

# **Archive eXchange Format Explorer**

User's Guide

Release 2.0

Version 1.1

August 2021

## Copyrights and Trademark Notices

Specifications subject to change without notice. Copyright © 2020 Telestream, LLC. Telestream, CaptionMaker, Cerify, DIVA, Episode, Flip4Mac, FlipFactory, Flip Player, Gameshow, GraphicsFactory, Lightspeed, MetaFlip, Post Producer, Prism, ScreenFlow, Split-and-Stitch, Switch, Tempo, TrafficManager, Vantage, VOD Producer, and Wirecast are registered trademarks and Aurora, Cricket, e-Captioning, Inspector, iQ, iVMS, iVMS ASM, MacCaption, Pipeline, Sentry, Surveyor, Vantage Cloud Port and Vidchecker are trademarks of Telestream, LLC

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

---

---

# Contents

<b>Preface</b> .....	vii
Audience.....	vii
Documentation Accessibility .....	vii
Related Documents .....	vii
Document Updates .....	vii
Conventions.....	vii
<b>1 Introduction</b>	
<b>New and Enhanced Features and Functionality</b> .....	1-1
<b>Limitations, Precautions and Recommended Practices</b> .....	1-1
Limitations .....	1-1
Usage Precautions .....	1-2
Recommended Practices .....	1-2
<b>Setting and Changing the Master Password</b> .....	1-2
<b>AXF Disk and Tape Storage Format</b> .....	1-2
<b>2 Installation</b>	
<b>3 Configuration</b>	
<b>General Configuration</b> .....	3-1
<b>Simulated Tape Library Configuration</b> .....	3-2
<b>Saving the Configuration</b> .....	3-2
<b>4 Operations</b>	
<b>Operations Overview</b> .....	4-1
<b>Operational Restrictions</b> .....	4-2
<b>AXF Explorer Icons</b> .....	4-3
<b>Informational Tooltips</b> .....	4-4
<b>Searching for AXF Objects</b> .....	4-9
AXF Object Search Controls .....	4-9
Setting the Starting Block Position .....	4-10
Searching to the Previous or Next AXF Object .....	4-10
<b>File Tree Page Selection and Navigation</b> .....	4-10
File Tree Multiple Page Selection.....	4-10

File Tree Page Navigation.....	4-11
<b>Extracting Metadata</b> .....	4-11
<b>Performing Copy Operations</b> .....	4-12
Copying files and Folders .....	4-12
Rebuilding Fragmented Files .....	4-12
Extracting the Contents of an Entire AXF Object .....	4-12
<b>Error Notifications</b> .....	4-15

## 5 Frequently Asked Questions

### Glossary

## List of Tables

3-1	AXF Explorer Configuration Options .....	3-1
4-1	AXF Explorer Icons.....	4-3

---

---

# Preface

Archive eXchange Format Explorer provides similar functionality to the Tape Reading Utility (TRU) supplied with earlier releases of DIVA Core and is for use with AXF formatted objects.

## Audience

This document outlines installation, configuration and operations of AXF Explorer for installers, system administrators and users.

## Documentation Accessibility

For information about Telestream's commitment to accessibility, visit the Telestream Support Portal located at

<https://www.telestream.net/telestream-support/diva/support.htm>.

### Access to Telestream Support

Telestream customers that have purchased support have access to electronic support through the Telestream Support Portal located at

<https://www.telestream.net/telestream-support/diva/support.htm>.

## Related Documents

For more information, see the DIVA Core documentation set for this release at

<https://www.telestream.net/telestream-support/diva/support.htm>.

## Document Updates

The following table identifies updates made to this document.

Date	Update
February 2021	Rebranded document to Telestream Updated copyright notices

## Conventions

The following text conventions are used in this document:

---

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.
<a href="#">blue text</a>	Blue text indicates a link to an outside source, or to another chapter, section, or glossary term in this book.

---

---

---

# Introduction

Archive eXchange Format Explorer provides similar functionality to the Tape Reading Utility (TRU) supplied with earlier releases of DIVA Core and is for use with AXF formatted objects. With the introduction of complex objects in DIVA Core 7.0, AXF Explorer offers an intuitive interface for parsing AXF files. The TRU utility is not compatible with complex objects or AXF files and therefore AXF Explorer must be used in its place.

This chapter includes the following information:

- [New and Enhanced Features and Functionality](#)
- [Limitations, Precautions and Recommended Practices](#)
- [Setting and Changing the Master Password](#)
- [AXF Disk and Tape Storage Format](#)

## New and Enhanced Features and Functionality

AXF Explorer has a separate installation package named `AXFExplorerInstaller.exe`, even though it is included in the DIVA Core software download. You must run the installer executable to install AXF Explorer - it is not automatically installed during the DIVA Core installation.

The utility enables the ability to completely dump an AXF object's metadata and contents to a local folder on a disk, and automatically merges fragments during file extraction or AXF dump.

## Limitations, Precautions and Recommended Practices

The limitations and precautions that must be observed when using AXF Explorer are discussed in the following sections.

---

---

**Caution:** Data loss may (or will) occur if the limitations and precautions in the following sections are not followed exactly.

---

---

### Limitations

The following limitations must be observed when using AXF Explorer. Data loss may (or will) occur if these warnings are not followed

- AXF Explorer must not be used on a live production system.
- All DIVA Core Actors and DIVA Core Managers must be stopped before initializing AXF Explorer.
- Only AXF objects located on tapes and local disks are displayed.

- Network locations are not displayed unless they are mapped drives.
- Only one extraction operations is performed at any given time.
- The utility only performs AXF tape read-only operations.
- Spanned objects can be extracted, however there is (currently) no ability to join the spanned objects together.

### Usage Precautions

AXF Explorer was not originally designed for use in a live production system. As a support tool, all Actors and Managers must be stopped before using the tool.

