

nnounce

Airport Audio System

**Design guide for AV integrators and consultants
deploying PA/VA, passenger experience audio,
and life-safety announcements in airport terminals.**

Optimize your airport audio investment with a compact hardware range, transport over standard network infrastructure, and plug-and-play commissioning — all built on a decentralized architecture that eliminates single points of failure.

The nnounce platform delivers superior passenger experience through real-time ambient noise compensation, multilingual neural text-to-speech, and automated announcements triggered by live flight data.



CHALLENGE / SCOPE OF WORK

CLEAR AUDIO ACROSS EVERY ZONE

Airports carry the same PA obligations regardless of size: gate calls, boarding announcements, security instructions, and emergency alerts. But many operate without dedicated AV staff or multi-vendor budgets.

Terminal buildings pose tough **acoustic challenges**: concrete, metal, and glass surfaces create high reverberation; noise levels fluctuate from 55 dB in off-peak hours to 85+ dB during peak boarding as occupancy rises and vehicles come and go. **Speech intelligibility** (STI ≥ 0.50 per IEC 60268-16) is critical. Passengers who miss announcements face stress, missed flights, and safety risks.

nnoince covers every terminal area as a **fully decentralised, IP-native audio ecosystem**. Each zone is independently controlled for volume, content, and announcement priority. Intelligence is distributed across every device: amnode amplifiers, micnode microphone stations, ionode audio integration platform and ambient sensing microphones each operate autonomously with fail-over capability, **eliminating any single point of failure**, and making the **system straightforward to scale as the airport grows**.

COMPLIANCE

STANDARDS & INTEROPERABILITY



EN 54 / EN 50849

Voice alarm system compatibility for life-safety deployments.



IEC 60268-16

Speech intelligibility (STI) measurement standard.



AES67 / AES256

Audio networking & encryption.



IPv6, secure boot

Network security hardening.

