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Matrox webinar:

What to look for in a lecture capture appliance

1. **What recording codec does the Monarch LCS use for recording?**
   The Monarch LCS uses a H.264 codec in either a MOV or MP4 file wrapper to record up to 1080p30 at 10Mbps in dual-encoding mode, or 1080p60 at 10Mbps in single-encoding mode.

2. **What file size would be generated for a one-hour recording?**
   It would depend on the encoding bitrate; if one hour of content is recorded at a bitrate of 500Kbps the file would be 225 MB, at 2.4 Mbps the file would be 1.1 GB and at 5Mbps the file would be 2.3 GB in size.

3. **Is a special SDXC card required for dual-channel ISO of video and data input?**
   We recommend class 10 or higher SD or SDHC cards. An SDXC card will work but it must be formatted to the New Technology File System (NTFS).

4. **Is 1920x1080p60 a supported format?**
   1080p60 is supported as an input stream, and can also be used for encoding purposes when the unit is set to one encoder one input only.

5. **When connected to a Mac—which is often used in schools—if the output from the Mac is High-bandwidth Digital Content Protection (HDCP) secured content, how does Monarch LCS handle it?**
   Since Monarch products follow HDCP specifications, they will detect HDCP-protected content such as iTunes or other commercial movies, and if the operator decides to encode, it will encode as black instead of the content. If the output from the Mac is unencrypted non HDCP-protected content such as graphics or presentation slides, the Monarch LCS will encode the content.

6. **The final recordings are in HD format. Can these be edited?**
   Yes, the Monarch records H.264 in either MOV or MP4 file wrappers. Editing applications like Apple Final Cut Pro, Adobe Premiere, Avid Media Composer and others can all import and edit these files with ease.

7. **Any recommendation for a camera for lecture capture? What camera(s) were used for this webinar/stream?**
   For the webinar a PT12X-SDI-GY-G2 camera from PTZOptics was used but any camera with standard HDMI or SDI outputs should work.

8. **How does the Monarch LCS handle loss of synchronization from an input source such as a camera or laptop? How does this impact the recorded file?**
   The Monarch LCS handles loss of synchronization perfectly since all inputs (SDI and HDMI) contain frame synchronizers. This buffers the encoder from any anomalies that happen in the video stream such as loss of synchronization or disruption in signal. Monarch LCS records black in the event of a signal loss, and returns to recording video once the signal is re-established.

9. **Can the Monarch LCS play a previously-recorded file?**
   At this time this feature is not supported by the Monarch LCS.

10. **Can the Monarch LCS stream to YouTube Live?**
    Yes, all Monarch products can stream to YouTube Live.

11. **Does the Monarch LCS allow for auto-upload to YouTube?**
    Auto-upload is currently not a supported feature of the Monarch LCS; however, the Monarch LCS facilitates content uploads by providing recording presets to match YouTube-recommended settings. Content must be uploaded by another computer.

12. **What are the necessary requirements for a server setup to replicate the live stream on an internal network?**
    The Monarch LCS can act as a very modest media server when streaming using the RTSP protocol. VLC player apps can access the stream, but it's worth noting the maximum number of simultaneous users is three to ten—with more users, playback quality is affected. When streaming in RTMP, a media server such as Wowza or Adobe Flash is required; this allows more users to receive the stream simultaneously.

13. **What CDNs support on-demand RTSP rather than RTMP?**
    It's important to note that RTSP will not work over public internet; however, Wowza supports RTSP on local networks.

14. **Is Ensemble Video a sort of CDN?**
    Ensemble Video is actually a content delivery network (CDN) with content management system (CMS) capabilities. For more information please visit ensemblevideo.com.

15. **What viewer does Matrox recommend? Does Matrox offer a branded viewer? A multi-stream player with selectable formats was displayed during the webinar. Who makes this and from where can it be downloaded?**
    During the webinar JW player was used for displaying the single RTMP stream. Most players are supported when viewing a single RTMP stream. The multi-stream video on demand (VOD) demonstration featured the Paella Player, an open-source HTML5 multi-stream video player. It is available for free download at paellaplayer.upv.es. Monarch LCS creates standard MP4 files for VOD applications.