When a tape drive icon is clicked, the utility initiates a full scan of the contents of the tape. Therefore, AXF Explorer is sending positioning and reading commands to the tape drives. If a running Manager initiates a drive operation which causes Actor to use a tape drive, and AXF Explorer begins accessing the same drive simultaneously, there is a very high probability (99%) that the contents of the drive will be erased or corrupted resulting in total data loss.

The following recommendations are strongly advised to avoid data loss. Data loss may (or will) occur if these warnings are not followed.

- AXF Explorer must not be used on a live production system.
- All Actors and Managers must be stopped before using AXF Explorer.

### Recommended Practices

Telestream recommends that you use a reasonable value for the number of files shown on each File Tree page. Up to approximately 500 files per page is a good reference point because higher values lead to slower performance, greater memory use, and possible adverse effects on the server when navigating AXF objects containing many files.

## Setting and Changing the Master Password

AXF Explorer uses a master password as a precautionary measure to prevent access to tape drives upon initial startup. You change the master password by clicking **Management**, and then **Set Master Password**. The current Master Password must be entered before it can be changed.

## AXF Disk and Tape Storage Format

AXF (Archive Exchange Format) is an open source format supporting interoperability among disparate content storage systems and ensures the content's long-term availability no matter how storage or file system technology evolves.

An AXF object is an IT-centric file container that can encapsulate any number, and any type, of files in a fully self-contained and self-describing package. The encapsulated package contains its own internal file system, which shields your data from the underlying operating system and storage technology. In essence, the file system within a file can store any type of data on any type of storage media.

---

---

## Installation

AXF Explorer is a standalone utility and not installed during the DIVA Core installation process. The Microsoft.NET Framework 3.5 must be installed before installing AXF Explorer. This is included with the Windows Server package.

Use the following procedure to install AXF Explorer:

1. Open Windows File Explorer and navigate to the folder containing the DIVA Core installation package.
2. Unzip the AXF Explorer compressed file that was delivered with DIVA Core.
3. Start installation by double-clicking the AXFExplorerInstaller.exe installation file.
4. On the first screen (Choose Components), confirm that all check boxes are selected, and click **Next**.
5. On the Installation Location screen, confirm the installation folder name and path. Installing in the default folder is recommended.
6. Click **Install** to proceed with the installation.
7. When the final screen is displayed, click **Close** to complete the installation.

---



---

## Configuration

Overall there is no configuration required for AXF Explorer. However there are several interface items that may be configured as desired.

This chapter includes the following information:

- [General Configuration](#)
- [Simulated Tape Library Configuration](#)
- [Saving the Configuration](#)

### General Configuration

Click the **Management** menu item at the top of the screen, then click **Configuration**. The Configuration Setting screen appears. The following table describes the different options available on the configuration screen.

**Table 3–1 AXF Explorer Configuration Options**

Option	Definition
<b>Number of files shown per page in the File Tree</b>	Sets the maximum limit for the number of files to be displayed under the File Tree heading.
<b>Show AXF Tape Object name as:</b>	Configures how AXF object names are displayed on the <b>Tape Drives</b> tab. AXF object names are displayed using either an object-category name combination, or using the AXF object UUID.
<b>Show File Tree only and hide metadata</b>	Select the check box to only display the file tree.
<b>Include simulated drives and tapes</b>	The <b>Tape Drives</b> tab will display simulated drives and tapes, and also physical drives. A simulated tape library is only used for engineering purposes and not for a live production system.
<b>Location of Simulated data folder:</b>	Clicking this button opens a Windows Explorer folder and file browsing dialog box, enabling you to identify the Simulation Data Folder (if required).

**Table 3–1 (Cont.) AXF Explorer Configuration Options**

Option	Definition
<b>Previous Object Seek Method</b>	<p>Selects the seek method used to locate the previous AXF object. The methods are as follows:</p> <ul style="list-style-type: none"> <li>• <b>Use Previous Object Pointer from current AXF Object:</b> this method searches to the previous object based on the information found in the current object. This seek method is fast.</li> <li>• <b>Backward Block Scan:</b> this method locates a previous object by performing a backward block scan without relying on information in the current object. This method can be slow and is intended for tapes experiencing issues.</li> </ul>

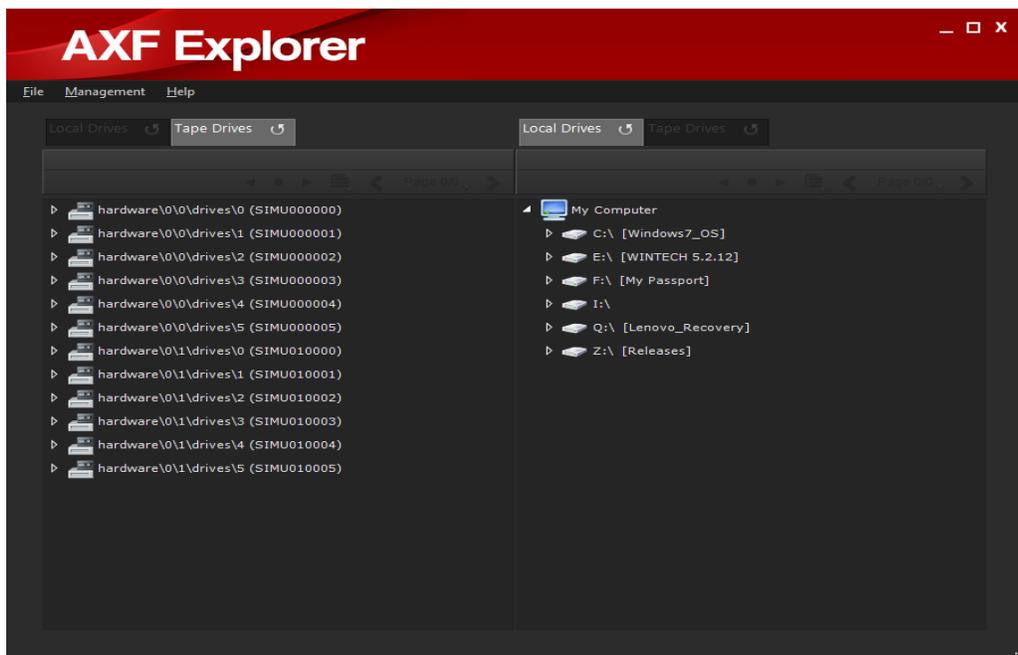
## Simulated Tape Library Configuration

The simulation option and folder simulate a tape library. Typically these options are not in use at a live site. Use the following procedure to configure a simulated tape library:

1. Click **Simulation Data Folder** to open the folder selection dialog box.
2. When you locate the desired simulation data folder, select the folder.
3. Click **OK** to load the location into the Configuration dialog box.

