Cisco Media Experience Engine (MXE) 3500 Q&A

What's New in Cisco Media Experience Engine 3500 Release 3.3

Q. What is new in Cisco® Media Experience Engine (MXE) 3500 Release 3.3?

A. Release 3.3 provides support for WebEx ARF recordings and Flash 9 and 10 videos as new video ingest formats so they can be transformed like any other video file the MXE 3500 supports already.

- The Video Conversion User Interface, sometimes referred to as the Simple User Interface, has been enhanced so users benefit from a more intuitive interface for video upload and administrators can now define a custom help link for their users.

- Release 3.3 also provides an automated workflow with the Cisco TelePresence Content Server and Show and Share. You can now make a recording with the Telepresence Content Server and automatically send it to the Media Experience Engine 3500 for further transformation and publishing to Show and Share under your user account.

- Cisco Pulse Video Analytics is also new as part of Release 3.3 and will be integrated into the Cisco Show and Share Release 5.3 application. You can now find and navigate within videos based on spoken keywords and speakers. Pulse Video Analytics can listen to the video and automatically extract the relevant keywords and identify the speakers.

Q. What is the hardware platform supported by Cisco MXE 3500 Release 3.3?

A. Release 3.3 will be supported on the MXE 3500 V2 hardware platform. The new hardware platform is Cisco UCS C200 M2 High-Density Rack-Mount Server. Starting with Release 3.1, all new Cisco MXE 3500 orders were shipped using this new hardware platform. The Cisco UCS C200 M2 server used by MXE 3500 in Release 3.3 has the following main components:

- Two Intel Xeon X5670 processors that run at 2.93 GHz (versus two X5540 running at 2.53 GHz in Cisco UCS C200 M1 server)

- 48-GB system memory (versus 12-GB memory used in UCS C200 M1). 4 GB is allocated for the Windows 2003 Server operating system with the MXE 3500 software.

- 900-GB hard disk space: 4 x 300 GB SAS hard disks arranged in RAID 5 (versus 2 x 300-GB SAS hard disks in Cisco UCS C200 M1 in Release 3.0). 400 GB is allocated for the Windows 2003 Server operating system with the MXE 3500 software.

Q. What is the software architecture of the Cisco MXE 3500?

A. The software architecture, which was first introduced in Release 3.1, consists of two virtual machines running on the ESXi Hypervisor technology from VMware. The two virtual machines are: a Windows Server 2003 (Standard Edition) operating system with the MXE 3500 software and a Linux operating system. The Windows 2003 Server virtual machine is concealed behind the Linux virtual machine. All requests send to the MXE 3500 application are intercepted by the Linux virtual machine before they are forwarded to the MXE 3500 application for processing. This new software architecture significantly reduces the exposure of the Windows 2003 Server to a variety of security vulnerabilities.

Q. What is the license management capability in the Cisco MXE 3500?

A. Starting in Release 3.1, the Cisco MXE 3500 now provides the ability to upload a product license file directly from its web UI. This capability facilitates easy uploads of the license file by the customer, compared to

manually copying the license file to the license directory on the Windows 2003 Server in Release 3.0. The license upload UI also displays a composite ID that is used to generate the license file.

Q. **What are the procedures to upgrade from Release 3.x to Release 3.3?**

A. Please refer to the Backing Up & Restoring Custom Data for Cisco Media Experience Engine 3500 3.3 Upgrade Application Note for detailed upgrade procedures. The Product Upgrade Tool (PUT) can now be used to obtain, upgrade software, DVDs, and licenses as needed for an upgrade.

Q. **Is a new license required after upgrade to Release 3.3?**

A. If you would like to take advantage of the new automated workflow between Cisco TelePresence Content Server, MXE 3500, and Cisco Show and Share application, then a new base license is required. If you already have the optional graphics feature, you will also need to obtain an upgrade license in order to utilize the watermark, bumper, trailer, and overlay capabilities. There is no cost to obtain these new licenses. Please refer to the Backing Up & Restoring Custom Data for Cisco Media Experience Engine 3500 3.3 Upgrade Application Note for detailed upgrade procedures. The license upload UI displays a composite ID that is used to generate the license file. Please note: If no fresh install is required as part of the upgrade, then only incremental licenses are required so remember to deselect "Replace Existing License" in the license upload UI. Whenever a fresh install is done, a new composite ID is created so a new license file will need to be generated to replace the old one. Cisco TAC can help with rehosting if needed.

