Technical and Functional Standards for Digital Court Recording

As of February 2015

Overview

This document provides detailed specifications for Digital Court Recording (DCR) systems which meet the court's needs for operating and managing the recording of court proceedings and hearings for the purpose of providing transcripts of court proceedings as mandated by Florida Statutes. These specifications will be updated on a regular basis and will be applied progressively to future purchases as of the date approved by the Florida Courts Technology Commission.

The initial focus of these standards is to record the audio and in some cases the video of court proceedings using a digital court recording system. The system is setup in a series of repositories encompassing many recorded rooms that may be accessible within a networked environment. This configuration shall provide for ease of administration and disaster recovery preparations as defined in this document.

DCR Technical and Functional Requirements

1). Produce a Quality Recording

The integrated DCR system must be able to produce high quality digital masters for archival preservation of the recording of a court proceeding. It is essential that the system playback feature accurately represents the recording of court proceedings. The quality of the digital recording must be clear and distinct, and accurate for use by the legal and judicial community for transcription. The system must have the ability to record on multiple channels determined by the room size, number of microphones, type of proceeding and other engineering requirements.

Base Configuration Requirements
- Audio recordings will be recorded at a minimum sampling rate of 44.1KHz at 16 bits
- Playback capability to the recorded room must be supported
- Remote monitoring over a WAN requires bandwidth management to ensure overall operation of the LAN/WAN is not negatively impacted.
   - Remote monitoring over a LAN, the bandwidth usage should not exceed 500Kbps per recorded room.
   - Remote monitoring over the WAN, whether one court room or multiple, the bandwidth utilization shall not exceed 500Kbps. The recommended standard is 384Kbps.
      - For remote monitoring over the WAN, the quality expectation should be not more than 15 frames per second. For capturing the video on the LAN, the quality expectation is at least 30 frames per second. Mpeg4 Layer 10, H.264 is preferred.
   - To retrieve a recording from a remote server over the WAN, the bandwidth usage should not exceed 384Kbps. File transfers can utilize higher percentages of

available line speed if done after hours. If file transfers are done during normal business hours, they should not exceed 384Kbps and should not impact regular business.
- o Changes to bandwidth requirements are allowed with local court approval in consideration of available local resources.
- o The voice traffic shall be QOS prioritized.
- o Recommended QOS tag should be DSCP AF41 (this makes DCR in compliance with video teleconference standards).

- • Standard Courtroom – minimum 4 Channel recording.
- • Hearing Room – minimum 2 Channel recording.
- • Backup, fault-tolerant recording – at a minimum a 1 Channel mixed recording.
- • Portable laptop/self contained units – 2 Channel recording with a minimum of two microphones with the ability to archive back to the main system.
- • Handheld Recorder – single channel recording on a portable recorder

All system configurations must have the ability to verify the status of the recorded audio for the primary and backup recording systems as the system is recording. At a minimum, the DCR system must be able to record and provide playback of the recording.
Microphones are assigned to specific channels for higher quality recording and isolation of audio on the channel for clarity purposes.

2). Automate Processes of Digital Court Recording

Automatic Record Operation

The DCR system shall include an automated record activation feature to allow for unattended operation using a user configurable scheduler. When enabled, the DCR system should record the spoken word automatically, unattended, without operator involvement. Scheduled activation shall allow for multiple recording events to be programmed using varied scheduled dates, including starting times and duration of recordings, and VOX.   These scheduled events will be on a per court proceedings basis, and shall be flexible to allow varied events at different times. For maximum effectiveness, recorded conversation should be comprehensive, without loss of spoken word or phrase.

Storage and Archiving

The DCR system shall organize recordings using an indexed data structure that can be easily backed up and recovered by the user. The purpose of the data structure is for organizing the recordings in a manner that allows for easy search and location of requested recordings for review or transcription. Data structures should have the ability to accommodate a web based interface for ease of access for limited use such as search and listen, if required for local court needs.

The DCR Application shall utilize a centralized and distributed index which is redundant for failsafe operation. Archiving methods should utilize industry standard technologies and methods

for backup, storage, recovery, and organization of archival digital recordings. The backups should be flexible enough to allow for offsite storage of the records. Archives should be indexed using an automatic numbering scheme for labeling and easy identification for retrieval.

