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# Shifting of Video Conferencing Industry from Hardware based MCU to software Based MCU

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**Multipoint Control Unit (MCU):** A multipoint control unit also known as a Video Transcoding Server is responsible for connecting various end points on a single point. Along with end point connection MCU is also responsible for data security, stability, video, and sound quality. MCU controls audio/ video switching tasks, coordinates user devices and software, and interacts with an H.323 gatekeeper (It provides addressing service for H.323 based video conferencing units and optionally can also impose bandwidth restrictions) that manages calls and performs many other important functions. The endpoints can call an MCU on any of the following – H.320 (ISDN), H.323 (IP), SIP (Video Phones), HD (High Definition video).

## Keywords

- MCU
- Hardware
- Software
- Computer System
- Computer System

## ARTICLE HISTORY

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MCU mainly takes care following:

- Mixing (Layout Management)
- Transposing
- Transrating (Call rate Negotiation)

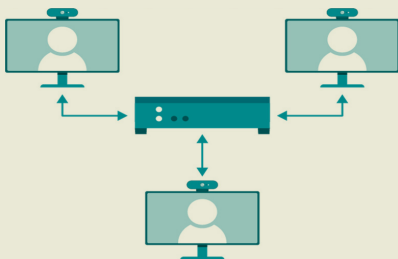


Figure 1 Hardware Based MCU Setup

**Mixing:** MCU gives users to feel various conference layouts as per their convenience. Layouts can be changed as per the number of sites

connected and requirement. Normally main site/ speaker come in centre frame and other/non speaking sites in remaining frames. This can be done by a technique called voice activated camera switching.

**Transposing:** Transcoding takes care of change of Video Stream formats.

**Transrating:** Transrating responsible for optimizing data transfer rate.

Transcoding – The various video conference systems connecting to it can have different data rates, different audio or video algorithms, different standards, different frame rates, etc. The MCU can still negotiate the best possible connectivity with each of them.

MCUs are available in both Hardware and Software design. As deployment of Hardware MCU is complex as well

as cost of Hardware based MCU is higher so nowadays software based MCU is becoming popular.

## Hardware MCUs and its Constraints:

Earlier only Hardware MCUs were in fashion. They were mainly based on Unix like operating systems. Their CPU was mainly based on reduced instruction set computing (RISC) architectural design. These were mainly vendor specific and under closed architectural design and were not much compatible for third party devices. Because of Proprietary reasons these MCUs are costly and require big financial investment. These legacy MCUs were compatible with external devices only via traditional SIP and H323 protocols as well as these MCUs were highly hardware dependent. This led to additional restrictions, e.g. the number

of conference participants who were simultaneously visible without cascading.

### Software Based MCU and its Positive Edge:

In last decade software industry grown up vertically and it also penetrated Video Conferencing service industry as well. After cloud computing and cloud services video conferencing industry rapidly shifted towards software based MCU. Software Technological enhancement decreases dependency of software on hardware. Hence it almost solved the vendor's dependency and interoperability issues. These software based solutions were able to run any x86 platforms hence even able to run even on PC. This technological evolvement made to even deploy Full fledged software MCU. Finally due to this all MCU were forced vendors scrapped specialized hardware platforms and switched to standard

hardware, enabling developers to use virtual machines for implementation of video conferencing features.

Software based MCUs not only provide wide functionality for efficient video conferencing systems but also allow using the most efficient cyber security features. Software makes video conferencing systems more flexible as you don't have to buy unnecessary hardware components, thus getting a better final cost. As a result, software video transcoding server (MCU) is now the best option that turns a video conference from just a luxury service into a widely accessible tool for all private and business communication.

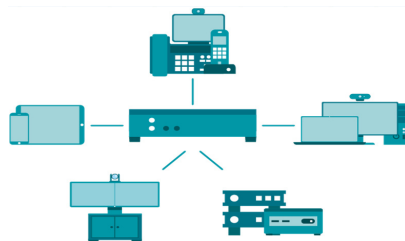


Figure 2 Software Based Setup

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### Annexure I

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Sources included in the report:

<https://trueconf.com/blog/wiki/multipoint-control-unit>

Instances where selected sources appear: 4

*Note: The Cybernomics had used the urkund plagiarism [http://www.orkund.com] tool to check the originality.*



### Reviewers Comment

**Review 1:** During a multipoint conference session, MCU server manages multiple endpoints at once, coordinates their functions on the video data processing, and forwards the flow of media streams between them.

**Review 2:** It is quite easy to think that they are the same. However, this is not correct. There are major differences between MCU Server and a software Video Conferencing Server. The difference lies in their respective functions, features as well as the underlying technology, architecture.

**Review 3:** A video transcoding server, better known as a multipoint control unit MCU is the core element of any video conferencing system. It connects all users of a video conferencing system within a single network and provides a wide range of functions.



### Editorial Excerpt

The article has 20% of plagiarism which is accepted percentage for publication MCU that defines any video conferencing system — not only basic parameters, such as data security, stability, video, and sound quality, but also a number of additional options that turn ordinary video communication into an efficient business communication tool. The server solves audio/video switching tasks, coordinates user devices and software, and interacts with an H.323 gatekeeper that manages calls and performs many other important functions. After many reviews it is decided to earmarked under the group of “View Point”.

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### Disclaimer

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