Cisco Media Experience Engine 3500 Overview

Q. **What is the Cisco Media Experience Engine (MXE) 3500?**

A. The Cisco Media Experience Engine (MXE) 3500 is an easily deployed media-processing device that allows you to share media across your network from any source to any type of endpoint.

- It allows the IT administrator to significantly reduce operating expenses (OpEx) and capital expenditures (CapEx) by delivering a cost-effective solution that reduces the complexities of both video on demand (VoD)-based and live media transcoding and processing.

- It offers a suite of post processing features that optimize the quality of the content while improving user experience.

- The Cisco MXE 3500 also integrates with other Cisco media applications, extending their capabilities to deliver "any-to-any" video collaboration.

- The Cisco MXE 3500 can be part of a cluster to scale performance and deliver fault tolerance for file-to-file and live transcoding services. To have the Cisco MXE 3500, you will need to purchase an additional license.

Q. **How does Cisco MXE 3500 work with other Cisco solutions?**

A. The Cisco MXE 3500 transparently integrates into the Cisco Digital Media Suite architecture in a number of ways:

- By pushing content dynamically to Cisco Digital Signs, searching content processed by the Cisco MXE 3500 using Digital Media Suite search libraries

- By selecting content produced by the Cisco MXE 3500 on Digital Media Suite Cisco Cast menus

- By displaying the content on Cisco Show and Share,[®] including spoken keywords and speakers when Cisco Pulse Video Analytics is enabled

Additionally, the Cisco MXE 3500 can take live IP feeds from the Cisco Cast solution and repurpose live content to different end devices.

The Cisco MXE 3500 also interoperates with the Cisco TelePresence® Recording Server, which allows you to take recorded video using the Cisco TelePresence system and repurpose the content so it can be played back on a variety of devices with the appropriate postproduction services performed on the content.

Q. **What formats does it support as input and output for file-to-file transcoding?**

A. **Input**: MPEG-1, MPEG-2, MPEG-4, H.264/AVC, QuickTime, AVI, Windows Media (WM7, WM8, WM9), VC-1, Flash (ON2-VP6, Sorenson Spark, H.264), DV (DV25, DVCPro25, DVCPro50), 3GP (H.264/AVC, MPEG-4, H.263), MP4 (H.264/AVC, MPEG-4, XDCAM EX), MXF OP1a (MPEG-2, IMX, DV25, DVCPro25, DVCPro 50, JPEG 2000), MOD, TOD, MTS, AVCHD

Output: MPEG-2 transport streams (standard definition [SD] and high definition [HD]), MPEG-4/H.264 transport (SD and HD) streams, AC-3 Audio, Layer II Audio, Windows Media Proxy, MPEG1, and MPEG-2.

Q. **What formats does it support as input and output for live transcoding?**

A. **Input**: MPEG-2 codec in MPEG2-TS container, WMV.

Output: WMV, FLV, and H.264/AVC.

Q. **How much video expertise is required to be an administrator for the Cisco MXE 3500?**

A. The Cisco MXE 3500 includes predefined profiles that allow administrators to perform media transcodes and postproduction activities without needing a high level of video expertise.

Q. **What level of automation is offered?**

A. The Cisco MXE 3500 includes predefined profiles that allow you to simply move files to a "watch folder" from which "jobs" are initiated and completed without your intervention. With Release 3.3, the level of automated is increased so the Cisco TelePresence Content Server can submit a video to be enhanced then published into the Cisco Show and Share application without user intervention.

Q. **What are the critical parameters for capacity planning?**

A. The critical parameters include the amount of video content, the length of the video content, the percentage of video content that needs to be transcoded, the types of endpoints targeted, turnaround time required for processed content, and SD versus HD content.