SYSTEM ARCHITECTURE

Two-Terminal Airport Example

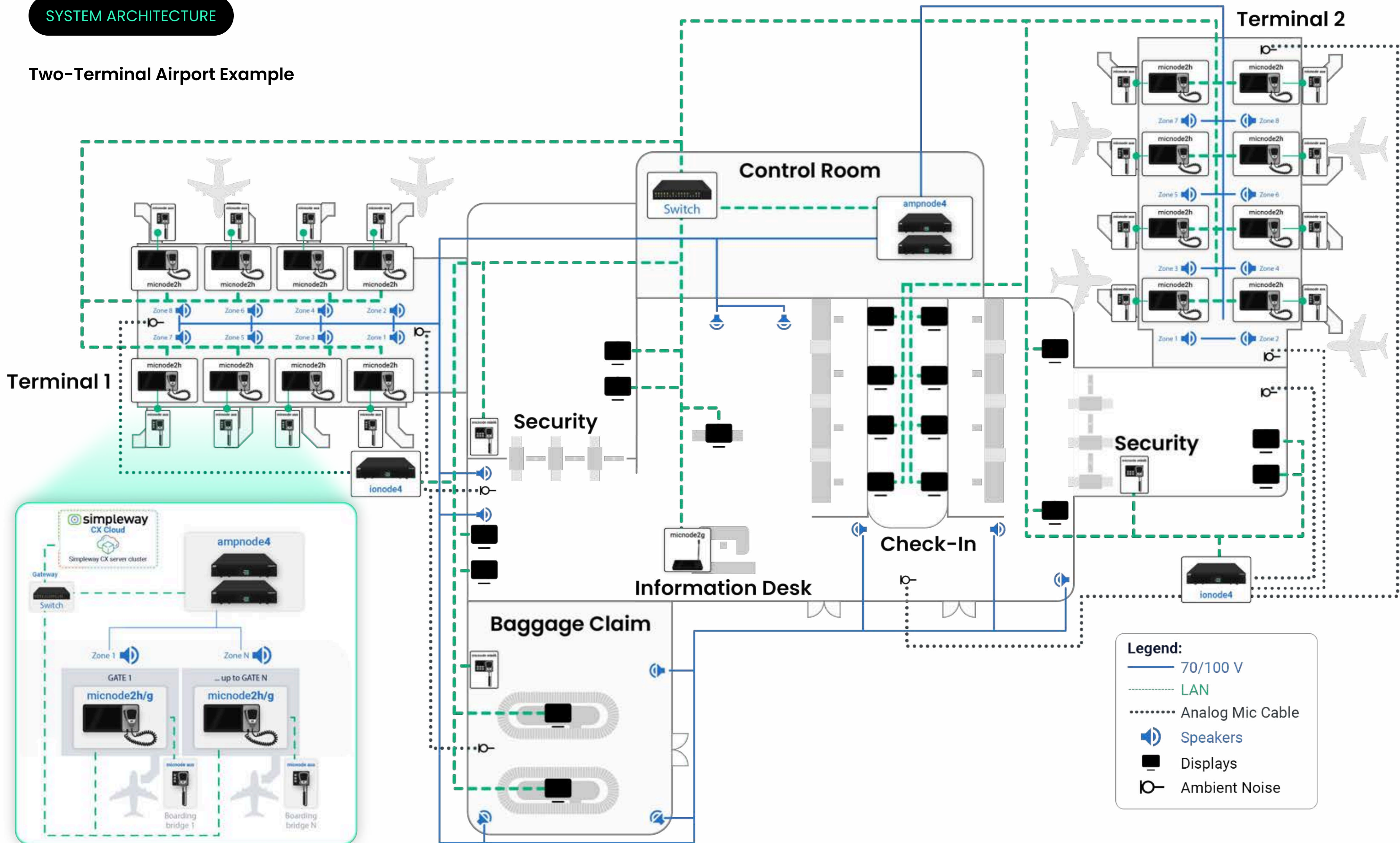


Fig.1 – System layout & wiring diagram example of a middle-sized airport with two terminals.

