

Enterprise Content Delivery Network with Multicast

Streaming internal video
at scale



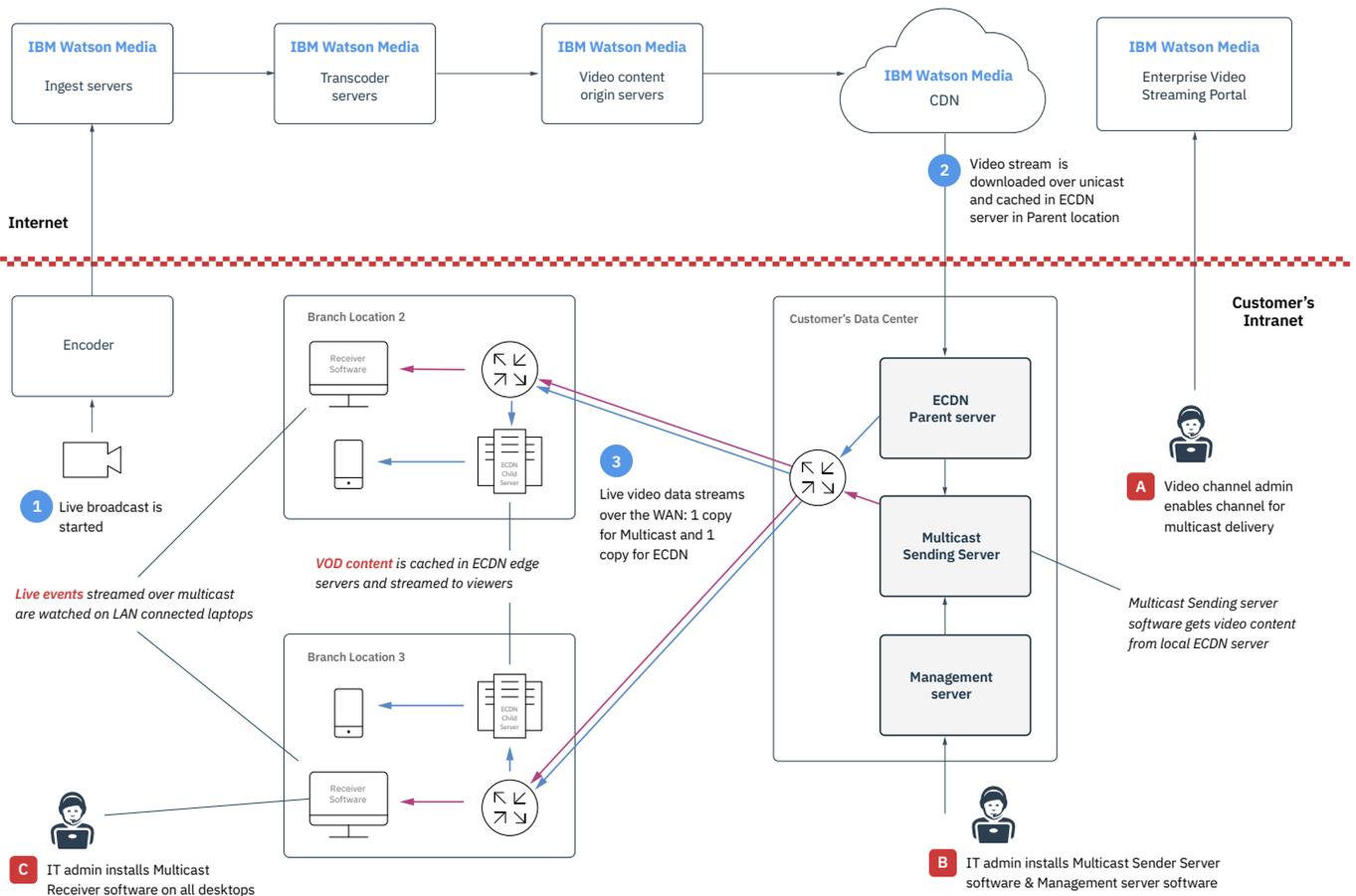
IBM Watson Media streaming solutions support video delivery over a multicast-enabled network, and that opens up useful new options.

Why multicast is optimal for video streaming

Multicast routing protocol, or just multicast, is a group communication protocol enabling data to be efficiently transmitted over the network. It is particularly suitable for distributing live audio or video streaming data. Here's how it works:

In traditional unicast delivery, a unique video stream must travel from the source to each viewer. With multicast delivery, the source sends a single copy of the video stream data to a multicast address, which then distributes packets to all interested recipients. The network routers between the source and recipients use multicast group membership information to calculate when to duplicate packets. As a result, bandwidth use is minimized.

Consider what happens when a large enterprise streams an event such as an all-hands town hall to multiple locations. In a multicast-enabled network, a single stream of data will flow over the WAN connections, regardless of how many recipients are watching from a particular location. The local router in the remote location will make additional copies of the data and distribute them to each unique recipient over the LAN. Without multicast delivery (or a similar solution such as IBM's ECDN with multi-tier distribution for non-multicast enabled networks), each viewer would require a separate video stream from the source, slowing or breaking a site's WAN connection and disrupting other business applications. With multicast delivery, hundreds or thousands of viewers at a site can watch a video stream without disrupting the network.