Q. **Where are Cisco MXE 3500 media-processing devices typically deployed?**

A. Cisco MXE 3500 devices are typically deployed in the data center.

Q. **Does the Cisco MXE 3500 support live transcoding?**

A. The Cisco MXE 3500 performs real-time transcoding of IP streams, in addition to file-to-file transcoding.

Q. **Is the Cisco MXE 3500 just a transcoder?**

A. No. The Cisco MXE 3500 goes beyond the bounds of only transcoding video on demand (VoD) and live content. In addition to transcoding, the Cisco MXE 3500 also allows you to do the following:

- Perform complex video editing that includes the modification of visual attributes (for example, color and contrast), stitching clips to form a single contiguous clip, adding bumpers/trailers, providing speech-to-text transcripts, and more
- Add graphic overlays including title slides, captions, logo insertions, watermarking, and more

Q. **How do graphics features complement the media-processing capabilities of the Cisco MXE 3500?**

A. Dynamic graphics updates occur during transcoding.

- Multiple simultaneous transcoding sessions with customized graphics are supported.
- You can add overlay graphics on all output formats, including logo insertion, watermarking, title overlays, and more

Media-Processing Functions

Q. How can I monitor encoding jobs?

A. Status of encoding jobs is provided through the web UI at http://<MXE 3500 hostname>/mxeui. Select Job Status under Monitoring in the Toolbox. Then double-click the job to monitor the processing status. A job's status can also be retrieved by using APIs for the Cisco MXE 3500.

Q. Can I receive email notifications when a job has completed?

A. Yes. You can configure the Cisco MXE 3500 to send email notifications when a job completes successfully or fails.

Q. Are there any log files that I can review?

A. You can easily access log files that provide critical information about job status for the control system and encoders in the system. These files are instrumental for performing troubleshooting.

Q. What should I do if I want to produce an audio-only file from a file that has both audio and video?

A. In the encoder profile, deselect the "Video Enabled" box and select the "Audio Enabled" box.

Q. How does the Cisco MXE 3500 handle video that does not contain audio?

A. Two techniques can be used to encode video that has no audio. Some encoders support video-only output. Alternatively, you can add a silent audio track in the Preprocessor profile.

Q. Why do video files that do not have any audio fail to encode by default?

A. Video files typically have audio tracks. By default, the Cisco MXE 3500 will fail to complete a job with a source video that does not have an audio track. This is to ensure that all transcoded videos have an audio track. If this behavior is not the desired behavior, select the "Add a Silent Audio Track" box on the Preprocessor profile. If an audio track is present, it will be maintained. If no audio is present, a silent audio track will be added.

Q. Does the frame rate of my output files have to match the frame rate of my input files?

A. No. The Cisco MXE 3500 adds or drops frames of video as required to equal the output frame rate requested. To ensure the smoothest possible output, video frame rates should be divided or multiplied by even numbers.

Q. Can the Cisco MXE 3500 convert frame rates from 25 fps to 29.97 fps or 29.97 fps to 25 fps?

A. Yes. The Cisco MXE 3500 adds or drops frames of video as required to convert video from 25 fps to 29.97 fps or conversely. Although this frame-rate method provides acceptable quality, the conversion is not a vector-based frame-rate converter. If the video has fast-moving motion, the picture may appear jittery.

Q. Can I increase or decrease the frame size of my output video when compared to my input video?

A. Yes. Reducing the frame size of the video is a common technique used to improve perceived video quality at lower bit rates. You can also increase the frame size from the original, but there will be a corresponding reduction in perceived video quality. This reduction is often acceptable if the content of the video is compelling and a larger frame size is required to match the video display method. An example is increasing the size of video captured with a cell phone to play back on TV.

Q. Can I convert video with a 4:3 aspect ratio to video with a 16:9 aspect ratio?

A. Yes. The Cisco MXE 3500 offers three methods to convert 4: 3 video to 16: 9 video:

- You can add curtains (black bars on each side of the video).
- You can apply a nonlinear stretch that increases the width of objects that are not in the center of the video frame.
- You can apply a linear stretch that increases the width of all objects to the video.

Q. **Can I convert video with a 16:9 aspect ratio to video with a 4:3 aspect ratio?**

A. Yes. You can crop 16:9 video to remove the video on the edges of the screen to change the aspect ratio of the video to 4:3. You can also add black bars above and below the video (called letter-boxing). The video has a 4:3 aspect ratio, but the content maintains a 16:9 aspect ratio.

Video Preprocessing

Q. **What is video preprocessing?**

A. Traditional transcoding solutions produce transcoded content that is only as good in quality as the source footage. However, when video is acquired outside studio settings, the quality of the source footage can be less than ideal. The Cisco MXE 3500 supports a variety of preprocessing features that allow you to significantly improve the quality of the transcoded content relative to the source footage. You can use these preprocessing features to edit video in a variety of ways.

