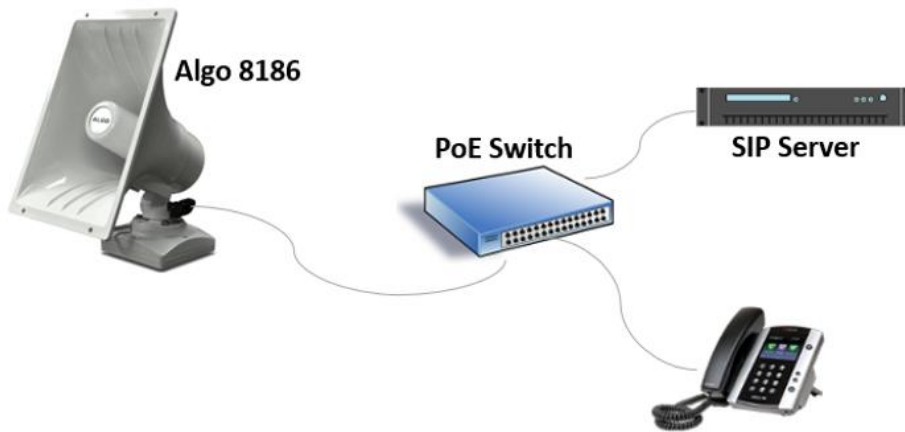
Hosted Telephone System Configuration

How It Works

As part of a VoIP telephone system, the Algo speaker is an endpoint like any other IP telephone. In the simplest configuration, the speaker is activated by calling an extension associated with it on the telephone system. In the Algo endpoint this is referred to as a **Page extension** which is designed to auto-answer when called.

The speaker is registered to the telephone system using a web interface accessible via the speaker's IP address. The Algo Network Device Locator can help to find the speaker's IP address or the device can announce this information itself via the DHCP server once connected to the network. Central provisioning is also supported for registering multiple endpoints in larger enterprise deployments.

Depending on the telephone system, a SIP endpoint license may be required to register the device. One license will be required per extension registered. If multiple extensions are registered to one endpoint speaker, then a license will be required for each extension registered. In a hosted environment, the extension required for the speaker will be potentially treated the same as any other extension on the telephone system and incur a monthly cost or similar fee.

Endpoint Web GUI Example

The speaker's Page extension can be called from any device in the UC environment. When called, the speaker will auto-answer and provide a page tone upon answering, after which the user can make a voice page announcement.
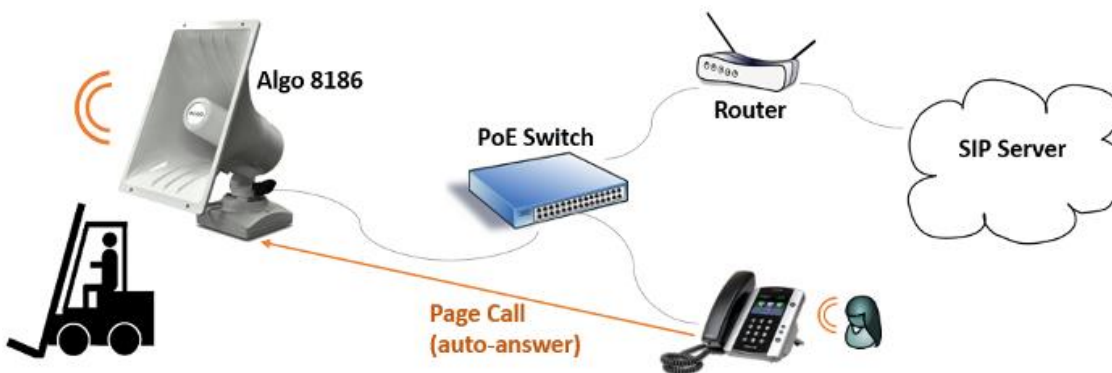
Multicast Scalable

Using an RTP multicast, any number and combination of Algo speakers can activate simultaneously to announce a voice page. **There is no limit to the number and combination of endpoints configured in a multicast.** The Algo paging system can be easily scaled to cover any size room, building, campus or enterprise environment. **Any Algo speaker can be configured as either "Master" or "Slave" for multicasting purposes.** Only the Master endpoint speaker is registered to the telephone system. Slave devices do not require registration. This minimizes the costs associated with additional endpoint extensions in a hosted environment, or SIP licensing which may be required with a premise-based telephone system. Note: Network bandwidth is minimal in a multicast configuration as only one copy of the network packets (~64kb) are sent from the Master endpoint, regardless of how many Slave endpoints are listening to a given IP multicast channel.