## Saving the Configuration

After all configuration settings have been confirmed, click **OK** in the Configuration screen to save the changes. Any configuration changes will cause AXF Explorer to reload the navigation trees for both the left and right viewing panes.



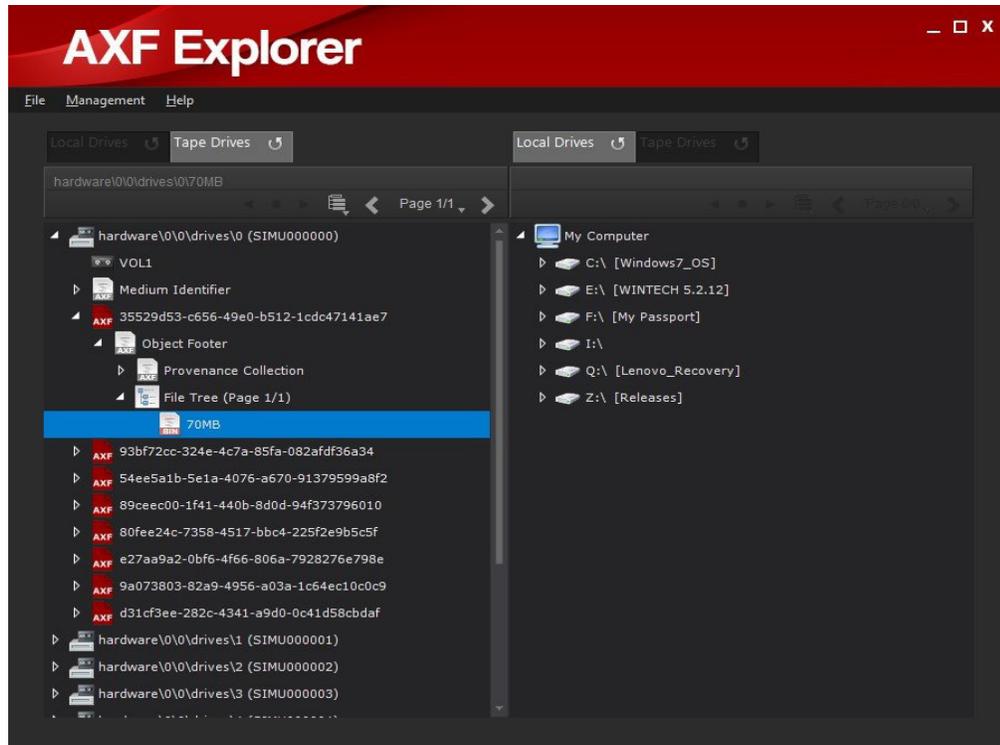
AXF Explorer operations are performed using drag-and-drop procedures similar to the Windows operating system. This chapter discusses the use of AXF Explorer and includes the following information:

- . [Operations Overview](#)
- . [Operational Restrictions](#)
- . [AXF Explorer Icons](#)
- . [Informational Tooltips](#)
- . [Searching for AXF Objects](#)
  - [AXF Object Search Controls](#)
  - [Setting the Starting Block Position](#)
  - [Searching to the Previous or Next AXF Object](#)
- . [File Tree Page Selection and Navigation](#)
  - [File Tree Multiple Page Selection](#)
  - [File Tree Page Navigation](#)
- . [Extracting Metadata](#)
  - [Copying files and Folders](#)
  - [Rebuilding Fragmented Files](#)
  - [Extracting the Contents of an Entire AXF Object](#)
- . [Performing Copy Operations](#)
- . [Error Notifications](#)

## Operations Overview

On the main screen, clicking the **Plus** icon next to a local drive or a tape drive will expand the drive (or tape) folder and file tree, enabling viewing of the folders and files contained on that specific drive (or inserted tape). Clicking the **Plus** icon next to a specific AXF file will expand the file to display the contents and enable copying of files.

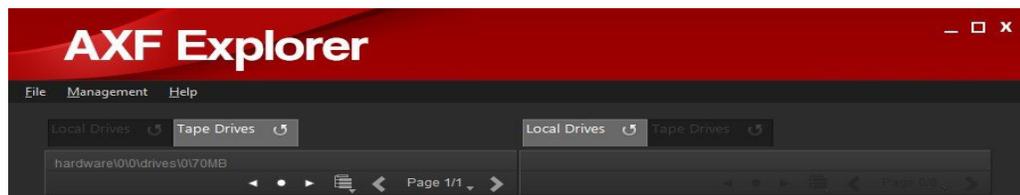
The two tabs located at the top of the right and left viewing panes are used for switching between **Local Drives** and **Tape Drives** views on either side of the display. Operations may be performed from either side of the display to the opposite side (right to left, or left to right) without concern of which side is displaying what drives. The **Refresh** button on each tab will refresh the current display. The button is active when the tab is active.



The number of file components displayed within the file navigation tree of an AXF object is set to a fixed value per page. You modify this setting on the Configuration screen. Each page will only display a subset of files, keeping the file navigation tree easy to read.