Q. **What type of video editing features does the Cisco MXE 3500 support?**

A. The main video editing features include:

- **Selecting footage to process from a larger file:** You can mark the point in time relative to the beginning of the clip to start encoding. You can mark "in points" and "out points" (expressed as time intervals) on video footage to be used when only a section of a larger file is encoded. When you specify these parameters, the Cisco MXE 3500 knows to discard the portion of the video prior to the "in point" and following the "out point".

- **Inserting transitions between clips:** You can determine the number of seconds to fade in from black to full brightness at the beginning of the video clip or fade out at the end of the clip. The specified "fade-in" time is appended to the beginning of the preprocessed file, including any bumpers that you may add, whereas the "fade-out" time is appended to the end of a trailer.

- **Cropping:** Crop settings are used to trim unwanted material from the outer edges of the incoming video image.

- **Bumpers and trailers:** If you want to append clips before or after video footage, you can apply bumpers and trailers. You can specify the file to be used as a bumper or trailer at the introduction or conclusion of the encoded clip, respectively. You can use movie files of any Cisco MXE 3500 supported format or still files as bumpers or trailers.

Q. **How can the Cisco MXE 3500 improve the quality of the video?**

A. The ambient conditions of the area in which the video source is acquired may be less than ideal because of the quality of the video equipment or environmental conditions, such as lighting. The Cisco MXE 3500 delivers a suite of preprocessing features that allow you to control a variety of color adjustments that can result in improved quality relative to the video source.

The following color adjustments are supported:

- **Brightness**: Adjusts luminance as measured against the source video

- **Contrast**: Adjusts separation between the blackest black and the whitest white

- **Hue**: Adjusts hue of colors in the video from red (decrease) to green (increase)

- **Saturation**: Adjusts the amount of color in the video image expressed as a percentage of source video color

- **Gamma**: Adjusts the midrange (gray) luminance values of the video, leaving black and white values unchanged

Q. **Are any noise-reduction capabilities supported?**

A. Yes. Another effective tool for improving the quality of video footage during the preprocessing stage is to use noise-reduction controls to minimize and control video imperfections. The Cisco MXE 3500 supports the following noise-reduction features:

- **Temporal smoothing**: This setting defines how frames are combined for interframe smoothing. It specifies the number of input frames to average when constructing an output frame.
- **Blur**: This setting specifies how much to blur the source footage. It is generally used at lower bit rates to reduce image detail, improving the overall appearance of the finished clip at high compression rates. Blurring degrades the image but enables better compression.
- **Noise reduce**: This feature removes small, irregular detail from the source video.
- **Unsharping**: Unsharping enhances edge detail in the image without enhancing other detail. Unsharp mask reduces compression efficiency, but can improve the perceived quality of the image. This feature is recommended for some video formats, such as VHS, and for multigenerational images where a sharper image is desired.

Q. **Can I make changes to the aspect ratio?**

A. Yes. The Aspect Ratio Conversion tools provide several methods for scaling media between various formats. For example, you can convert an image with a 4:3 aspect ratio to a 16:9 aspect ratio, or conversely. The Cisco MXE 3500 uses pixel aspect-ratio information in the conversions and uses default assumptions about the pixel aspect ratio based on the pixel dimensions of an image. For example, an image size of 720 x 480 or 720 x 486 is assumed to be SD NTSC, and is assigned the NTSC pixel aspect ratio of 0.9. For complete control, you can explicitly set both the input media pixel aspect ratio and the pixel aspect ratio for the preprocessor output image. The input dimensions are read from the input media. The preprocessor output dimensions are set by the encoder that receives the preprocessed video.

Q. **Is watermarking supported?**

A. Yes. Most organizations have explicit corporate policy surrounding distribution restrictions of company confidential content. Visible watermarking is a method by which you can mark video content as material that must comply with corporate distribution guidelines. The Cisco MXE 3500 allows you to apply highly customizable watermarks during the preprocessing stage so the consumer of the content is aware of how the content must be handled. Customization parameters include adjustments to placement, text, and appearance of the watermark.