All recording servers used in support of the central recording model must have archival systems that operate mutually exclusive of each other. Primary and secondary recordings shall archive to different archival systems to preserve a redundant copy of the record in separate locations. The software must maintain a searchable index of archived recordings detailing time and date stamps as well as labeling that would allow for immediate identification of needed records. Vendor provided archive servers must have enough storage capacity to maintain on-line storage of digital recordings for a minimum period of six months.

Centralized Monitoring Over Distributed Network

An integrated DCR system enables operators to hear, see, and record audio and video in real time. By leveraging network based systems to listen to and observe court proceedings activity, operators can efficiently monitor several rooms simultaneously from a remote location over the court's local or wide area network if required.

In order to effectively monitor a court proceeding, the DCR system must allow an operator to view sound level indicators of each audio channel with ease. The operator must be able to clearly and distinctly listen to the recorded audio or channels of sound to determine and monitor the quality of the recording. Separate audio channels allow the listener the ability to isolate the microphone/speaker on an individual channel allowing for greater clarity. Closed circuit or network based video cameras are also an important component of the system that allows for centralized monitoring and identification of speakers and events in the court proceedings as well as the option of capturing video with the record.

However, the DCR system should provide an operator with the capability to centrally monitor at least four integrated court proceedings remotely in a LAN environment, using a business class desktop computer or workstation.

The DCR system must provide for a comprehensive graphical user interface to enable a DCR operator to:

1. View a list of monitored court proceedings.
2. Read status indicator(s) of court recording activity.
3. View live images of at least four court proceedings on a single display.
4. Display on screen messaging including status, time and date stamp, and allow for input of the case identifier(s).
5. Room switching must be an integrated part of the software.

User Interface

The DCR system must provide a visual user interface for court personnel to monitor, record, and playback recordings of court proceedings. User profiles should allow for customized levels of

access and administrative control of the system to prevent unauthorized use and/or damage to the system. Rule based security must be part of the application, and at a minimum events shall be logged by user name with date and time stamps.

Operators must have the ability to perform basic recording control features such as start, stop, pause recording, and playback of audio to a sound reinforcement system in a recording room either locally or remotely.

The DCR software should provide methods to assist with identifying an active speaker during recording. Monitors and operators should have the ability to input relevant annotations that are attached to the recording using a standard computer keyboard.

3). Preserve Integrity of the Record

It is important that the DCR system preserve the integrity of the electronic record after a court proceeding has been recorded through appropriate system configuration or storage medium, whether on fixed disk or removable media. The recordings must be tamper resistant with provisions to ensure that the record cannot be tampered with after it is recorded into the system. The archive and redundancy systems must have "record over" protection. The DCR System must offer backup methodologies consistent with the court's requirements for the protection and recovery of its records. At a minimum the system must allow for the offsite backup of the data structure and recordings.

Provisions must be made to provide for fail-safe operation and maximum uptime.
Although fixed disks are reliable, all server equipment responsible for recording should have no single point of failure. System power considerations should be planned during the installation phase to allow for 15 minutes of continued operations at all levels of the system to allow for controlled shutdown during extended power outages, and to reduce loss of recording of proceedings and system damage. Power considerations should include at a minimum the server bank, switches, routers, and workstations associated with monitoring and recording.

In complex configurations where equipment is responsible for recording multiple recording rooms using one or more servers, the DCR system must have a secondary/backup method. The backup method must operate independent of the primary recording server to provide for redundant, fault tolerant operations. It is expected that all participating recorded rooms provide an independent composite audio channel to the secondary/backup system. All primary servers must be configured to provide and support RAID Level 5 for all fixed disks and secondary servers RAID 1.

The DCR system must be able to copy recorded content immediately following the end of the proceeding to portable media such as CD-ROM or DVD. The system must also allow for full backup of recordings and data structures using industry standard backup software and methods. The DCR system must allow for network and user profile based security to control levels of access and prevent unauthorized access and potential damage, which shall be incorporated into the application. The system should allow for stronger security if it is deemed necessary. The

system must support the ability to seal all or portions of the recordings utilizing user authorization, encryption, and seal keys.

The DCR system must be protected by anti-virus and anti-spam technologies to avoid loss of data. Remote access by vendors for purposes of working or maintaining systems shall be done in a secure manner in alignment with the court's security standards and expectations both at the state and local level. The system shall not allow for access without court approval. DCR systems shall be designed in a manner that would not preclude it from being updated to work with new releases of Operating Systems. It must also accept regular security and software patches to the Operating System.

4). File Association

The DCR system must be able to associate all related content with the recorded event such as audio, video, annotations and machine understandable data (metadata) to be viewed as a single digital record.