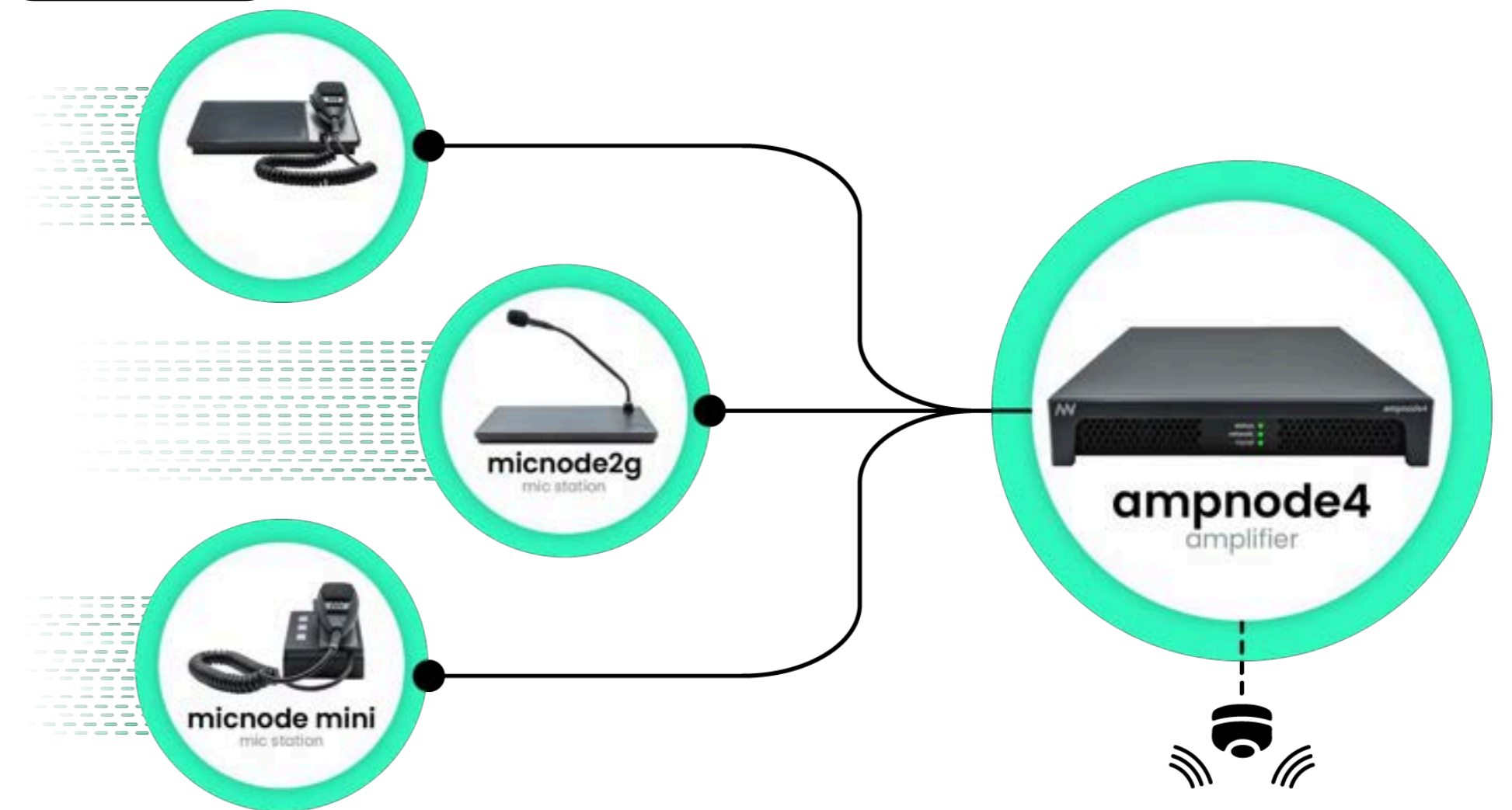
SIGNAL FLOW

HOW IT CONNECTS

Each amplifier (ampnode4 / 4LS) receives live pages from gate microphone stations (micnode2h / 2g), the information desk (micnode mini 3 / 6), and automated flight-data feeds, all over standard LAN. Audio reaches speakers via 70/100 V lines. Ambient sensing microphones per zone feed real-time noise levels back for automatic output adjustment.

The nnounce audio layer can be fully combined and synchronised with **Simpleway's CMS platform - Airport CX, including FIDS integration, voice automation, and role-based paging UIs**, delivering a unified passenger experience system across audio, visual, and operational channels.

KEY DEVICES



AIRPORT CX

UNIFIED AIRPORT COMMUNICATIONS PLATFORM

Airport CX by Simpleway is a centralized communication solution designed to manage every aspect of the passenger journey through automated audio and visual messaging. It integrates with nnounce hardware by acting as the intelligent brain that pushes data to nnounce's network-enabled amplifiers and microphones.

This connection allows the solution to route specific announcements to designated gates or terminals using professional-grade audio endpoints. By combining Simpleway's data processing with the physical distribution power of nnounce devices, airports can control their entire public address system through a unified digital interface.

Digital Signage & CMS

FIDS is just the start. Manage gate displays, wayfinding, and advertising from one CMS—turning downtime into revenue.



Voice Announcement System

AI-powered announcements in 80+ languages using real-time flight data. Natural TTS that adapts automatically to schedule changes.

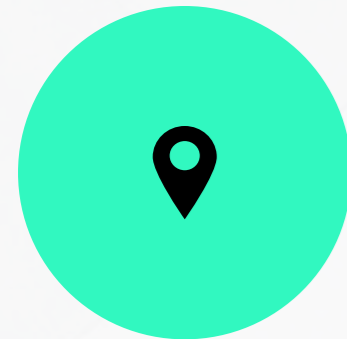


AODB & Flight Management

Real-time flight data synchronization with instant manual override. Automated updates meet on-demand control when situations change.



PRINCIPLES



Zone-Based Routing

Each area — gates, security, check-in, info desk, baggage — is an independent zone. Priority messages override background audio and restore on completion.

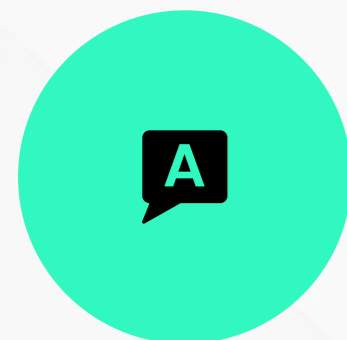
Requires: ampnode amplifier + zone configuration via Simpleways CMS platform - Airport CX.



Automated Announcements

Airport CX triggers gate calls, boarding, and status updates directly from operational data. No manual staff action required.

Requires: Airport CX platform + FIDS/AODB data feed.



Background Music Management

Scheduled background audio plays per zone between announcements. Volume lowers automatically on any incoming page and restores on completion.

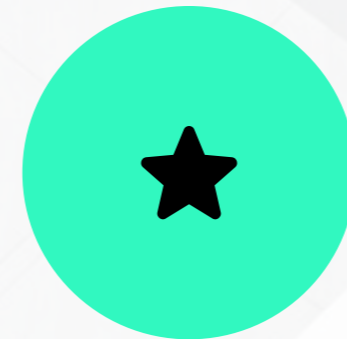
Requires: ampnode amplifier and audio source (stream/file).



Emergency & Life-Safety Override

Emergency messages override all zones at maximum priority. Compatible with Q-SYS and Bosch PRAESENSA life-safety ecosystems. EN 54 / EN 50849 compatible.

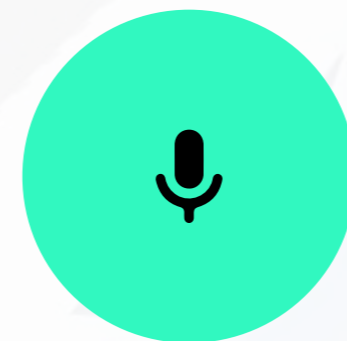
Requires: nnoince amplifier ampnode4LS.