16. **Besides Paella, what other video players with multi-stream capabilities would Matrox recommend?**
    There are an increasing number of video players with these capabilities, as well as some content management systems (CMS)—such as Kaltura—which support multi-stream broadcasting. Even YouTube is experimenting with this capability. We expect to see many in the future.

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17. Will the Monarch LCS work with the cloud-native VBrick Rev for uploading or streaming?

To date we have not tested this specific product in conjunction with the Monarch LCS, though it is likely to only work with the proprietary VBrick encoder.

18. Is there a way for users to upload and/or overlay static or dynamic graphics (e.g., branding, text overlay) within the stream?

There is no graphic overlay or background graphic option offered with the Monarch LCS; however, this feature can be offered by the media server.

19. Can the Monarch LCS support a graphic or colored background rather than the standard black background?

Currently, this functionality is not supported within the Monarch LCS.

20. How does the Monarch LCS inform users the system is on and recording is in progress?

There are three methods to detect if the Monarch LCS is encoding:

a) LED on the unit will flash continually
b) User interface (UI) will display a pulsing graphic
c) Polling—via an HTTP API—will return a variable based on status.

21. Must the drive be "mapped" to a specific drive letter or can it be accessed via name resolution?

We recommend mapping using IP address to target the recording destinations. Uniform Resource Identifier (URI) targeting has not always been successful.

22. How does the appliance interface with the computer?

The Monarch LCS is a network appliance and does not require a computer. A computer is used to access its web-based control interface, Command Center, for initial setup and operations. Once complete, the user can use the Command Center, on-device buttons or API to control the appliance.

23. What sort of controls are available with Monarch LCS?

The system offers three types of controls:

a) Manual via the on- device button, which offers start/stop only.
b) Remote via a web UI, so that any device running a browser application can access the controls and settings. This is the primary interface.
c) Programmatic via an HTTP API as well as through polling of XML data hosted on the webpage.

24. Does the Monarch LCS provide API support that will allow for input switching? Is it possible to automate switch from a command line?

Currently, this is not a call that is supported in the API; however, this is something that we will add in a future update.

25. Is there an email notification process if the Monarch system is down?

While the Monarch system itself does not have this functionality, a CMS could easily implement such a service by obtaining the status of the Monarch LCS via the API and advising administration if there is a problem.

26. How does this lecture capture appliance integrate with Blackboard or other LMS?

The Monarch LCS API is designed to seamlessly integrate into existing learning management systems (LMS), content management systems (CMS) and video management systems (VMS).

27. Is there a provision or future scalability to capture a stream from a USB camera or an IP camera?

This is not something we anticipate supporting at this time.

28. Is there a provision for hardware remote control or app control for the appliance (on either iOS or Android)?

There is no specific app for control, although a web GUI can be used for this purpose.

29. Can students or administrators download lectures on demand?

Yes, provided the website administrator allows downloading. Monarch LCS encodes to H.264 which can be played on virtually any device.

30. Is it possible to stream two channels while simultaneously recording the "program out"?

The Monarch LCS provides two available channels; as such, it is possible to stream a picture-in-picture composition while simultaneously recording it. When encoding both channels independently, the channels must both be set to either stream or record.

31. Could the Monarch LCS be used with a video conferencing system such as Zoom.us?

The Monarch LCS is not ideal for tele- or video- conferencing due to encoding latency. Its intended usage means the Monarch LCS has been optimized for quality over latency, and the appliance is best suited for live streaming and recording applications.

32. For those needing to secure sensitive content, how secure is a password-protected live stream broadcast to a limited audience? Do the Monarch HD, HDX and LCS provide secure streams?

The service you select for your broadcasting needs will dictate and provide the various levels of security for your event. On our end, all Monarch systems are password protected at login time into the devices to ensure controlled access to content.

33. Can it record and stream live content side-by-side on a background?

The Monarch LCS offers great capabilities in that it can record and stream live contents as picture-in-picture as well as side-by-side, plus allows uploads to HTML sites for active playback. However, in dual isolated mode, you cannot stream and record simultaneously. The Monarch LCS has a default background of black; it does not support customized backgrounds at this time.