How to use IBM Watson Media with a multicast network

To stream IBM Watson Media over a multicast network, enable the channels in your IBM Enterprise Video Streaming account for multicast delivery. The IBM Watson Media support desk can assist you with this setup.

Then, deploy the multicast software as detailed in the figure above, which shows how a typical multicast-enabled network is configured to support an IBM Watson Media stream.

Notes

Multicast Sender

- This software component downloads, over the unicast network, the video stream from the IBM Watson Media CDN, and then it distributes the data over the multicast network.
- This software is installed on a server. See specifications section for configuration details.
- It may be installed in your private network and needs outbound HTTP(S) network connectivity to the Internet (IBM Watson Media CDN servers).
- At least one instance of this software is required.
- Customers are responsible for monitoring and administering this software.

Management server

- This software component is used for configuration and management of one or more instances of Multicast Sender server. It is a Java server application that runs on Apache Tomcat® web server backed by a MySQL database.
- It is installed on a server physically separated from the Multicast Sender server.
- This software is installed on a server in your private network. It needs HTTP(S) connectivity to the Multicast Sender server.
- At least one instance of this software is required.
- Customers are responsible for monitoring and administration of this software.
- See the specification section below for configuration details.

Multicast Receiver

- This software component is installed on every employee's desktop. It receives the video stream data packets from the multicast network, and makes it available to the IBM Watson Media player for playback.
- One license of the Multicast Receiver is needed for each

desktop that runs the video player.

- On Microsoft® Windows® operating system, this software is installed as a "Service" and always runs in the background.
- On Apple® MacOS® operating system, it runs in a separate process when the user first starts a playback. The user may minimize the window, but must keep it running if they want to watch additional video streams.

License requirements

Here are license requirements for multicast delivery at a given site:

- Multicast Sender - 1 license.
- Management server - 1 license.
- Multicast Receiver - one for each device.

[Contact your IBM Sales team](#) for a customized quote for your environment.

Specifications

Multicast Sender requirements

- Operating system:
 - Microsoft Server 2012 or later, Microsoft Windows version 8 or later (for testing or demonstrations).
 - Linux kernel version 3.3.1 or later. IBM Watson Media has been tested on multicast deployments using CentOS, RHEL, and Oracle Linux distributions. On other distributions, the software might work, but is not supported.
- 1 core CPU 2.5Ghz, 4GB memory, 40GB hard disk (SSD recommended).
- 1Gbps network interface card.
- On Linux, Java 8 - 64-bit or later. On Windows, a Java JRE is included in the package.
- Network connectivity - Direct HTTP(S) outbound connectivity to Internet without requiring any proxies. Only IPv4 is supported. IPv6 is not supported.
- Network connectivity for management purposes: Port 80 (HTTP) connectivity to the Multicast platform.

Also see specification guide [1].

Management server requirements

- Operating system:
 - Microsoft Windows Server 2012 or later, Microsoft Windows version 7 or later.
 - Linux - CentOS 7 or later, RHEL 7 or later, Oracle 6.5 or later.
- 2 core CPU, 2.5Ghz, 4GB memory, 40GB hard disk.
- 1Gbps network interface card.
- On Linux, Java 1.8 64-bit or later. On Windows, a Java JRE is included in the package.
- MySQL™ Server version 5.7.14 or later.
- Also see specification guide [1].

Multicast Receiver requirements

- Operating system:
 - Microsoft Windows version 7 or later with Microsoft .NET framework 4.5.1 or greater.
 - Apple MacOS - OS X 10.10 (Yosemite) or later.
- 1 core CPU 2.5Ghz, 4GB memory.
- Network connectivity - Browser based player gets video data stream from on loopback address 127.0.0.1 on HTTP port.
- Also see specification guide [1].

References

1. Specification guide - ibm.biz/multicast-mgmt-software-system-requirements
2. Watson Media home page: ibm.com/watson/media
3. IBM Enterprise Content Delivery Network: <https://www.ibm.com/downloads/cas/DQXWN428>

Frequently asked questions

• Is multicast delivery of video-on-demand broadcasts supported?

No. A multicast-enabled network only supports live broadcast streams.

• If there are hundreds of different locations within an enterprise, how many instances of Multicast Sender servers are needed?

A single global multicast network spanning an enterprise will need a minimum of 2 Multicast Sender servers (1 primary, and 1 secondary). If there are segment regions or “pockets” of multicast coverage within an enterprise, a minimum of 2 Multicast Sender servers (1 primary, and 1 secondary) are needed per region, and they will be responsible for publishing the multicast stream within that location.

• Does multicast delivery support mobile devices?

At this time, multicast delivery does NOT support mobile Android or iOS devices. To deliver video streams to mobile devices, install Enterprise Content Delivery System (ECDN) servers. [Click the link for details](#)

• Does IBM work with a partner to provide this multicast technology?

Yes. The multicast technology referenced in this datasheet is provided by [Ramp](#), and resold by IBM.

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