

Indiana Archives and Records Administration E-Record Storage and File Format Guide

Please note that this is a section of a larger set of guidelines that are still under review. IARA determined that releasing this section was necessary and appropriate at this time. May 6, 2020

Electronic Records Storage Location Best Practices

Collaborative Spaces

Applications such as SharePoint and Teams are considered collaborative spaces as they allow multiple people to work in a single, shared location. If you are creating a collaborative space, it is a best practice to assign a second owner at the point of creation whenever possible. This acts as a backup plan in the event that you are unable to continue managing the collaborative space.

Any files saved exclusively to the collaborative space and which pertain to the work of your agency are public records and must be retained in accordance with Oversight Committee on Public Records approved retention schedules. If a file is saved in the collaborative space and also elsewhere, ensure you are retaining both copies in accordance with Oversight Committee on Public Records approved retention schedules. For example, if you save a document to a SharePoint site but also share a copy of the same document in Teams, ensure you are retaining both appropriately. In some cases, it may be important to retain both.

If a collaborative space becomes inactive or is no longer needed, ensure content is retained in accordance with Oversight Committee on Public Records approved records retention schedules. This applies to all content created in and saved exclusively to the collaborative space. For example, a single Teams instance may contain multiple channels, multiple conversations within those channels, documents within the associated SharePoint site, images shared in a conversation or elsewhere, video recordings, or chat logs. It is an acceptable practice to copy or remove public records to a secure, backed-up location for the length of their required retention period, transferring permanent records to the Indiana Archives when they reach the end of their agency retention period. The Teams instance should then be maintained for the longest relevant retention period of any records that have not been transferred or copied elsewhere, or for a minimum of three years, whichever is longer.

Records Management for server space, networked drives, and the Cloud

Save records to a secure, backed up, agency managed location

Any files which pertain to the work of your agency are public records regardless of format and must be retained in accordance with Oversight Committee on Public Records approved retention schedules. When it comes to saving records, look for a location that is secure, backed up, and agency managed.

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It is a best practice to save records to a location which is backed up on a regular basis to a secondary geographic location. Never save records to your computer Desktop or an external device such as a USB key or thumb drive as these locations are not backed up.

Save records to secure locations where you have reasonable assurance they cannot be altered or tampered with. For example, saving records to a location shared with users external to your agency is not a best practice. Whenever applicable put safeguards on records that prevent others from editing or otherwise tampering with them.

Whenever possible save records to a space your agency manages or owns. Refrain from saving records to temporary locations, or locations to which you may not have long-term access. If you must save records to a location to which you may not have long-term access, ensure you have a contingency plan for transferring the records to a more permanent location when necessary.

Limit your personal items

- Follow the Information Resources Use Agreement (IRUA). Specifically, do not save personal audio and video files.
- To help limit personal items, save personal files to a specific folder. Then during your regular clean up make sure to empty this folder.

Stay organized

- Follow any file or folder naming conventions your agency has created (see [File Management](#) for more information on naming conventions).
- Remove duplicates and unnecessary drafts.
- Perform regular clean ups of any storage space you own or use.

Shared Inboxes

If you are the owner of a shared inbox, it is your responsibility to retain the contents in accordance with Oversight Committee on Public Records approved retention schedules.

15 years or longer retention

Not every storage system will be reliable over the long-term. If you have electronic records that must be retained for 15 years or longer, a best practice is to create a microfilm copy. You can use the electronic records as your access copy, when you need to quickly access information. The microfilm is kept as the master copy, to be used in the event the electronic records are inaccessible. This is an especially important best practice for any records which would be required by your agency during or after a disaster. If you would like to learn more about microfilming state and local government records the [State Imaging and Microfilm Lab](#) can help.

File Management

Recommended File Formats

Indiana Code 5-14-3 requires that agencies make public records that are created electronically (born digital) available electronically. As a result, agencies may be required to migrate some legacy or proprietary formats and software before transferring electronic records to the Indiana Archives. In general, it is a best practice for agencies to ensure that electronic records may always be easily accessed, particularly in the event of a public records request. More information may be found in Indiana’s Public Records: The Legal Framework of Records and Information Management in State Government. The recommendations in this section pertain to both born digital and digitized records.

File formats appropriate for archiving are:

- Non-proprietary and in common usage
- Uncompressed – any compressed formats should be lossless
- Adherent to an open, documented standard
- Interoperable among diverse platforms and applications
- Fully published and available royalty-free
- Developed and maintained by an open standards organization

The following list was compiled after a survey of best practices from the National Archives and Records Administration, Society of American Archivists, Library of Congress, and the Council of State Archivists. Preferred refers to file formats to which the above institutions give strong support. Acceptable refers to either file formats to which the above institutions give good support or IARA is willing to support based on current Indiana State government practices.