Ambient Noise Compensation

Sensors measure real-time noise per zone. The ampnode amplifier adjusts output continuously - clear audio during peak boarding and quiet overnight hours alike.

Requires: ambient sensing microphones + ampnode amplifier per zone.



Live Paging from Any Station

Staff broadcast to a local zone, zone groups, or full terminal from any micnode. Priority logic prevents conflicts between simultaneous pages.

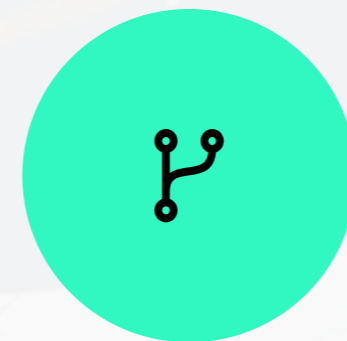
Requires: nnoince microphone stations



Multilingual Text-to-Speech

Built-in neural TTS engine converts flight data to spoken announcements in multiple languages — no pre-recorded audio files needed.

Requires: Airport CX platform with neural TTS licence.



Third-Party Ecosystem Integration

Q-SYS, Bosch PRAESENSA, AES67, RTP, VoIP compatible. Integrates into existing AV infrastructure without rip-and-replace.

Requires: compatible third-party system + LAN connectivity.

DESIGN CONSIDERATIONS FOR AIRPORT PA

Standards & Compliance

Airport PA systems are subject to overlapping fire-safety and voice alarm standards that vary by jurisdiction and building classification.

+ Know applicable norms before design begins. Relevant standards: EN 54 (fire detection & alarm), EN 50849 (voice alarm), NFPA 72 (US). Integrate with certified life-safety ecosystems (Bosch PRAESENSA, Q-SYS).

— Assuming AV knowledge covers fire-safety requirements. General AV experience does not qualify an integrator to certify a fire-safety PA system. Each applicable standard must be verified independently for the specific jurisdiction and building type.

Strategic Speaker Placement

Speaker position and density directly determine intelligibility. High-mounted, widely spaced speakers increase reverberation radius and reduce direct sound at ear level.

+ Mount speakers low and close to passengers. Maximise direct-field sound and minimise ceiling reflections. Maintain sufficient density so every listener position receives adequate coverage without relying on distant, high-mounted units.

— High-mounted speakers with low density. Ceiling-mounted speakers in reverberant terminals increase the reverberation radius and typically fail to meet STI ≥ 0.50 even at high drive levels.

Remote Monitoring & Telemetry

Large terminals cannot be monitored by physical inspection alone. Speaker line faults may go undetected until a passenger complaint or a life-safety event.

+ Install monitoring microphones in key spaces. Control room staff can verify audio quality at a glance. Use nnounce continuous telemetry for real-time endpoint health and immediate fault alerts across all devices.

— Missing endpoint telemetry. Visual inspection in large terminals is impractical. Without monitoring microphones, faults in speaker lines or amplifier channels go undetected, which is a critical risk in life-safety scenarios

Acoustics

Large open volumes with hard reflective surfaces (concrete, metal, glass) produce severe reverberation that degrades speech intelligibility.

+ Conduct acoustic analysis at design stage. Identify problematic surfaces before installation. Reverberation caused by hard surfaces cannot be corrected after the fact. It is the leading cause of PA intelligibility failure in airport terminals.

— Skipping acoustic analysis. Systems that sound acceptable at commissioning may still fail intelligibility standards once the terminal is occupied.

Localized Zone Design

Poorly scoped zones cause announcements to bleed into irrelevant areas, creating confusion and raising the noise floor.

+ Define narrow, purpose-specific zones. Boarding calls should reach only passengers at the relevant gate. Zone boundaries must be planned precisely so audio does not spill into adjacent gates or concourses.

— Oversized, coarsely defined zones. Wide zones make it impossible to target announcements to the correct audience. Passengers at other gates hear irrelevant calls, increasing confusion and PA fatigue.

Noise Compensation (ANC)

Background noise fluctuates between quiet early-morning hours and peak boarding rushes. A fixed PA output level will be either inaudible or intrusive.

+ Deploy ambient sensing microphones per zone. The nnounce ampnode adjusts output dynamically to maintain a constant signal-to-noise margin with no manual operator intervention required.

— No ambient sensing — manual level adjustment.. Operators cannot react fast enough to rapidly changing conditions. Without ANC, the PA is either too quiet during busy periods or too loud at quiet times.