Graphics Overlay

Q. **How do graphics features complement the media-processing capabilities of the Cisco MXE 3500?**

A. Dynamic graphics updates occur during transcoding:

- The Cisco MXE 3500 supports multiple simultaneous transcoding sessions with customized graphics.
- The application overlays graphics on all output formats, including logo insertion, watermarking, title overlays, and more.

Q. **When and how are graphics overlay applied to video content?**

A. Graphics are applied during transcoding. Through a XML metadata description file, Cisco MXE 3500 provides an external control mechanism for managing the graphics overlay content and appearance.

Q. **Is the application of graphic overlay a complex procedure?**

A. Cisco MXE 3500 Graphic Overlay feature replaces the manual process in the editing suite with an automated transcoding workflow that reduces production costs and creates new custom messaging opportunities. Within Cisco MXE 3500, the Flash overlays are templates that contain dynamic variables and allow you to automate the application of graphics. Variables values are updated with a XML metadata description file. Therefore, graphics templates are reusable for different shows, cross promotions, advertisement, branding, and sponsorship applications.

Encoders

Q. I am having interlacing problems when I set multiple encoder outputs. What can I do?

A. When you create a Job Profile, make sure that you do not mix interlaced and single-field output formats in the same Job Profile; that is, do not put an MPEG worker in the same Job Profile as a Flash 8 worker. The preprocessor is much better at de-interlacing than the encoders. When mixed types of output formats are in a Job Profile, the system must create an interlaced output, so the encoder is forced to perform the de-interlacing.

Q. What does immediate mode do for file-to-file transcoding?

A. It encodes the file without writing a preprocessor file to disk. It uses RAM instead to buffer the preprocessor data to the encoding worker, helping to speed up the entire transcoding process.

Flash 8

Q. What is the difference between Flash 8 FLV and SWF formats?

A. You can edit the Flash 8 FLV format using Adobe Flash editing tools. The FLV format is also the format required by most Flash streaming servers. You cannot edit the SWF file format, and you must download the entire video before you can play it.

Q. Do Flash 8 output files carry the duration metadata?

A. Yes.

Q. Why is my Flash 8 encoder so slow?

A. A Flash 8 encoder does take longer than some other encoders.

MPEG2

Q. Why is the MPEG encoder producing stereo audio when I created a profile that specifies joint stereo?

A. This situation is by design. For each 1152 samples, the system checks to see if there are enough bits to encode in stereo at or better than the no-noise threshold. If not, it reverts to joint stereo.

QuickTime

Q. Can I specify the length of my audio or video track to determine the length of the QuickTime output?

A. QuickTime files can have video and audio tracks of different lengths. On the QuickTime encoder tab, change the Master Stream drop-down menu from the default of None to Audio or video to set which track will control the length of the final output video.

Real

Q. Can I encode from Real to MPEG?

A. This encoding is currently not supported.

Windows Media

Q. Is anamorphic output supported in Windows Media video files?

A. Yes, on the Windows Media tab, under Video Formatting, check the Aspect Ratio box and select the desired aspect ratio from the drop-down menu.

Q. Can the Cisco MXE 3500 do multi-bit rate Windows Media encoding?

A. Yes.

Live Transcoding and Streaming Services

Q. **What is live transcoding?**

A. It is the ability of the Cisco MXE 3500 to take in live IP feeds and transcode them in real time and output the transcoded stream to a variety of endpoints.

Q. **How can I purchase live services for the Cisco MXE 3500?**

A. The Live transcoding feature is delivered as an add-on license to the base Cisco MXE 3500 services. In order to use the live feature, you must purchase the live license for the Cisco MXE 3500.

Q. **What is the latency for live transcoding?**

A. The latency for live transcoded streams varies depending on the type of processing. Generally, the latency for live broadcast ranges from 5 to 25 seconds. Because the primary use cases for this application are one-way broadcasts (without interaction), these latency figures are well within the bounds of what typical users desire.

Q. **Does live transcoding deliver all the input and output formats supported for file-to-file transcoding?**

A. No. Live transcoding supports a subset of the list of formats available for file-to-file transcoding:

- **Input**: MPEG-2 in MPEG2-TS, WMV
- **Output**: WMV, FLV, and H.264

Q. **During the processing of live streams, is it possible to perform graphics overlays?**

A. Yes, you can apply graphics templates to live transcoded content. Procedurally, the tasks are very similar to how graphics are applied to VoD-based content.