The Slave speakers require PoE and network connectivity to receive a multicast, all wired as a home run to a networked PoE switch. No additional Algo hardware or software is required. Note: In a multicast configuration all speaker endpoints require full power from each PoE port connected to a device. The power requirements are 48V, IEEE802.3af, Class 0.

Note: In the illustration example below the 8180 speaker is used as a multicast Master, however, ANY Algo IP speaker (8180, 8186, 8188, 8189), paging adapter (8301, 8373) or strobe light (8128) can be configured as a Master or Slave for multicast purposes.

Zone Paging

Zones are generally created in the Algo paging system using a multicast IP address. Each multicast IP address configured in the Master endpoint, will send the page audio stream to the specific group of Slave devices configured to receive the multicast. Slave devices can be members of any number of multicast zones, including All Call. **There is no limit to the number and combination of Slave endpoints to include in a given multicast zone.** Zones can also be configured to an individual endpoint (e.g., classroom speaker) using SIP registration. Any zoning requirement is generally possible with an Algo paging system.

Algo 8180 (G2)/8186/8188/8189 speakers, as well as the 8301 paging adapter, permit up to 50 Page extension registrations per device. This allows for extension-based calling of page zones to be configured (e.g. one button speed dialling of a page zone from a telephone). Zones can also be configured as DTMF selectable in all speakers and adapters, where only one Page extension is registered to the telephone system. In this scenario, zone paging is selected via the telephone keypad after the device answers the page call (e.g. press 3 for office, 4 for warehouse, etc.). All Call and Priority Call can be configured using the either the extension-based method or DTMF selection.
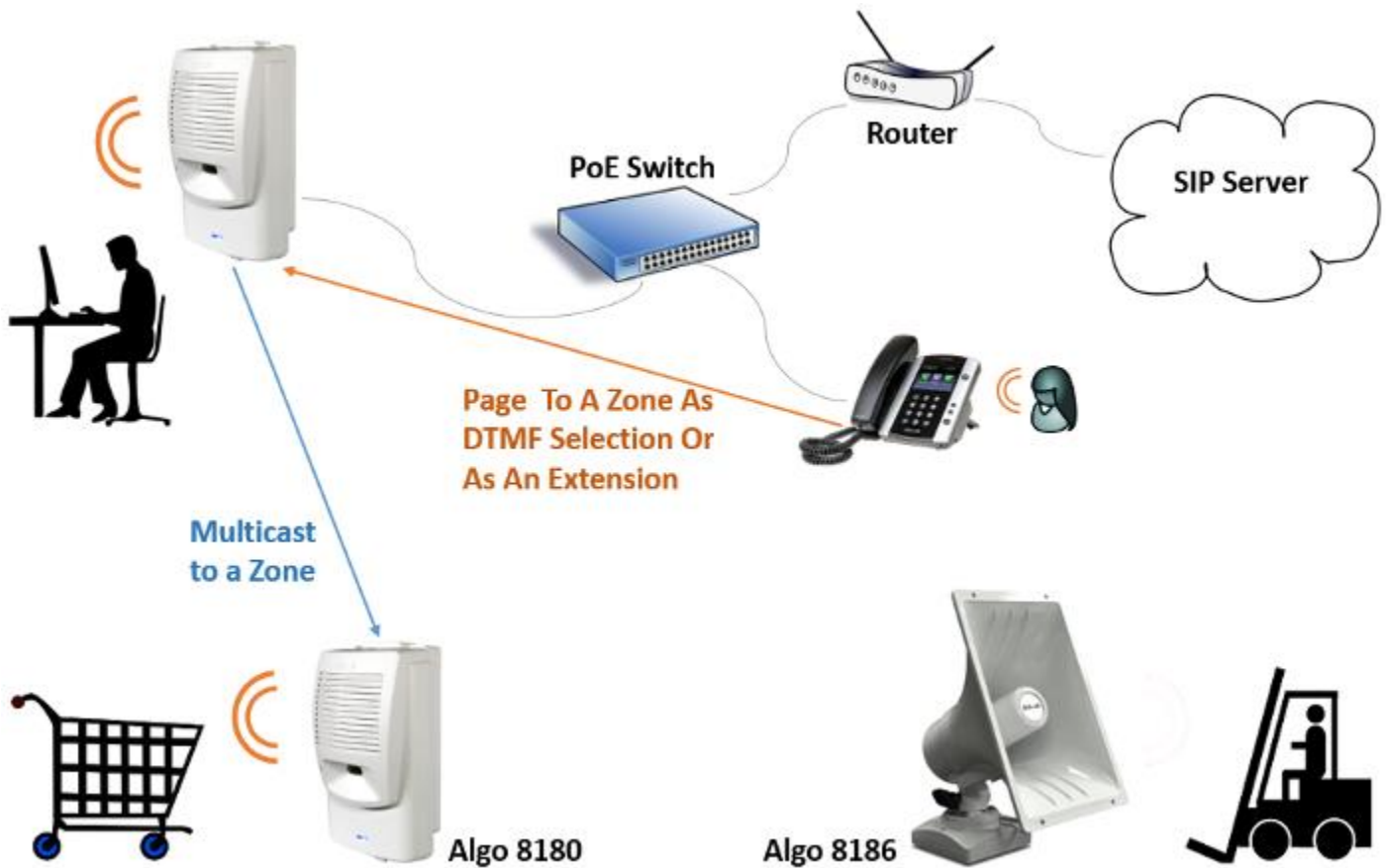
Where the telephone system supports Page Groups and inclusion of a third party SIP endpoint, Algo speakers can be part of this configuration to allow page audio over both telephone and speaker simultaneously.