The navigation arrows just under the **Drive** tabs (on both sides of the screen) enable changing pages when the file tree is selected (and the tree is expanded), or when a file or folder in the file tree is selected. The number of pages will be displayed between the two arrows. The number on the left indicates the current page and the number on the right is the total number of pages. In addition, a slide control will also be active and can be used for navigating directly to a specific page.

The left arrow, circle, and right arrow icons to the left of the page navigation control how tape searching is performed.



## Operational Restrictions

When AXF Explorer is first run, all tape drive accessible areas are restricted and only local drives are accessible. This prevents accidental operation of a tape drive while it is being used by another program.

To enable tape drive access, click **Enable Tape Drive Access**. A confirmation message appears warning you that tape scanning operations may possibly cause data corruption. Click **OK** to confirm the action and enable reading the tape drives.

After confirming the warning, AXF Explorer will prompt you for the master password. The correct password must be entered before tape drive access is allowed. Contact Telestream Support if you do not have the master password.

## AXF Explorer Icons

The AXF Explorer GUI uses icons to identify different components as described in the following table:

**Table 4–1 AXF Explorer Icons**

Icon	Function	Description
	AXF Object Seek	Searches to the previous or next AXF object from a particular block position on a tape.
	Disk Drive	Local disks in the system.
	Tape Drive	Tape drives in the library.
	Tape	Tapes found within a tape drive.
	Local Disk Folder	Standard folders on local disks.
	AXF File	AXF formatted files that AXF Explorer can read.
	AXF Metadata	References sections of the AXF object containing metadata.
	File Tree	The AXF object's file tree.
	AXF Folder	File tree folders located within and AXF object.
	Inaccessible File	These files are inaccessible due to fragmentation. Operations cannot be performed on these files because they do not exist on the current tape.

**Table 4–1 (Cont.) AXF Explorer Icons**

Icon	Function	Description
	Fragmented File (first)	This identifies the first fragment of a file. Additional fragments will be on other tapes.
	Fragmented File (inner)	This identifies an inner fragment of a file. There may be one or more inner fragments. Additional fragments will be on other tapes.
	Fragmented File (last)	This is the last fragment of a file. All previous fragments will be on other tapes.
	Complete File	Complete files are not fragmented and can be fully extracted.

## Informational Tooltips

Pausing your mouse over a component displays a tooltip containing information about the selected (hovered) component.

The *Tape Drive* tooltip displays the following information about the tape drive:

**Device Name**

The name of the drive.

**Serial Number**

The serial number of the drive.

**Firmware**

The firmware release level of the drive.

The *Tape Volume* tooltip displays the following information about the tape within the drive:

**Identifier**

The ISO or ANSI standard volume label.

**Volume ID**

The unique identification code to identify the logical tape volume.

**Implementation ID**

Indicates the format used by the tape (AXF or Legacy)

**Owner ID**

The owner identifier of the tape volume.

The *Medium* tooltip displays the following information about the *Medium Identifier Element* in an AXF object. It contains the AXF volume signature and specific information for the storage medium.

**Medium Label**

The current volume serial number for the medium.

**Block Size**

Identifies the block size for the current storage medium.

**Medium UUID**

The universally unique identifier for the medium. This typically will not change when the medium is reformatted or reused.

The *Medium Provenance* holds the historical record for each storage medium. There may be one or more provenance records. The tooltip displays the following information:

**Medium Label**

The current volume serial number for the medium.

**Block Size**

Identifies the block size for the current storage medium.

**Prepared Time**

The date and time when the application prepared this storage medium for use. This value is expressed in UTC (Universal Time Code) format.

The *Application* tooltip provides the following information related to the system that created the AXF storage medium.

**Application Name**

The name of the application that created the AXF storage medium.

**Version**

The application release level.

**Description**

A description of the application.

**Serial Number**

The application's serial number.

The *Origin Environment* tooltip provides the following information about the environment of the system or device that created the AXF storage medium.

**Manufacturer**

The manufacturer of the device.

**Make**

The make of the device.

**Model**

The model of the device.

**Firmware**

The firmware release level of the device.

**Description**

A description of the device.

**Serial Number**

The serial number of the device.

**Medium UUID**

The universally unique identifier for the medium.

**Medium Label**

The medium label (equivalent to the barcode)

**Operating System**

The operating system the device runs on.

**Root Path**

Contains the parent or root path for the AXF object contents.

**Location**

Provides information regarding the location where the current AXF object instance was created.

The *Medium Preparer* tooltip provides the following information about the owner (person) who created the AXF storage medium.

**Name**

The name of the owner.

**Facility**

The name of the facility.

**Description**

The description of the owner.

**Operator**

The name of the operator.

The *Object Footer* tooltip provides the following information about the AXF object footer metadata.

**Object Name**

The name of the object.

**Category**

The category the object belongs to.

**UUID**

The universally unique identifier for the AXF object.

**Instance Preparation Time**

The time at which the instance was created.

**Collection Sequence**

A reference to a collection of objects (currently set to 1)

**Collection UUID**

The universally unique identifier for the collection.

**Number of Files**

The number of files in the AXF object's file tree.

**Number of Directories**

The number of folders in the AXF object's file tree.

**Object Payload Size**

The size of the object.

**Header Position**

The starting position of the object header metadata in bytes or block number.

**Footer Position**

The starting position of the object footer metadata in bytes or block number.

**Previous Header Position**

The position of the previous object header metadata in bytes or block number.

**Previous Footer Position**

The position of the previous object footer metadata in bytes or block number.

**Object Index Position**

The absolute block position pointing to the most recent object index structure written to the medium.

**File Footer Present**

Indicates whether the file footer is present.

**File Footer Checksum Type**

Identifies the checksum type used in the file footer structure.

The *Source Environment* tooltip provides the following information about the environment of the system or device that created the AXF object.

**Manufacturer**

The manufacturer of the device.