Q. **Is it possible to perform color correction through the preprocessing functions?**

A. Yes, the live transcoding feature allows you to use the preprocessing functions applicable to VoD content. So, for example, if you want to vary the contrast, hue, color, and other parameters to the live streams, you can use the preprocessing profile to accomplish that.

Q. **Live events generally come with more stringent requirements for fault tolerance. How can I ensure reliability to my live transcoding deployment?**

A. The optional Cisco MXE 3500 Resource Manager product allows you to have multiple Cisco MXEs in a fault-tolerant cluster such that a failure to one of the Resource Nodes would result in the instantaneous transfer of live transcoding operation (for FLV and H.264 only) to another Resource Node.

Q. **How can I ensure that enough resources are available for my live events?**

A. The optional Cisco MXE 3500 Resource Manager allows you to cluster multiple Cisco MXEs so you can easily scale any deployment to meet the needs of even the most demanding live events. The Resource Manager can intelligently load balance across multiple Cisco MXEs to ensure that resources are optimized.

Q. **What are the options for CDN (Content Delivery Network) products delivered by Cisco that may be used for scalable content distribution for the MXE 3500?**

A. The Cisco MXE 3500 can send out live streams directly from the device, but it is not built to deliver the services of a typical CDN product. The recommended deployment strategy is to perform the live transcode with the Cisco MXE 3500 and deliver the stream to a CDN device for stream replication and other CDN-type services.

Q. **If I am sending the live stream to a region that does not have adequate bandwidth, how can the Cisco MXE help?**

A. The Cisco MXE 3500 can transrate live video such that you can adjust content to ensure that the bit rate is at a level that allows playback on virtually any environment.

Speech-to-Text

Q. **What is speech-to-text?**

A. Speech-to-text is based on voice-recognition technology that converts audio into a textual representation.

Q. **How can I purchase speech-to-text services for the Cisco MXE 3500?**

A. The speech-to-text feature is delivered as an add-on license to the base Cisco MXE 3500 services license. If you want to use this feature, you must purchase the Speech-to-Text license for the Cisco MXE 3500.

Q. **How accurate is speech-to-text?**

A. Speech-to-text accuracy varies based on many different variables, including speakers' cadence, accents, sound quality, ambient conditions, and so on. Generally, the average accuracy for speech-to-text service on the Cisco MXE is in the 30 to 70 percent range.

Q. **How can accuracy be improved?**

A. You can improve the accuracy for the speech-to-text service on the Cisco MXE 3500 by improving the sound quality using a high-quality microphone and recording in a quiet environment.

Q. **How is speech-to-text rendered on the video?**

A. You can make the speech-to-text output appear as a caption on the video.

Q. **Can I export only the text transcripts of the video?**

A. Yes. The speech-to-text module creates a text output that you can easily export.

Q. **In order to obtain speech-to-text output, do I need to reprocess the video?**

A. No. The benefit of the speech-to-text service is that the processing is part of the overall workflow, meaning that the speech-to-text service is applied as the video is processed for transcoding and transrating.

Q. **Can I take a recorded Cisco TelePresence output and apply speech-to-text to the video?**

A. Yes. The Cisco MXE 3500 is transparent to the workflow for the Cisco TelePresence Recording Server. The Cisco MXE can then automatically ingest (through a watch folder) the file and perform the transcoding, transrating, video editing, overlays, and the speech-to-text rendering, all in a single processing job.

Q. **Is speech-to-text supported in the live mode?**

A. No. Currently speech-to-text service is delivered only for file-to-file transcoding services.

Q. **What primary use cases are supported for speech-to-text services?**

A. The speech-to-text service has numerous uses, including:

- Captioned video for the hearing impaired
- Ability to display the text on video when it is being played back in areas that cannot have the audio enabled (for example, a café, store, or public area)
- Desktop video publication to view transcripts of the video alongside the video

Integration with the Cisco Flip Camera

Q. **What is the Cisco Flip™ camera?**

A. The Flip camera is a camera in a portable form factor that empowers you to capture HD video footage.

Q. **Which versions of the Cisco Flip camera are compatible with the Cisco MXE 3500?**

A. All HD versions of the Flip camera are currently compatible with the Cisco MXE 3500.

Q. **How does the Cisco Flip camera integrate with the Cisco MXE?**

A. The Cisco MXE can ingest content captured by the Flip camera and perform transcoding, transrating, video editing, graphics overlays, and speech-to-text conversions.