Audio

Preferred	WAV or WAVE, BWF, AIFF
Acceptable	MXD, FLAC

Containers

Preferred	TAR, GZIP, ZIP
Acceptable	7z

Computer Aided Design (CAD)

Preferred	SVG, X3D
Acceptable	U3D, PRC

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Databases

Preferred	XML, CSV
Acceptable	TXT

Email

Preferred	EML, MBOX, PST
Acceptable	XML, MSG, Native Format (with approval)

Geospatial

Preferred	SHP, GeoTIFF
Acceptable	NetCDF, DBF

Image

Preferred	TIFF
Acceptable	PDF, JPEG 2000, PNG

Social Media Archives

Preferred	ZIP, HTML, RAR
Acceptable	JSON, WARC, ARC, Native Format

Statistics

Preferred	ASCII, DTA, POR, SAS, SAV
Acceptable	CSV

Tabular data

Preferred	CSV
Acceptable	TXT

Text

Preferred	TXT, XML, PDF or PDF/A
Acceptable	RTF, HTML, ASCII, UTF-8

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Video

Preferred	MOV, MPEG-4, MPEG-2 AVI
Acceptable	MXD, MKV

Web

Preferred	WARC
Acceptable	ARC, native format

Naming Conventions

It is a best practice to name files and folders according to official and clearly communicated agency-wide naming conventions. Useful naming conventions are consistent, meaningful, and help people find information easily. When developing a standard, keep in mind these best practices:

- Vocabulary – select a common vocabulary for file names so that everyone uses the same terminology. This includes abbreviations and acronyms.
- Order - confirm which element should go first, so that files on the same topic can be located more easily.
- Punctuation – decide on procedures for if and when to use capital letters, hyphens, symbols, or underscores. Avoid special characters and spaces.
- Dates – agree on a logical date format so that files display chronologically, e.g. YYYY-MM-DD or YYYYMMDD.
- Version – specify the number of digits that will be used in numbering so that files are listed in numerical order
- Documentation – write down your agency’s naming rules and make them available.

The following recommended standards may be used as file naming guidelines. This list is not exhaustive, and not all conventions will apply in every situation.

- Consistency is key. Ensure that agency staff are trained to utilize any file naming conventions.
- If abbreviations or acronyms are used, keep a document explaining their full meanings.
- Keep file and folder names short but informative; consider the Windows 260 character file path limitation.
- Use descriptive keywords in the names that reference the content, series, and/or topic of the records.
- Use capital letters, dashes, or underscores rather than spaces to delimit words.
- Order the elements in file names in the most appropriate way to locate and retrieve records.
- Discourage redundancy in file names and directory paths.
- Restrict the use of non-alphanumeric characters whenever possible.

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- Include a leading zero when entering numbers in a file name – unless the number is a year – to maintain numerical order.
- Input four digit years, two digit months and two digit days if incorporating dates.
- Avoid using only personal names on directory folders.
- Place the family (last) name first, followed by the initial(s), if including people's names within file/folder titles.
- Verify that all words are spelled properly and dates are correct.

Structure and Organization

Files and folders should be organized in a structure that is in keeping with the needs of anyone with access, in accordance with any agency established conventions, and should be consistent across the agency. It is best to avoid too many folders within folders as this can make it difficult to quickly browse files and can prolong search times. Similarly, it is best to avoid placing all files in a single folder as this can also make browsing difficult, and can also prevent the ability to provide different levels of access.

Long-term File Maintenance

While a record series may be permanent, the file format and/or media on which it is stored is not considered permanent. In accordance with Oversight Committee on Public Records retention schedules, some electronic records may need to be retained by an agency permanently. Even electronic records which may need to be retained for 10, 20, or 30 years still require a higher level of care than you may be accustomed to with paper records.

To help ensure continued accessibility files need to periodically be migrated from one format to another, or from one storage device to another. It is important to familiarize yourself with file format best practices and the manufacturer of any media you have to ensure you are migrating according to approved specifications.

When migrating files to a new file format, best practice is to select a format which is considered preservation-level, is not proprietary, is lossless whenever possible, is in common use, has metadata support, and has available documentation. If you must use proprietary formats, please select ones which are well supported and in common, widespread use. See the section in these Guidelines on File Formats for specifics.

When migrating files to a new storage device, ensure you understand the lifespan of the device by reading the manufacturer's specifications and reviews of the device. Physical media formats such as disks, CDs, SD cards, and magnetic tape may require further review by the Indiana Archives prior to transmittal by for potential preservation issues. Your agency may also be required to convert or migrate records if they have not been held in an acceptable modern format. Depending on how files will be transmitted, you may be asked to run a virus scan and submit proof of virus-free files prior to submission.

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If you have questions or concerns about file formats or the migration process, please contact the Electronic Records division of IARA, erecords@iara.in.gov.

Recommended Capabilities for Electronic Record Keeping Systems

IARA provides State Form 56882 for state and local governments searching for a new electronic recordkeeping system. This form is also useful for ensuring an existing system meets recommended best practices. While it is not required to return the filled out form to IARA, if you would like feedback or to contribute to IARA's research please send the completed form to the Electronic Records division of IARA, erecords@iara.in.gov.