Redundancy & Reliability

PA system failure in a life-safety environment is unacceptable. Any single hardware fault must not silence the terminal.

+ Deploy N+1 ampnode amplifiers with automatic failover. Local processing on each device ensures autonomous operation if the network is interrupted. Continuous telemetry triggers instant fault alerts.

— Single-point-of-failure architecture. Plan N+1 redundancy from the start. Retrofitting it after installation is costly and disruptive. Critical for life-safety compliance.

Speech Intelligibility

PA intelligibility must meet a minimum measurable standard, not just sound acceptable to the installer on the day of commissioning.

+ Design and commission to STI ≥ 0.50 per IEC 60268-16. Measure and document STI across all zones at commissioning. This is the objective pass/fail criterion for passenger communication.

— No STI measurement at commissioning. Subjective listening checks are not a substitute for IEC 60268-16 testing. Failing to document STI creates liability exposure for the integrator.

Cabling

Parallel power and signal cabling generates electromagnetic interference, causing noise and intermittent faults in audio circuits.

+ Keep power and signal cables fully separated. Use separate trays or conduits for power and signal cables, crossing at 90° where unavoidable. Mixed cabling can void system certification.

— Mixed power and signal cabling. Running power and signal cables together causes hum, interference, and failed system audits that cannot be remediated after fit-out.

BOM / SHOPPING LIST

EQUIPMENT — NNOUNCE HARDWARE REFERENCE



ampnode4

amplifier | WA002

Quantity: 1+

Role: A 600W four-channel amplifier with smart power allocation, auto-setup, and neural processing.

Location: Control room

[Learn More](#)



ionode4

audio integration device | WA001

Quantity: as requested

Role: Connects your audio infrastructure using high-performance audio inputs and outputs.

Location: Secondary positions

[Learn More](#)



micnode2h

mic station | WA004

Quantity: varies

Role: Handheld PTT microphone station with touchscreen UI, zone selection, priority override, and neural TTS/STT.

Location: Gate counters

[Learn More](#)



micnode2g

mic station | WA003

Quantity: varies

Role: Gooseneck microphone station with the same touchscreen UI and full feature set as the micnode2h.

Location: Gate counters

[Learn More](#)



micnode mini3

mic station | WA005

Quantity: varies

Role: Compact 3-button PoE wall paging station for info desks and secondary staff positions.

Location: Info desk, check-in

[Learn More](#)



micnode aux

accessory

Quantity: as requested

Role: Extends any micnode station to a secondary paging position.

Location: Secondary positions

[Learn More](#)

Ambient sensing microphone

Quantity: per zone

Role: Measures background noise per zone in real time and adjusts the ampnode output level automatically.

Location: High-traffic public areas

LAN switch (managed) - 3rd party

Quantity: 1+

Role: Managed IP switch connecting all nnounce devices and the Airport CX server over 1 Gbps Ethernet.

Location: Comms room

KEY BENEFITS

WHY AIRPORTS CHOOSE NNOUNCE

- ✓ **Single vendor** – hardware, software, and integration from one partner
- ✓ **IP-native** – standard LAN, no proprietary audio cabling
- ✓ **Decentralized and resilient** – no single point of failure, N+1 redundancy
- ✓ **Scalable** – add zones without replacing core hardware
- ✓ **Automated** – FIDS integration eliminates manual paging
- ✓ **Secure** – AES67/AES256 encryption, secure boot, IPv6
- ✓ **Interoperable** – Q-SYS, Bosch PRAESENSA, AES67, VoIP
- ✓ **Compliant** – EN 54 / EN 50849, STI ≥ 0.50 (IEC 60268-16)
- ✓ **Intelligent audio** – real-time ANC and neural TTS for clear multilingual announcements

MORE INFORMATION

[nnounce](#) →

[Simpleway Global](#) →

CONCLUSION

Airport audio is a life-safety system, a passenger experience differentiator, and an operational automation platform. nnounce addresses all three through a decentralised, IP-native architecture that eliminates single points of failure, scales without core hardware replacement, and integrates with existing AV and fire-safety ecosystems.

Real-time ambient noise compensation, automated FIDS-driven announcements, multilingual neural TTS, and continuous device telemetry reduce the manual workload on airport operations staff while delivering measurably clearer, more consistent audio to passengers in every zone of the terminal.

Whether the project is a greenfield regional terminal or a phased modernisation of a major hub, the modular nature of nnounce means the system grows with the airport. Add zones, add ampnodes, add languages. The initial investment is protected and total cost of ownership stays low across the facility's lifetime.