5). Provide Search and Access for Recordings

It is expected that all DCR technology must be accessible for operation over a networked environment. Systems must be capable of streaming live or pre-recorded audio to select users over court network. The system should be capable of delivering this feature to a Web server over the Internet using appropriate security. Additionally, the DCR system must be capable of serving audio and/or video "on demand" to court personnel over network or made available to Internet users through secure Web servers.

Each recording shall be labeled in a logical sequence where it can be identified and accessed in the event the data structure/index fails. At a minimum, each recording shall be labeled with the date, time, and recording room when placed in the data structure. Random labeling of recordings will seriously impair the ability of the recording to be identified in the event of an index corruption or failure. If the data structure has to be rebuilt, the logical labeling of recordings offers a built in structure that can be easily integrated into a new index. All recorded information must be indexed and searchable through a common interface. Recordings must be searchable using a case identifier, filenames, date and time stamps, and annotations as well as any associated metadata captured during and after the recording.

All recordings must be accessible through a common index and made available for searching immediately after it has been recorded.

The DCR system must provide meaningful reports to assist in management of common and relevant analytical and operational information including recording utilization, recording storage capacity, audit logs and security access information.

DCR Technical Constraints

Quality of DCR System Software

The Appellate and Circuit Courts utilize standardized operating systems, and are continually upgrading to new releases. The DCR system should be compatible with all major platforms and should not use proprietary hardware or software. The system should support open standards including but not limited to HTML, ODBC/JDBC, TCP/IP, and XML that can be utilized to facilitate search requests, data retrievals, electronic submission and transport of all digital data. Stable open source server platforms that are OS independent are acceptable.

Software installation

Installation routines that feature both text-mode and graphical user interfaces including the use of W3C HTML 3.0 compliant web browsers, supporting a wide variety of video hardware at reasonable color depths and resolutions. In cases where the graphical interface is not desired or supported, a text mode interface must be made available to provide the user with the same functionality. The text mode installation should spare the novice the intimidation of a command prompt. The text interface should provide a friendly script driven interface to the text mode installer. The DCR software application should be independent of the operating system version.

Driver support

The system shall utilize an automatic hardware detection system to discover hardware, OS kernel version and server drivers to use with devices such as Firewire, PCI, AGP, USB, and PCMCIA devices. The vendor must provide timely support for driver support, updates, and functionality.

Version control

All packages, including drivers, audio applications, and servers related to multimedia, operating system and kernel patches, will be provided in their latest version, to be fully tested by the systems integrators and court staff. System upgrades should be equally applied to avoid having multiple versions of an application running in the DCR environment that could frustrate future troubleshooting processes.

Sound architecture support

The DCR software should fully support standard sound interfaces and APIs on workstations and servers. It is expected that all audio software interfaces are certified by the manufacturer for operation within the intended environment, including consumer sound cards to professional multichannel audio interfaces. The DCR software should be fully modular including support for symmetrical multi processors and have thread safe design. The audio file structure shall be exportable open source formats such as .wav, .mp3, .avi, .au or similar industry standard playable by any open source playback software. Server environments shall provide the same level of 3rd party vendor support, functionality, and ease of integration into the DCR

environment.

Usability considerations

The Court supports standardized browsers and all court staff are able to access Web based services using these browsers. The user interface must be optimized for use with the screen size of 1024 x768 pixels. However, only features supported by the browser that are aligned with W3C standards should be used for core functionality. In addition to the W3C markup and style sheet standards, all user interfaces that are developed, procured, or otherwise acquired on or after July 1, 2006, must comply with the requirements of the Florida Accessibility of Information and Technology Act (see sections 282.601-282.606, Florida Statutes) and the Standards Applicable to Electronic and Information Technology as set forth in Rule 60EE-1.002, Florida Administrative Code.