34. What software would be required for viewing the streams on cell phone? For example, to set up a viewing room apart from the main lecture hall where guests can view contents on their cell phones.

If you receive streams from a media server, a web browser is all that is required to view streamed events.

35. Is there an edit feature within the Monarch LCS for trimming video recordings and replacing static content?

The Monarch LCS does not include an edit feature; however, there are free tools such as QuickTime Player X that offer trimming capabilities for Monarch-recorded content.

36. Does the Monarch LCS allow for chapter marking or bookmarks?

Currently, chapter marking or bookmarks are not supported features of the Monarch LCS.

37. What features does the Monarch LCS contain to better mitigate the A/V sync problems experienced during long streaming/recording sessions with the Monarch HD?

A number of factors could have contributed to these past issues. Matrox has updated drivers numerous times for the Monarch HD, and we encourage any user experiencing difficulty to contact our technical support team to ensure having the latest software and recommended best practices. Matrox Video technical support can be reached via phone, email or at www.matrox.com/video/en/support.

For the Monarch LCS, we have included additional hardware to address particular conditions, such as signal glitches or video inputs that do not meet current specifications, which can cause A/V synchronization issues.

38. How does the Monarch LCS handle high temperatures?

The shell of the Monarch LCS acts as a heat sink and includes a very quiet fan. It is designed to work in environments with ambient temperatures up to 50 degrees Celsius, although Matrox does not recommend operating the system with ambient temps above 40 degrees Celsius to safeguard against premature component failure.

39. Is there an auto-resume streaming option built into the product line?

Auto-resume is not part of the first Monarch LCS release, though we have recognized the need for this feature and will include it in an upcoming release. The Monarch HD does presently include an auto-resume feature.

40. Does the Monarch LCS support closed captioning?

Closed captioning is not currently a supported feature of the Monarch LCS device.

41. Does the Monarch LCS provide date/time/clock displays, and, if yes, can these be overlaid onto live streams or recorded files?

Each file name will contain time and recording date information. At present, there is no graphic overlay feature within the Monarch LCS.

42. Does the Monarch LCS device have an accessible power on/off button?

Our lecture capture device was specifically designed so that there is no accessible power on/off button that could be inadvertently pressed.

43. Are custom computer resolutions (i.e., besides 720p and 1080p) supported? Many classroom environments have laptops and computers that primarily display DVI resolutions.

While graphics processing units (GPUs) with digital visual interface (DVI) outputs do support a great many resolutions, including customized options, 1080p and 720p are virtually always supported.

44. Does the appliance support pausing and playback during recording or streaming?

The Monarch LCS does not currently offer this functionality.

45. In the event of a power loss, can the Monarch LCS stop and close a file in midst of being recorded?

No, but the lecture capture device does include a feature which, while recording, creates split files at user-defined time intervals (e.g., every five minutes). In the event of power loss only the last file would be lost, not the entire recorded event.

46. Are the HDMI and SDI outputs latency free?

The SDI pass-through has a one-frame delay, while the HDMI has a four-frame delay.

47. How can the differences between the three Monarch models be explained? In other words, why buy the LCS at $2,495 versus the less expensive HD or HDX models?

The Monarch HD has an HDMI-only input and the encoders are fixed for one stream and one record. The Monarch HDX adds SDI input and frame synchronizers to correct any signal glitches, plus the two encoders can be set to either stream or record. Specifically designed for lecture capture in classrooms, Monarch LCS adds a second full-time HDMI input. Two inputs (either both HDMI or HDMI and SDI) are catered to capture the professor's lecture as video as well as the presentation content. Additionally, Monarch LCS takes the two inputs and composites them into a variety of single encode layouts such as picture-in-picture and side-by-side and even provides the ability to crop some content. In the switcher mode, during the presentation, operators are able to switch dynamically between the two input sources, for example, from full screen of the professor to full screen of the presentation. In the isolated mode, the appliance provides two independent, but perfectly synchronized, video files or streams. This feature, when used with a compatible third-party player, enables the viewer to select their preferred layout from several options, and switch between layouts seamlessly, putting the control in their hands. These are significant added benefits.

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