

Case Study - Omada by TP-Link Connectivity Solution for Junior Eurovision 2024

Client Profile

Name: UER/EBU European Broadcasting Union and RTVE Spanish Radio and Television

Production & Installation: SoldOut and Ibérica Multimedia

Industry: Entertainment

Venue Capacity: 12,000 people

Location: Madrid

1. Introduction

During the Junior Eurovision Song Contest 2024 at Madrid's Caja Mágica, a high-density Wi-Fi network was deployed to connect over 1,000 devices. The chosen solution was Omada by TP-Link, which is renowned for its stability and scalability.

The installation included ER8411 gateways, TL-SG3452X switches, and EAP690E HD high-density Wi-Fi access points. The network supported more than 1,200 devices, handled over 1 TB of data, and enabled camera control for live broadcasting, operating seamlessly and ensuring optimal performance throughout the event.

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2. Key Equipment Deployed

- 2× core firewalls with failover and redundancy, supporting over 50 Gbps
- 4× TX401 PCI Express 10GE network adapters
- 2× Omada ER8411 gateways with 10 GE SFP+ ports
- 1× TL-MC1400 chassis for media converters
- 10× MC220L (v3) Gigabit media converters
- 2× MC420L 10G media converters
- 10× TL-SM311LMB MiniGBIC LC GIGA (multimode) transceiver modules
- 4× TL-SM311LS MiniGBIC GIGA (single-mode) transceiver modules
- 2× SM6110-SR Omada 25Gbase-SR SFP28 (multimode) transceiver modules
- Over 10× TL-SG3452X 48-port Gigabit switches with 4x SFP+ 10Gb ports
- 1× Omada SX6632YF stackable 26-port SFP+ 10 Gb switch with 6x 25G slots
- Over 40× Omada AXE11000 EAP690E HD high-density Wi-Fi access points
- Over 5× Omada EAP625 Outdoor HD Wi-Fi access points
- Over 10× Omada POE380S PoE++ injectors

3. Challenge: Deploying a High-Density Network Infrastructure at Junior Eurovision to Ensure Seamless Wi-Fi Connectivity for All Event Professionals

The Junior Eurovision Song Contest 2024 is one of the world's most prominent music competitions, reaching a vast audience with its live broadcast to over 23 million viewers. This demanded a robust Wi-Fi and communications infrastructure for organizers, professionals, artists, and journalists, requiring a networking solution validated by a reputable integrator or manufacturer.

As it was the first Junior Eurovision hosted in Spain, expectations ran high. UER/EBU and RTVE entrusted event producer SoldOut, who, after evaluating multiple proposals, selected Ibérica Multimedia's plan, relying on both the integrator and their deployment strategy. The Omada by TP-Link platform was selected for its stability, scalability, fast deployment for temporary events, and real-time monitoring, all of which ensure reliable, secure Wi-Fi fully managed within the Omada environment

A primary requirement was to provide comprehensive Wi-Fi and communications coverage across all event areas: press room, voting rooms, tally rooms, and specialized Wi-Fi deployments on stage for live camera control. As an international live event, there was zero tolerance for failure or deployment delays.



Based on prior assessments and requests from various departments, the network was designed to connect at least 1,000 devices. Recognizing the high demands of such an event, a preliminary project was proposed to deliver 12 GB of internet bandwidth, utilizing multiple ISPs for security purposes.

Given the event's carefully curated aesthetics, it was essential that the network hardware design complemented the venue's look.



4. Solution



With the support of TP-Link, its manufacturer and key partner for high-density Wi-Fi solutions, the integrator developed a plan to deploy a temporary wireless Wi-Fi environment and wired connections for other critical perimeter areas. The TP-Link Omada platform was used to address both anticipated needs and any unforeseen requirements.

Continuous monitoring during rehearsals, as well as daily traffic analysis and reporting, enabled resource balancing and efficient management of each independent zone, including rapid incident resolution when necessary.

Fiber optic transceiver modules interconnected TP-Link equipment from the main data center to additional communication rooms within the venue. New fiber runs extended connectivity to areas such as RTVE's mobile units and other remote perimeter zones handling staff and guest access control—all managed within the same Omada Wi-Fi controller for connected devices. All transceiver modules and media converters used were TP-Link, ensuring compatibility and stability with both TP-Link and third-party equipment.

To ensure stable Wi-Fi coverage in high-density areas, Omada AXE11000 EAP690E HD Wi-Fi access points were deployed indoors for their high performance and connection quality. For outdoor areas, Omada EAP625 Outdoor HD access points were chosen to handle lighter workloads and withstand expected humidity levels. Depending on the area, these Omada access points were connected either directly to core switches or to additional switches in other communication rooms, linked via fiber optic transceiver modules to the main core. This setup ensured all internet traffic passed through a highavailability core and allowed resource rebalancing between zones as needed.





5. Installation

The most critical area was the stage itself. Coordination with over 500 professionals, under the guidance of Jorge O. Talledo, the festival's IT Manager and lead for network design and deployment, together with the production team, ensured all objectives were met across all areas. Reliable connectivity was also provided in the press room to serve digital and traditional media.



As an international production, the requirements exceeded standard practices, demanding extra effort to deliver flawless performance within the tight timelines of each deployment phase.

Deploying an installation of this scale within strict production deadlines was only possible through extraordinary coordination among all teams: RTVE's production and operations crew, UER/EBU staff, the entire SoldOut production team, the voting and tallying team, as well as the staff of Caja Mágica and Madrid Destino, who supported the project from the outset.

Special recognition goes to Ibérica Multimedia for their outstanding work deploying the Omada solution. Their ability to create a powerful, stable, and secure network in such a demanding environment as Junior Eurovision 2024 has been invaluable.

6. Conclusion

The deployment of the network infrastructure was instrumental in the successful execution of the festival, with the following highlights:

- Over 1,200 devices connected, including computers, smartphones, and tablets;
- Over 30 devices connected for controlling 18 cameras during the live broadcast;
- Data traffic exceeded 1 TB in the days leading up to the festival;
- 15 independent VLAN networks created for exclusive use by the organization, production, cameras, audience, security, and services;
- The network remained interference-free, delivering high performance even during peak demand, especially during performances and voting phases.