DCR Standards and Functions Summary

Required

1. Must be able to produce high quality digital masters for archival preservation of the recording in a court proceeding.
2. Recording must be clear and distinct and accurate for use by legal and judicial community for transcription.
3. Must have the ability to record on multiple channels.
4. Audio recordings will be recorded at a minimum sampling rate of 44.1KHz at 16 bits.
5. Playback capability to the recorded room must be supported.
6. For remote monitoring over the LAN, bandwidth should not exceed 128 Kbps and shall not exceed 512Kbps per recorded room.
7. For remote monitoring the WAN, bandwidth usage should not exceed 384Kbps and shall not exceed 512Kbps.
8. For retrieving recordings over the WAN, bandwidth should not exceed 384Kbps and shall not exceed 512Kbps.
9. Voice traffic shall be QOS prioritized.
10. Standard Courtrooms shall have a minimum of 4 channels.
11. Hearing rooms shall have a minimum of 2 channels.
12. Backup fault tolerant recording shall have a minimum of 1 channel mixed recording.
13. Laptops or standalone units shall have a minimum of 2 channels of recording with the ability to archive back to the main system.
14. Handheld recorder shall have a single channel recorder.
15. All system configurations must have the ability to verify the status of the recorded audio for the primary and backup recording systems as the system is recording. The system must be able to record and provide playback of the recording.
16. System shall include an automated record activation feature to allow for unattended operation using a user configurable scheduler.
17. Scheduled activation shall allow for multiple recording events to be programmed using varied scheduled dates, including starting times and duration of recordings, and VOX.
18. Scheduled events will be on a per court proceedings basis, and shall be flexible to allow varied events at different times.
19. The DCR system shall organize recordings using an indexed data structure that can be easily backed up and recovered by the user.
20. The DCR system must utilize a centralized and distributed index which is redundant for failsafe operation.
21. All recording servers used in support of the central recording model must have archival systems that operate mutually exclusive of each other.
22. Primary and secondary recordings shall archive to different archival systems to preserve a redundant copy of the record in separate locations.

23. The software must maintain a searchable index of archived recordings detailing time and date stamps as well as labeling that would allow for immediate identification of needed records.
24. Vendor provided archive servers must have enough storage capacity to maintain on-line storage of digital recordings for a minimum of six months.
25. The DCR system must allow an operator to view sound level indicators of each audio channel with ease.
26. The operator must be able to clearly and distinctly listen to the recorded audio or channels of sound to determine and monitor the quality of the recording.
27. The DCR system must provide for a comprehensive graphical user interface to enable a DCR operator to:
    a. view a list of monitored court proceedings
    b. Read status indicator(s) of court recording activity
    c. view live images of at least four court proceedings
    d. display on screen messaging including status, time and date stamp, an allow for input of the case identifier(s)
    e. Room switching must be an integrated part of the software
28. The DCR system must provide a visual user interface for court personnel to monitor, record, and playback recordings of court proceedings.
29. Rule based security must be part of the application, and at a minimum events shall be logged by user name with date and time stamps.
30. Operators must have the ability to perform basic recording control features such as start, stop, pause recording, and playback of audio to a sound reinforcement system in a recording room either locally or remotely.
31. The recordings must be tamper resistant with provisions to ensure that the record cannot be tampered with after it is recorded into the system.
32. The archive and redundancy system must have "record over" protection.
33. The DCR System must offer backup methodologies consistent with the court's requirements for the protection and recovery of its records (I&I).
34. At a minimum, the system allow for the offsite backup of the data and recordings.
35. Provisions must be made to provide for fail safe operation and maximum uptime.
36. In complex configurations where equipment is responsible for recording multiple recording rooms using one or more servers, the DCR system must have a secondary/backup method. The backup method must operate independent of the primary recording server to provide for redundant, fault tolerant operations.
37. All primary servers must be configured to provide and support RAID Level 5 for all fixed disks and secondary servers RAID 1.
38. The DCR system must be able to copy recorded content immediately following the end of the proceeding to portable media such as CD-ROM or DVD.
39. The system must also allow for full backup of recordings and data structures using industry standard backup software and methods.