If desired, the Algo speaker can also be configured to multicast to include more endpoints as part the Page Group call. This is particularly helpful where there is a limit to the number of extensions permitted in a Page Group and additional speakers are required to provide coverage over an area.

Multi-site paging can be easily accommodated using a Page Group and/or multicast configuration. In the illustration below, the scenario to the left uses a Page Group where an endpoint at each site is a member of the group. A SIP call to the Page Group will include all of the phones and speakers in the group to broadcast a voice page announcement. To extend the reach within a site, an Algo speaker endpoint can also be configured as a multicast Master to stream page audio simultaneously to any number of other endpoints within the site upon receiving a Page Group call. As an alternative configuration, in the scenario to the right a SIP call to an Algo speaker configured as a multicast Master in one location, can stream page audio over the WAN to any number of Algo speakers within the sites. IP phones supporting a multicast can also be included. Any type of zoning requirement can also be accommodated.
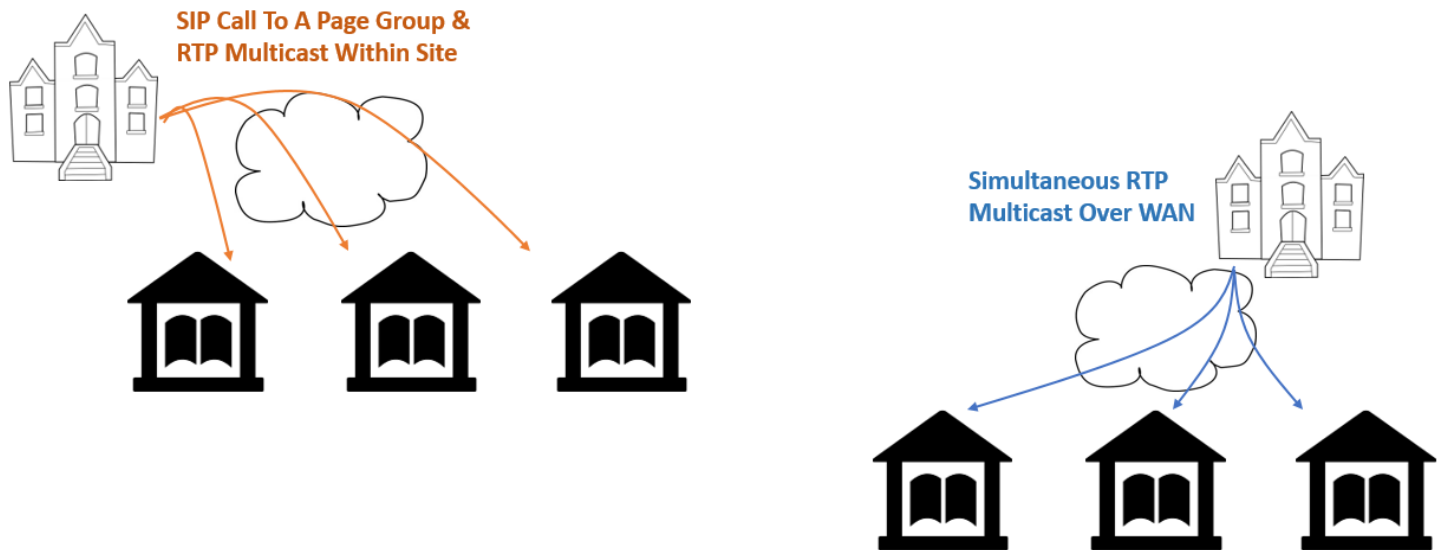