**Make**

The make of the device.

**Model**

The model of the device.

**Firmware**

The firmware release level of the device.

**Description**

A description of the device.

**Serial Number**

The serial number of the device.

**Medium UUID**

The universally unique identifier for the medium.

**Medium Label**

The medium label (equivalent to the barcode)

**Operating System**

The operating system the device runs on.

**Root Path**

Contains the parent or root path for the AXF object contents.

**Location**

Provides information regarding the location where the current AXF object instance was created.

The *Destination Environment* tooltip provides the following information about the environment of the system or device that holds the AXF object.

**Manufacturer**

The manufacturer of the device.

**Make**

The make of the device.

**Model**

The model of the device.

**Firmware**

The firmware release level of the device.

**Description**

A description of the device.

**Serial Number**

The serial number of the device.

**Medium UUID**

The universally unique identifier for the medium.

**Medium Label**

The medium label (equivalent to the barcode)

**Operating System**

The operating system the device runs on.

**Root Path**

Contains the parent or root path for the AXF object contents.

**Location**

Provides information regarding the location where the current AXF object instance was created.

The *Object Owner* tooltip provides the following information about the owner (person) who created the AXF object.

**Name**

The name of the owner.

**Facility**

The name of the facility.

**Description**

The description of the owner.

**Operator**

The name of the operator.

The *File Information* tooltip provides the following information about a file stored within the AXF object.

**Filename**

The name of the file.

**File ID**

The file identifier index.

**Size**

The size of the file.

**Position**

The block position within the AXF object where the file is located.

**Checksum Type: Checksum**

The checksum type and value calculated for the file.

The *File Fragment* tooltip provides the following information about a fragmented file stored within the AXF object.

**Filename**

The name of the file.

**File ID**

The file identifier index.

**Fragment Number**

The fragment number where the file fragment resides.

**Fragment Size**

The size of the fragment.

**Fragment Position**

The block position within the AXF object where the fragment is located.

**Original Size**

The original non-fragmented size of the file.

## Searching for AXF Objects

AXF Explorer normally searches to the end of a tape and locates all AXF Objects on the tape by following each pointer to the previous object. The seek operation may take an extended time to reach the end of tape. There may be instances where you may not want to wait that long to access an AXF Object. The seek time can be reduced by providing AXF Explorer with a starting block position on the tape to search. Using this method, you can seek to a previous or next AXF object starting from the set block position one object at a time.

### AXF Object Search Controls

The control buttons for setting the starting tape block position and searching to the previous or next object will appear when clicking a tape drive item in the tree.

The following three buttons are for seeking within an AXF object:

**Left Arrow**

The left arrow button searches to the previous AXF object from the starting block position of the tape.

**Center Button**

The center button (a filled in circle) sets the starting block position to search from and (or) view the current block position.

**Right Arrow**

The right arrow button searches to the next AXF object from the starting block position on the tape.

## Setting the Starting Block Position

Clicking the center button will display the dialog box to set the starting block position where the search for an AXF object will begin. The current start block position value will also be shown. The following two options are available for searching objects:

### Scan Entire Tape

AXF Explorer performs the standard AXF scanning operation by searching to the end of the tape and locating all AXF objects.

### Start Scan at Block

AXF Explorer starts scanning operations from the specified block position. Only the result of a single discovered AXF object is displayed in the tree.

## Searching to the Previous or Next AXF Object

After specifying a starting block position, click either **Search Previous Object** or **Search Next Object**. The drive will search to the specified starting block position and attempt to locate the AXF object. If successful, the AXF object will be added to the file tree. Only one AXF object will be discovered and added. After an AXF object has been located, you can click **Search Object** again to locate the next previous or next object.

When scanning for the previous AXF object, the method used to locate the next object in sequence is determined by the *Previous Object Seek Method* setting.

## File Tree Page Selection and Navigation

Each folder in the file tree can only display a certain maximum number of files per page. When selecting either the file tree or a desired file or folder, the file tree navigation buttons will activate. The selected folder must be expanded in order for the navigation panel to become active.

## File Tree Multiple Page Selection

For AXF objects containing file trees that span many pages (especially for complex objects), you can select every file without having to manually select them on a page-by-page basis. The name of the AXF object is displayed above the multiple selection list button. The multiple selection list contains the following two submenus:

### Select All Pages

Selects every file and folder entry that falls under the currently selected file tree.

### Unselect All Pages

Deselects every file and folder entry that falls under the currently selected file tree.



## File Tree Page Navigation

The current page and the total number of pages available will be visible as soon as the File Tree Navigation panel is active. Clicking the arrow buttons will take you to the previous or next page.

To jump to a specific page, click the **Page** link between the two arrows which will reveal a page selection control. Slide the control to the appropriate page and the file tree will then display it. The targeted page number will be visible to the left of the control.

## Extracting Metadata

The Metadata for a tape instance or an AXF object can be saved to the local drive. The metadata types that you can save for a tape instance are:

- . Medium Identifier
- . Provenance Collection
- . Provenance
- . Application
- . Origin Environment
- . Medium Preparer

The metadata types you can save for an AXF object are:

- . Object Footer
- . Provenance Collection
- . Provenance
- . Application
- . Source Environment
- . Destination Environment
- . Object Owner

To save the metadata, locate the desired metadata type using the navigation tree by expanding the tree of the tape instance or AXF object. You can select multiple objects by holding down the CTRL key (for individual object selection) or the SHIFT key (to select a range of objects) and then clicking the specific metadata types, or on the first and then the last metadata type in a range.

On the opposite panel (either right or left) locate the destination drive and folder (if applicable). Expand it as necessary using the **Plus** icon next to the drive and (or) folder.

After the source metadata type(s) and destination drive and folder have been selected, drag and drop the object to the desired destination location. The Copy Status dialog box will be displayed indicating that the copy operation is being performed.