40. The DCR system must allow for network and user profile based security to control levels of access and prevent unauthorized access and potential damage, which shall be incorporated into the application.
41. The system must support the ability to seal all or portions of the recordings utilizing user authorization, encryption, and seal keys.
42. The DCR system must be protected by anti-virus and anti-spam technologies to avoid loss of data
43. Remote access by vendors for the purposes of working or maintaining systems, shall be done in a secure manner in alignment with the court's security standards and expectations both at the state and local level.
44. The system shall not allow for access without court approval.
45. DCR systems shall be designed in a manner that would not preclude it from being updated to work with new releases of operating systems, and must accept regular security and software patches to the operating system.
46. The DCR System must be able to associate all related content with the recorded event such as audio, video, annotations and machine understandable data (metadata) to be viewed as a single digital record.
47. DCR technology must be accessible for operation over a network environment.
48. Systems must be capable of streaming live or pre-recorded audio to select users over the court network.
49. The DCR system must be capable of serving audio and/or video on demand to court personnel over network or made available to the Internet users through secure Web servers.
50. Each recording shall be labeled in a logical sequence where it can be identified and accessed in the event the data structure/index fails. At a minimum each recording shall be labeled with the date, time, and recording room when placed in the data structure.
51. All recorded information must be indexed and searchable through a common interface
52. Recordings must be searchable using a case identifier, filenames, data and time stamps, and annotations as well as any associated metadata captured during and after the recording
53. All recordings must be accessible through a common index made available for searching immediately after it has been recorded.
54. The DCR system must provide meaningful reports to assist in management of common and relevant analytical and operational information including recording utilization, recording storage capacity, audit logs and security access information.
55. The system shall utilize an automatic hardware detection system to discover hardware, OS kernel version and server drives to use with devices such as Firewire, PCI, AGP, USB and PCMCIA devices
56. The vendor must provide timely support for driver support, updates, and functionality.
57. In cases where the graphical interface is not desired or supported, a text mode interface must be made available to provide the user with the same functionality.

58. All packages, including drivers, audio applications, and servers related to multimedia, operating system, and kernel patches will be provided in their latest version, to be fully tested by the systems integrators and court staff.

59. Audio file structure shall be exportable to open source formats such as .wav, .mp3, .avi, .au or similar industry standard playable by any open source playback software.

60. Server environments shall provide the same level of 3rd party vendor support, functionality, and ease of integration into the DCR environment.

61. The user interface must be optimized for use with the screen size of 1024X768 pixels.

62. The system must comply with the requirement of the Florida Accessibility of Information and Technology Act (see sections 282.601-282.606, Florida Statutes) and the Standards Applicable to Electronic and Information Technology as set forth in Rule 60EE-1.002, Florida Administrative Code.

63. Monitors must have the ability to input relevant annotations that are attached to the recording using a standard computer keyboard.

Recommended

1. Data structures should have the ability to accommodate a web based interface for ease of access for limited use such as search and listen, if required for local court needs.
2. For monitoring, the quality expectation should be at least 30 frames per second for video. For capturing video.
3. For capturing video, the quality expectation should be at least 15 frames per second.
4. Mpeg4 Layer 10 and H.264 for video is preferred.
5. Higher bandwidth allowed after hours, should not impact regular business, and bandwidth requirements can be changed with local court approval based on availability of local resources.
6. The DCR system should record the spoken word automatically, unattended, without operator involvement when the scheduler is enabled.
7. When the scheduler is enabled, the recorded conversation should be comprehensive, without loss of spoken word or phrase.
8. Data structures should have the ability to accommodate a web based interface for ease of access for limited use such as search and listen, if required for local court needs.
9. Archiving methods should utilize industry standard technologies and methods for backup, storage, recovery, and organization of archival digital recordings.
10. Backups should be flexible enough to allow for offsite storage of records.
11. Archives should be indexed using an automatic numbering scheme for labeling and easy identification for retrieval.
12. The DCR system should provide the operator with the capability to centrally monitor at least four integrated court proceedings remotely in a LAN environment, using a business class desktop computer or workstation.
13. User profiles should allow for customized levels of access and administrative control of the system to prevent unauthorized use and/or damage to the system.
14. DCR software should provide methods to assist with identifying the active speaker during recording.
15. All server equipment responsible for recording should have no single point of failure.
16. System power considerations should be planned during the installation phase to allow for 15 minutes of continued operations at all levels of the system to allow for controlled shutdown during extended power outages, and to reduce the loss of recording of proceedings and system damage.
17. The system should allow for stronger security if it is deemed necessary.
18. The system should be capable of delivering streaming live or pre recorded audio to select users through a web server over the Internet with appropriate security.
19. The DCR system should be compatible with all major platforms and should not use proprietary hardware or software.

20. The system should support open standards including but not limited to HTML, ODBC/JDBC, TCP/IP, and XML that can be utilized to facilitate search requests, data retrievals, electronic submission and transport of all digital data.
21. Stable open source server platforms that are OS independent are acceptable.
22. If a text mode interface is used, the installation should spare the novice the intimidation of a command prompt and provide a friendly script driven interface to the text mode installer.
23. System upgrades should be equally applied to avoid having multiple versions of an application running in the DCR environment that could frustrate future troubleshooting processes.
24. DCR software should fully support standard sound interfaces and APIs on workstation and servers.
25. DCR software should be fully modular including support for symmetrical multi processors and have thread safe design.