Besides an RTP multicast, Algo speakers also support Polycom Group Page, InformaCast, and SA-Announce.
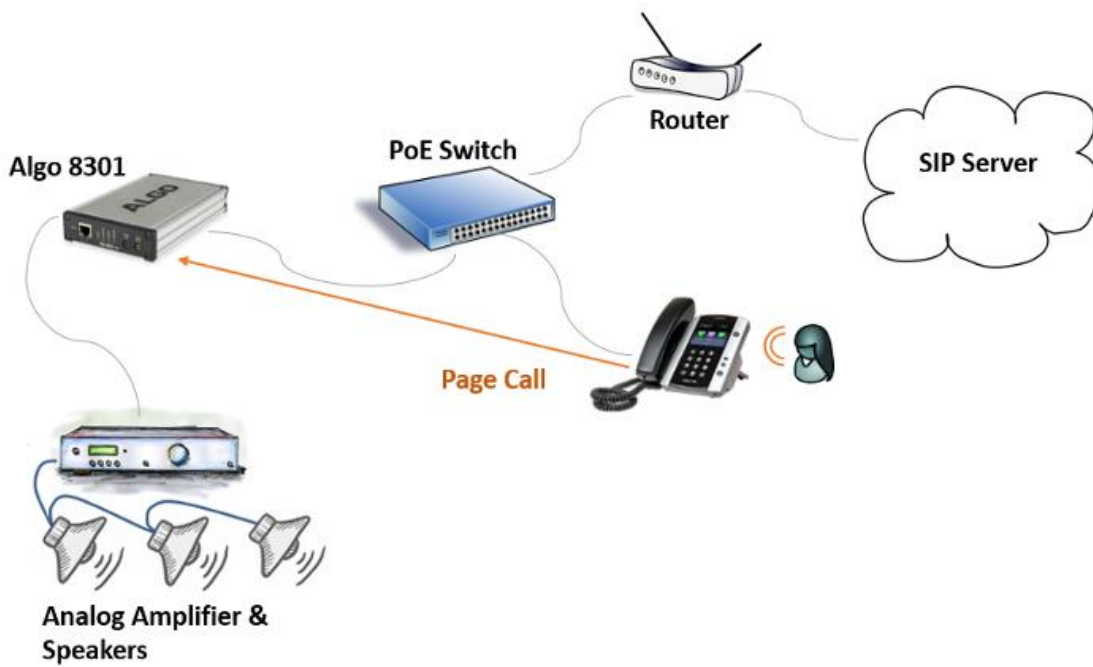
Legacy Analog Amplifier Integration

Algo paging adapters are designed to IP enable a legacy analog amplifier and speaker infrastructure. These adapters offer seamless integration of the analog paging system into the UC environment. Like Algo speakers, the adapters register to the telephone system as a third party SIP endpoint. A Page extension on the adapter will auto-answer when called.

An isolated and balanced Line Out on the paging adapters will interface with most traditional amplifiers without any hum or noise. XLR and terminal Line Out connection options are available to suit any pro audio, commercial or consumer amplifier.
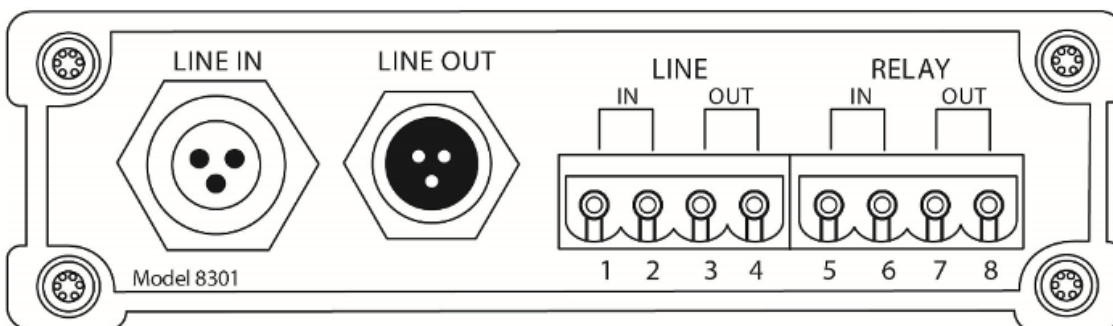
The 8301 adapter illustrated below is typically designed for a single amplifier / single zone application, although the 8301 will pass DTMF for zoned amplifiers. Where multiple amplifiers are involved, a separate 8301 will be required for each. Using multicast, separately zoned amplifiers can be easily accommodated in addition to All Call.