Q. **What is required for the setup of the Cisco MXE with the Flip camera solution?**

A. The setup is very simple, and the routine usage is even simpler. To set up the Flip camera to take advantage of Cisco MXE processing, simply create a mapped network drive on your PC desktop. This mapped drive is connected directly to the Cisco MXE watch folder, which monitors the drive and looks for new content. From your perspective, you simply need to capture video on your Flip camera and transfer the video (single drag-and-drop action) to the watch folder that you created on your desktop. This process initiates the processing on the Cisco MXE. When the processing is complete, you can view the processed content on a variety of video-enabled devices.

Cisco MXE 3500 Clustering (optional license)

Q. **What are the components of the Cisco MXE 3500 cluster?**

A. The Cisco MXE cluster has two components:
- Resource Manager
- Resource Node

The Resource Manager and Resource Node are installed on separate Cisco MXE 3500 servers.
Each MXE cluster comprises one Resource Manager and up to nine Resource Nodes.

Q. **What is the Cisco MXE 3500 Resource Manager?**

A. The Cisco MXE 3500 Resource Manager is a software-based, multidevice manager that intelligently distributes transcoding jobs across multiple Cisco MXE systems. The Resource Manager also delivers fault tolerance to a Cisco MXE deployment.

Q. **Is the Cisco MXE 3500 Resource Manager software or hardware?**

A. It is software that is installed on the Cisco MXE 3500 hardware.

Q. **How does the Cisco MXE 3500 Resource Manager allow me to scale my Cisco MXE deployments?**

A. In order to scale media-processing capabilities, you can deploy multiple Cisco MXE 3500 appliances in a cluster setup. The Resource Manager is software that is loaded on one of the Cisco MXEs in the cluster. The other Cisco MXEs in the cluster have the Resource Node software loaded on them. The Resource Manager can determine the usages of the Resource Nodes in a cluster to help ensure that jobs are distributed evenly based on the Resource Nodes' current load.

Q. **How do I know when I need to add more than one Cisco MXE 3500 to my deployment?**

A. It's important to perform capacity planning before you deploy the Cisco MXE with the Resource Manager. This planning may be based on the amount of content to be processed, the length of the video, the type of content being processed (for example, HD or SD), and the turnaround time you need to obtain the processed content.

Q. **How many Cisco MXEs can I add to my cluster?**

A. You can have up to 10 Cisco MXE appliances in a cluster: one serving as the Resource Manager and nine as Resource Nodes.

Q. **How do processing jobs get distributed across multiple Cisco MXE 3500 appliances in a cluster?**

A. Distribution of jobs across Cisco MXE 3500 appliances goes beyond simple assignment of a job to an underused Cisco MXE 3500 device. You can split up a single job across multiple Cisco MXE 3500 devices for the most efficient load balancing available. For example, you can send the preprocessing component of job 1 to Resource Node 1, the transcoding portion of job 1 to Resource Node 2, and the postproduction component of job 1 to Resource Node 3.

Q. **How does the Resource Manager allow me to deploy Cisco MXE 3500s with fault tolerance?**

A. If a Resource Node goes down, the Resource Manager in the cluster has the intelligence to divert jobs dynamically to the Resource Nodes that are operational.

Q. **If I already have Cisco MXE 3500 devices deployed, can I convert them to Resource Manager and Resource Nodes?**

A. Yes. You can upgrade your existing standalone Cisco MXE 3500 system to a Resource Manager system with a Resource Manager license. To upgrade an existing standalone Cisco MXE 3500 to Resource Node, you need to install Resource Node software on the Cisco MXE 3500. Installing the Resource Node software will format the hard drives.

Q. **Do I lose any base functions when I deploy my Cisco MXE 3500 with the Resource Manager license?**

A. No. The Cisco MXE 3500 with the Resource Manager license offers the same functions as a standalone Cisco MXE 3500 and provides additional features that are available only in Resource Manager.

Q. **Can the Cisco MXE 3500 Resource Manager deliver load balancing and fault tolerance to live streams?**

A. Yes. This function extends to live media processing that the Cisco MXE 3500 supports.

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