InHouseStreaming™

The new way of audio distribution in real-time using LAN/WAN infrastructures

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Summary

In broadcasting, various networks are used to get audio information, such as programs and current news into the radio station. Conventionally, audio routers are used to distribute such programs and news via a dedicated analog or digital cable network which transports certain audio signals to certain destinations.

The application of InHouseStreaming™ by MAYAH is offering new possibilities by streaming some or all audio signals in Multicast within the LAN/WAN environment – at different quality levels simultaneously. Thus, all workstations can access such signals and at a quality level according to their needs.

Zusammenfassung


Die Anwendung InHouseStreaming von MAYAH zeigt neue Möglichkeiten auf, in dem einige oder alle Signale mit Multicast im LAN/WAN gestreamt werden, und zwar in unterschiedlichen Qualitätsstufen. So können alle Arbeitsplätze mit den Audio-Signalen versorgt werden und sogar in der entsprechenden Qualität.
1 Status Quo: Audio Distribution

When distributing audio signals within the radio station, various parameters have to be considered. Figure 1 shows currently applied structures in a simplified version. The audio signals which are connected to an audio router are distributed by switching the audio router inputs to certain outputs. An audio router, which may carry analog as well as digital signals is typically controlled by a workstation running the control software. Such an audio router may be connected to various hundreds of signals and might distribute such signals. The distribution of the audio signals is done using dedicated internal cabling.

![Figure 1: Classical audio distribution within the radio station](image)

Such cabling is used in particular for analog and/or digital audio signals. Such a concept of classical audio signal distribution is designed to reach single dedicated locations within the station. In order to reach many more locations, let alone all workstations, such a system is not appropriate or the cost for cabling is prohibiting.
2 Status Quo: IT Networks

During recent years, high investments have been directed towards LAN/WAN structures in broadcasting. Audio and video signals in pre- and post-production are transported via the LAN/WAN and clearly define the requirements regarding capacity, speed and storage. In most cases, the latest available technology allows the logical administration of the networks with respect to segments used and is able to support multicast.

While the Internet can be considered to be an unreliable network for a 24 hour / 7 days operation, the well defined LAN/WAN can also be used for streaming applications, even with very short delay times. It is important to use products which fullfill the demands of such professional operations.
3 Audio distribution via IT networks = InHouseStreaming

MAYAH proposes a connection between today’s available audio routing / distribution and IT networks. This combination MAYAH has named InHouseStreaming™.

The following Figure 2 to Figure 5 are illustrating a process of migration starting with the current situation of using audio routers for audio distribution and moving towards a concept making audio routers completely obsolete. In Figure 2 the audio signal PRG1 is routed via an audio router in the control room to a reproduction unit with two loudspeakers, which might be located in a studio, newsroom or similar.

![Figure 2: Conventional audio distribution via audio router](image)

In Figure 3 the audio signal PRG1 is connected from the audio router output to MAYAH StreamingServer input. The StreamingServer encodes the audio signal simultaneously in four different formats or at four different bit rates of one format (so-called aggregates). All four aggregates are transported via Multicast in the LAN/WAN environment.

![Figure 3: Integration of StreamingServer](image)
Thus, audio streams can be accessed from all LAN/WAN workstations simultaneously. The various quality streams allow various applications: Small bit rates and medium quality for pre-listening up to high bit rates and post-production quality for archiving. The audio router is used for two different procedures: a) to distribute audio signals conventionally to the various locations and b) to connect the audio signal to the input of StreamingServer for streaming.

The next step of InHouseStreaming integration is shown in Figure 4. E.g. three StreamingServers are each connected to an output of the audio router (here PRG1, PRG2 and NEWS) and stream such signals in various formats – meaning qualities – into the LAN/WAN.

![Figure 4: Integration of several StreamingServers](image)

The complete integration of InHouseStreaming is shown in Figure 5. All incoming signals, such as SPORT, NEWS, PRG1, PRG2, REP1 and REP2 are directly connected to a StreamingServer. All StreamingServers stream such signals in various formats into the LAN/WAN.

![Figure 5: Replacement of audio router by StreamingServer](image)

All programs and news, which have conventionally been distributed via audio routers, are now available via Multicast streaming in the LAN/WAN.
4 InHouseStreaming at various quality levels

MAYAH InHouseStreaming can be distinguished dramatically from existing WebRadio streaming solutions, because the quality levels cover an extreme range. MAYAH InHouseStreaming supports:

- CT-aacPlus™, mp3PRO™
- Linear, Layer 2
- MP3, apt-X™

With the selectable audio coding algorithms, it is possible to cover completely different requirements and applications in the broadcasting house simultaneously. StreamingServer encodes up to four formats simultaneously, such as CT-aacPlus at 24kBit/s for Pre-Listening, MPEG Layer 2 at 256kBit/s for automation and linear audio for archiving.