If the saved metadata belongs to a tape instance, the file will be stored using the following file name format:

```
[tape label]_[metadata type]_[provenance number]_[sub-provenance type].xml
```

If the saved metadata belongs to an AXF object, the file will be stored using the following file name format:

```
[AXF Object UUID]_[metadata type]_[provenance number]_[sub-provenance type].xml
```

*A provenance number and sub-provenance type will only exist in the file name if the Metadata Type is a provenance.*

## Performing Copy Operations

Complete files stored within an AXF object can be individually extracted and saved to a local drive. Fragmented files located across multiple tapes can be extracted and combined real-time to recreate the original file. Additionally, the entire content (files and metadata) for an AXF object can be saved.

### Copying files and Folders

To copy a file (or multiple files) or folder from one drive to another, first locate the desired AXF file using the navigation tree. After you locate the desired file or folder, click the **Plus** icon to expand the AXF file to display the files it contains. Files or folders can be selected to be copied to the targeted destination. When selecting a folder, it indicates your intention is to copy all of its files and underlying sub-folders to the selected destination.

You select multiple objects by holding down the CTRL key (for individual object selection) or the SHIFT key (to select a range of objects) and then clicking the mouse button on the specific objects, or on the first and then the last object in a range respectively.

On the opposite panel (either right or left) locate the destination drive, tape, and folder (if applicable) and expand it as necessary using the **Plus** icon next to it.

After the source object(s) and destination drive and folder have been selected, click the object, drag and drop it to the desired destination location. A Copy Status dialog box displays indicating that the copy operation is being performed.

### Rebuilding Fragmented Files

Files split across multiple tapes result in AXF objects that contain only partial fragments of the whole file. There are 3 types of fragmented files which depict their position in an AXF object:

- . First
- . Inner
- . Last

For a fragmented file there can only be a single first fragment and a single last fragment. However, there can be multiple inner fragments. Each of these fragments must be joined together to recreate the original file.

Fragmented files can be copied out of AXF objects. Each fragment must then be written to the same location on the local drive. The order (or sequence) in which the fragments (first, inner, or last) are selected does not influence the way they are written when re-creating the file. Each fragment will be saved with the same name. However, they will not overwrite a previously extracted fragment. AXF Explorer will join them accordingly. After all fragments belonging to the file have been extracted, the file will be complete.

Fragment rebuilding is also possible when performing a full AXF object dump containing more than one selected AXF object (of the same UUID or Object Name-Category) into the same folder.

### Extracting the Contents of an Entire AXF Object

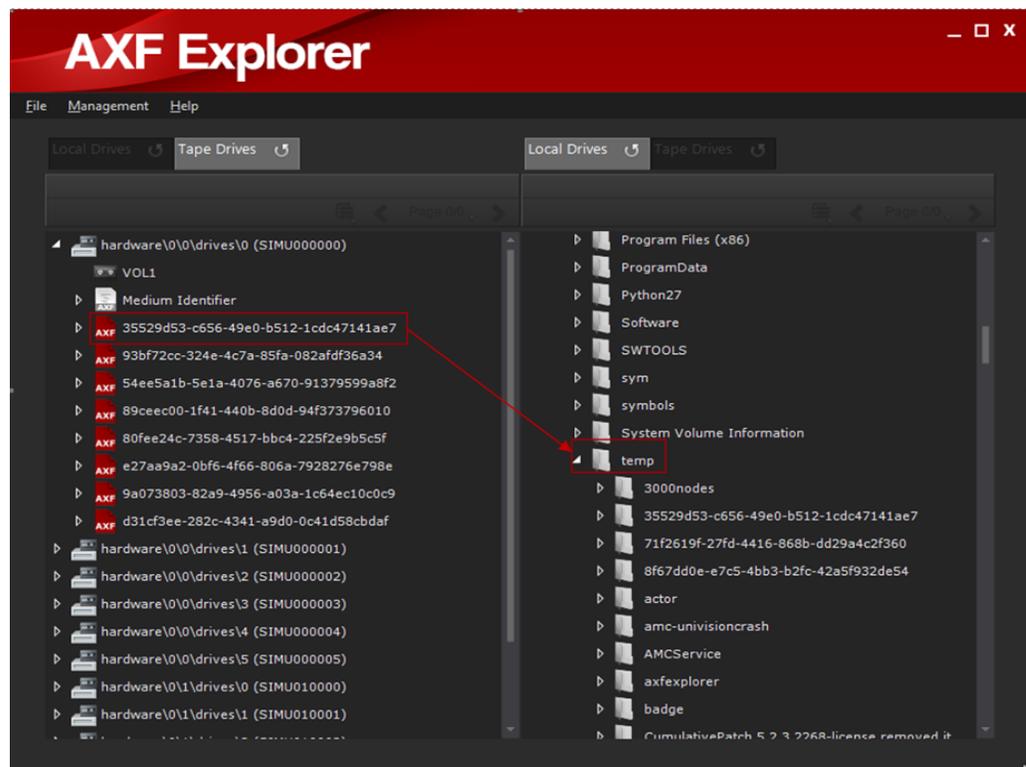
The entire contents (consisting of metadata, files, and folders) of an AXF object can be extracted and saved to local disk. When an AXF object dump is performed, a separate folder is

first created and designated with either the UUID or Object Name-Category. The folder name depends on the configuration setting for the *Show AXF Tape Object Name As* parameter. A data subfolder is created to hold the extracted file contents and a metadata subfolder is created to hold the AXF object metadata.