IP Enabled Amplifier

The paging adapters also feature multicast capability to allow for simultaneous voice paging to Algo IP speakers and providing page audio to a legacy analog amplifier to create a hybrid paging system.

**Hybrid Paging System - IP & Analog**
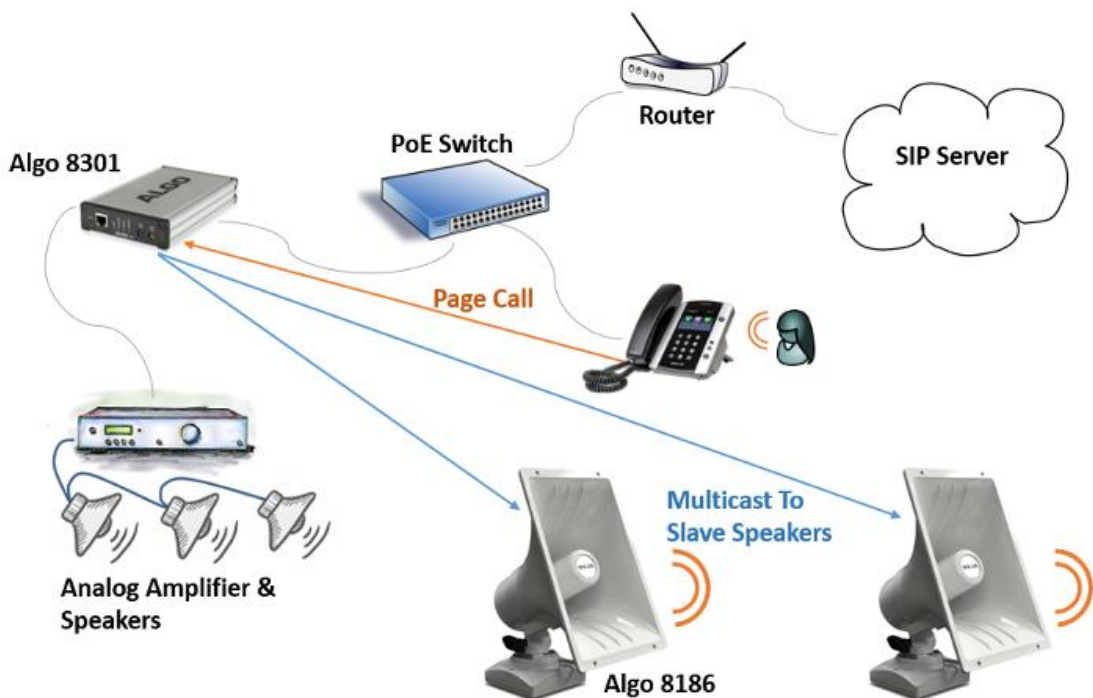
For zone paging, the 8373 adapter supports three separate speaker channels using high current internal zone control relays. The 8373 eliminates the need for an external zone control module. For applications with more than three zones on a single amplifier, additional 8373 adapters can be deployed using multicast. Zones can be configured as Page extensions or DTMF selectable. What is the difference between the Algo 8373 and 8301 Paging Adapters?

