RAI Production Center in Rome Upgrades with Lawo VSM and V__matrix



Italy’s large public broadcaster, RAI - Radiotelevisione Italiana, recently upgraded its Broadcast Production Center in Rome with a new control and signal distribution network based on Lawo IP infrastructure solutions. For its different production areas, RAI opted for a V__matrix solution for guaranteed performance in a distributed production environment. The installation, in five production galleries and six studios, comprises V__matrix clusters and a VSM system for studio-related and overarching system control as well as signal distribution management.

ARET video and audio engineering, Lawo’s Milan-based partner and system integrator in Italy, was appointed to revamp the whole production complex, which involved Lawo IP infrastructure for the realization of RAI’s vision of distributed routing and processing resources that can be pooled assigned to the desired studios. This installation not only makes TV production workflows more flexible and efficient, but also offers a high level of redundancy. Thanks to the all-IP infrastructure, V__matrix units can be located adjacent to the stages where production teams host shows with presenters and guests.

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This technical upgrade of the Broadcast Production Center, dedicated to the late popular presenter Fabrizio Frizzi, is RAI's first step on the way towards a full-IP environment and therefore also leverages IP transport for existing baseband equipment. Even at this early stage, the benefits for RAI in their Rome facility are immense: distributed routing for facility-wide IP signal distribution, with conversions to and from SDI in the desired places, allows for a more flexible use of facilities and equipment. The broadcaster can easily add new production areas that interact with all sources and destinations through additional V__matrix devices whose ingratiation within the overall infrastructure will be fast.

"In the public tender that RAI issued for this upgrade project, we described the concept and quality of the installation in detail," says Enrico Briziarelli, Head of Control Rooms and TV Studios Engineering at RAI. "Along with modernized studio control rooms, our aim was to create a new, IP-based and 12G-capable central equipment room, with all connections between studios, control rooms and the equipment room based on IP technology. The project also involves some new postproduction audio suites, four live Dolby ProTools facilities, five graphics areas for LED walls, and augmented reality. After scrutinizing all aspects of the proposals we received, we found that the best match was ARET and the IP-based equipment they presented", explains Briziarelli.

"This project has been fascinating right from the start: the technical architecture designed by RAI skillfully combines the advantages of IP and 12G-SDI technology, and the result is definitely powerful, flexible and futureproof", states Dr. Eng. Alessandro Asti, Vice President Sales, ARET. "Of course, when talking about IP projects, everybody has to learn and the team as a whole needs to harness new competencies," explains Asti. "We have had the privilege to meet and discuss with high-level professionals, both from RAI and from Lawo, and, as always in challenging projects, it is 'The Team' that makes the difference."

The five production areas host distributed clusters of Lawo V__matrix units. Lawo's IP-based Software-Defined Video Processing and Multiviewer Platform, with a total of 137 C100 processing blades to provide immense routing and processing power in any gallery/studio combination. Each studio is equipped with two replicated V__matrix frames with two cards each, which allows processing of up to 40 incoming and outgoing signals. This setup is symmetrical, with ten-by-ten rear plates and every blade providing 10 SDI inputs and 10 SDI outputs. This setup is completed by an additional V__matrix cluster used as IP router for overall signal distribution. Three C100 blades are reserved for connections with OB vans, providing remote access to the networked infrastructure. The IP infrastructure in place can be scaled up simply by adding extra V__matrix frames and processing blades anywhere within the facility, which will allow the integration of new galleries.

The project furthermore includes three studio lighting control rooms and accessory areas like translation booths and voice-over cabins. RAI has also created an OB van parking position where trucks can tap into the facility's infrastructure by connecting to a dedicated V__matrix frame, thereby distributing their signals throughout the

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facility.



For flexible and user-friendly control and signal management, a Lawo VSM (Virtual Studio Manager) broadcast control system manages the equipment of individual galleries and studios, and provides overall control in all facilities. This enables RAI engineers to easily rearrange the technical configuration of the control rooms. 135 C100 blades distributed throughout the facility serve as signal gateways based on

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the vm_avp virtual module. Two extra C100 cards allow key engineers in the control room to monitor the signals on their monitor wall around the clock.

A so-called IP orchestrator, configured and maintained by Lawo directly, is installed on top of all clusters – a bigger cluster of two VSM servers and four gadget servers. The IP orchestrator glues together all the studio and the stage clusters, enabling interaction between signals across the facility via the clusters of every image gallery and also between facilities. Any signal coming from any stage can be routed to any cluster of any gallery. For example, one day RAI may produce a show directed in gallery 1 with the presenter and stage in studio 3, and the next day the team may present another show on stage 3 but this time produced in gallery 2.

“We started the installation in January 2021 and completed the first three control rooms in August 2021. In a second phase, we began installations in the last two control rooms in November 2021 which were completed in August 2022,” states Gabriele Vaccaro, Head of Video Systems Engineering at RAI. “One major challenge was installing the IP infrastructure while in parallel still producing live programs. But with ARET’s and Lawo’s support, our RAI team managed to churn out productions while renewing the production area,” Vaccaro notes.

While the first phase of the project was under way, Lawo provided training sessions to teach RAI’s engineers how to configure and use the IP-based systems and to reassign and redesign any configuration within individual control rooms and the overall IP infrastructure. Both technical engineers and production teams needed to get familiar with the new workflow.

“The team worked hard at every level achieving results step by step, so I thank all of them for the passion they have shown and every single tip that produced an outstanding result,” says Asti.

“This installation, this investment of 26 million Euros, is the most important project in over 15 years that will give shape to our vision of a fully IP-based facility,” says Briziarelli in closing. “For our first step into the IP world we are using the potential of Lawo IP infrastructure by integrating our existing baseband equipment – giving us the freedom to progress step by step.”

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