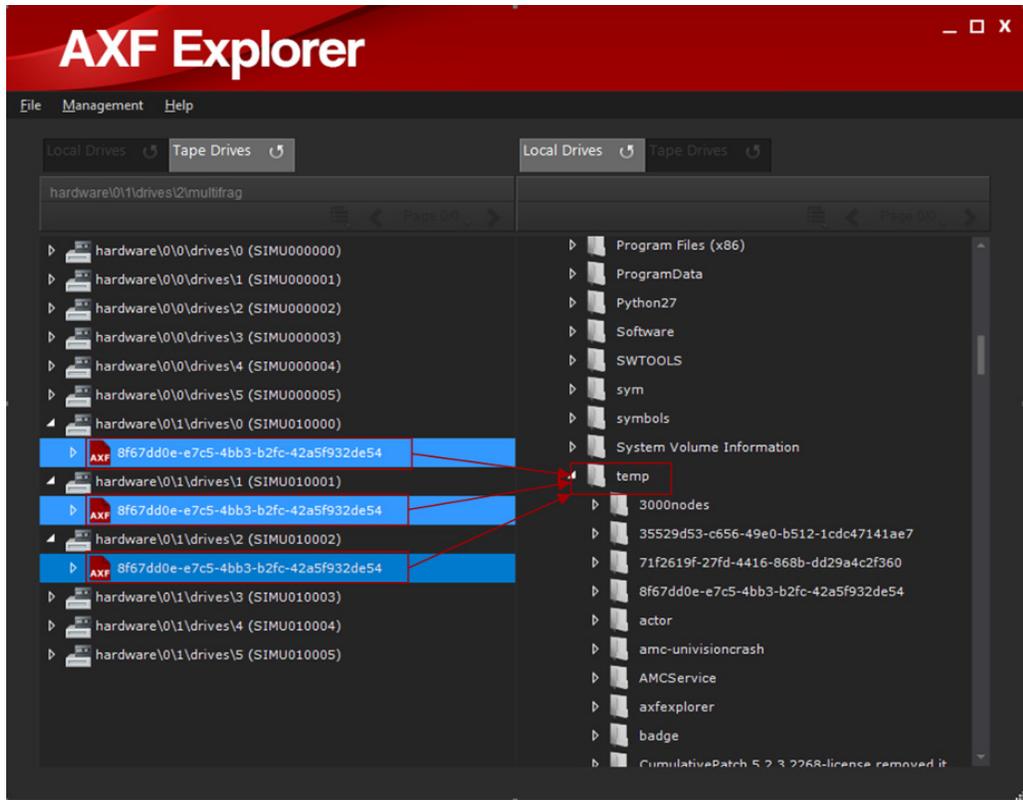
To dump the entire AXF object to local disk, first locate the desired AXF object using the navigation tree. You select multiple objects by holding down the CTRL key (for individual object selection) or the SHIFT key (to select a range of objects) and then clicking the mouse button on the specific objects, or on the first and then the last object in a range respectively.

On the opposite panel (either right or left) locate the destination drive, tape, and folder (if applicable) and expand it as necessary using the **Plus** icon next to it.

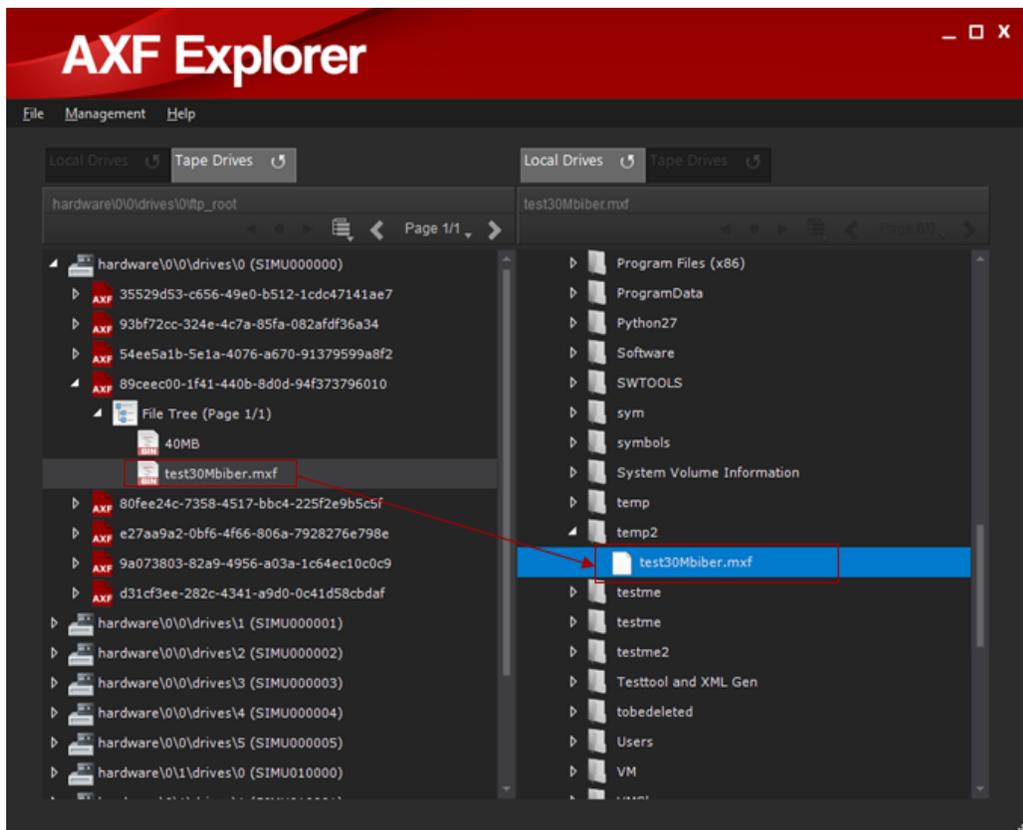
After the source object(s) and destination drive and folder have been selected, click the object, drag and drop it to the desired destination location. A Copy Status dialog box displays indicating that the copy operation is being performed.



The file fragments spanned across multiple disks will be rebuilt during the copy.