Scheduled Bells, Tones, Announcements & Music

A Scheduler for automating the playing and multicasting of WAV files (e.g., bells, tones, announcements, music, etc.), can be easily integrated into the Algo voice paging system using the 8301 endpoint. This device uses the NTP server to synchronize with IP clocks, and is ideal for schools (i.e., class changes, recess, playing an anthem, etc.), retail and healthcare (e.g., store closing, visiting hours, etc.), and workplace shift changes, breaks, etc. Any combination and number of Algo endpoint speakers are compatible with the 8301 to receive a multicast. The audio available from the 8301 can also be simultaneously played via its Line Out to integrate a legacy analog amplifier.
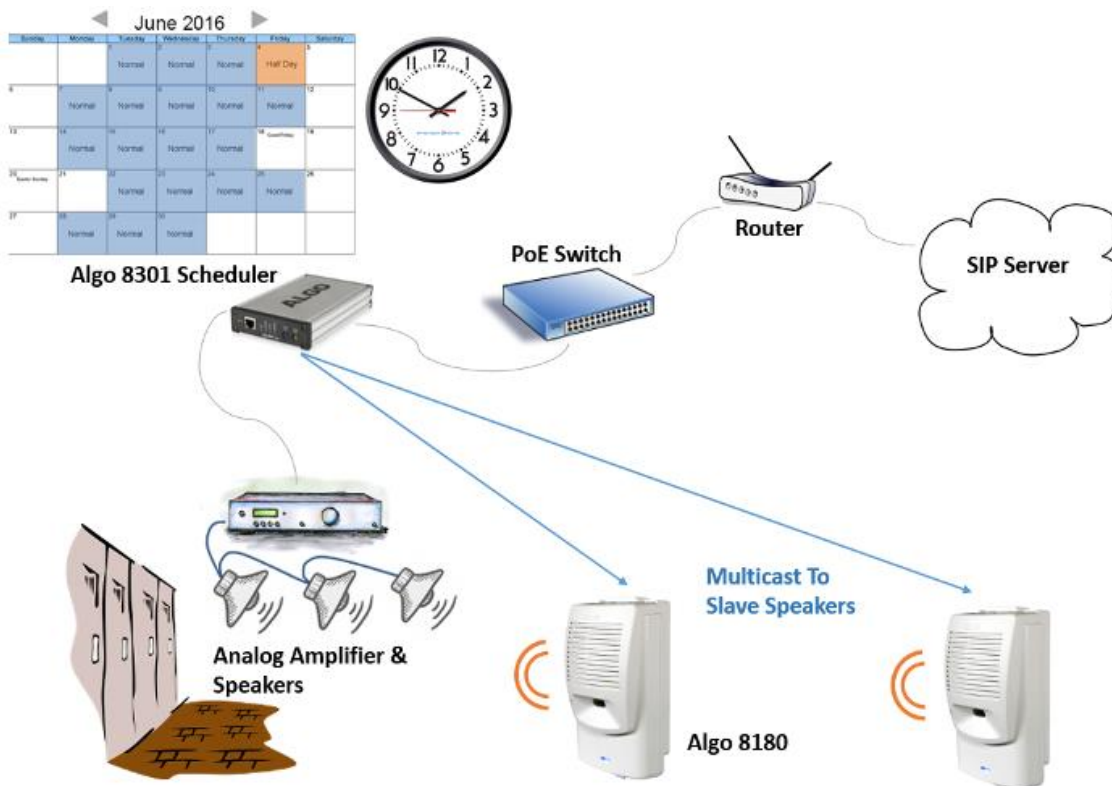
Note: The 8301 also offers a 3.5mm Aux In for playing and/or multicasting music from an iPod or similar digital device.

Emergency Notification Alerting

All Algo speakers support registration for **Ring extensions**. Typically this is used for loud ringing, however, other types of alerting are possible (e.g., lockdown, evacuation, reverse evacuation, medical emergency, safety or weather alert, etc.). Any device in the UC environment calling the speaker's Ring extension will activate playing a custom WAV file when the extension is configured for ring/announcement activation only.

Up to 10 Ring extensions are available to register on a single Algo speaker (i.e., 8180 (G2), 8186, 8188, 8189) and 8301 adapter, allowing for different types of emergency notification alerting to occur when a specific Ring extension is called on the endpoint. Only the WAV file configured for a given Ring extension will play when called. A Call to Cancel feature in the endpoint will allow the alert to play continuously for the duration of the event, until a designated extension registered to the speaker or adapter is called to stop the alert. All Algo speakers, paging adapters and strobes can

receive a multicast for such emergency alerting. Deployments for larger mass notification applications can easily incorporate Algo visual and audible notification endpoints, and seamlessly integrate legacy analog infrastructure via paging adapters, if required.

Push buttons can also be used to activate emergency alerts. On the 8180 (G2)/8186/8188/8189/8301 endpoints, an auxiliary input is available to permit a wall button or external switch, such as the Algo 1202 or 1203, to be connected with a single twisted pair (e.g. 24 gauge CAT 3 or 5). Any type of button providing a contact closure can be used for this application. The button can be configured on the endpoint device in three different ways:

- 1. Initiate a SIP call for two-way communication
- 2. Dial an extension and play an announcement saved as a WAV file in the device
- 3. Play and/or multicast a WAV file for notification alerting (as illustrated below)