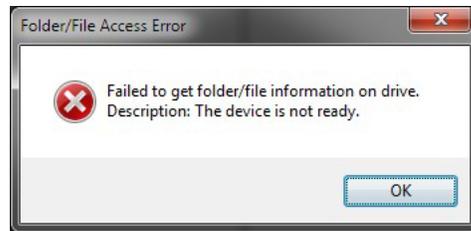
When the copy operation has completed successfully, the Copy Status dialog box will disappear and the object will be shown in the new location.



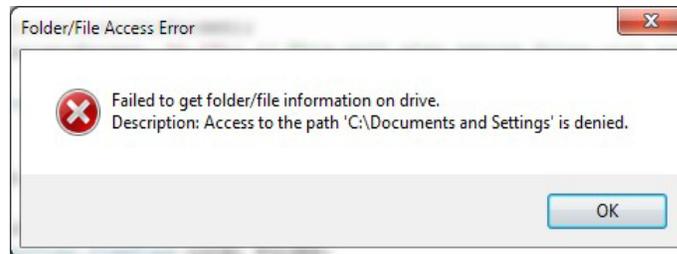
## Error Notifications

A dialog box displays when an error is encountered. The following list describes possible errors and their meanings:

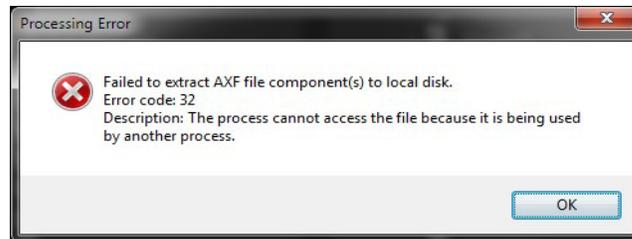
- The selected drive cannot be accessed to retrieve the drive's contents.



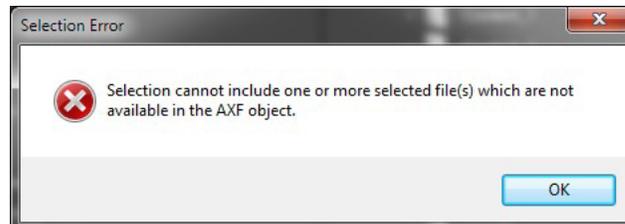
- A particular folder cannot be accessed while attempting to retrieve its file contents. A possible cause of this error is insufficient file permissions.



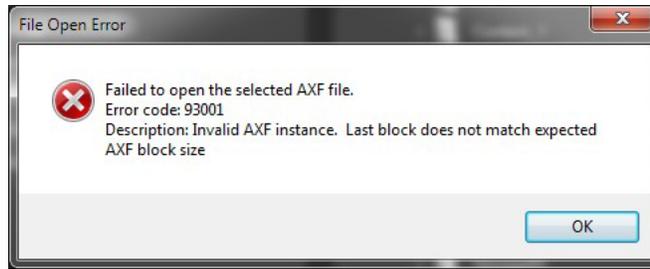
- The source file or destination file cannot be opened because it has been locked or is in use by another process.



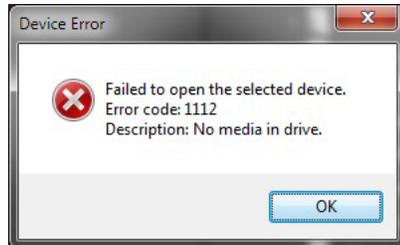
- AXF Explorer cannot extract the selected file component(s) because they are not available within the fragmented AXF object.



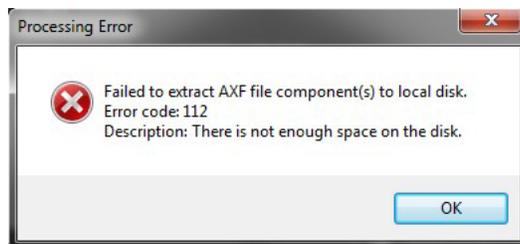
- The selected AXF file is corrupt or invalid.



- There is no media inserted in the tape drive.



- A write error occurred because no space remains on the target drive.



---

---

## Frequently Asked Questions

The following are some questions frequently asked by Telestream customers:

**Why are the navigation arrows inaccessible?**

The navigation arrows are only enabled when more than one page of drives, folders, or objects requires display. Either the file navigation tree, or a file or folder which falls under the file tree must be selected for the navigation panel to become active, and the selected item must be expanded and not in collapsed state.

**I selected my destination tape, and it is inserted into the library, so why can I not copy anything over to it?**

AXF Explorer will only allow you to read from tapes. You cannot drag and drop files from a local drive to tape.

**If I drag and drop a file, does AXF Explorer move it or make a copy of it?**

AXF Explorer will not move a file. It extracts the selected file(s) from the AXF object and copies them to the selected destination.

**Why can I not perform an operation on a file?**

Fragmented files that are not located on the disk or tape being viewed will appear with a red X in the icon. Operations cannot be performed on these objects. Also, a file may be locked by another process and temporarily inaccessible until the process completes and releases the file.

**Why does AXF Explorer give me an error saying the disk is full when there does not appear to be much on there, or it appears that there is space remaining?**

AXF Explorer will generate a disk full error when you run out of available space during the extraction process. To continue, additional space on the target drive must be freed and the partially written file must be deleted.

**Why has all of the data on my tape been wiped out?**

AXF Explorer must not be used on live production systems. As a support tool all Actors and Managers in the system should be stopped before using AXF Explorer. See [Usage Precautions](#) for details on why this occurred.

---

---

# Glossary

## **Archive Exchange Format (AXF)**

The Archive Exchange Format (AXF) is based on a file and storage media encapsulation approach which abstracts the underlying file system, operating system, and storage technology. AXF helps ensure long-term accessibility to valued assets, and keeps up with evolving storage technologies.

## **Complex Object**

An object is defined as being complex when it contains more than 1,000 (configurable) components. Complex object handling may differ from non-complex objects as noted throughout this document.

## **Tape Reading Utility (TRU)**

Used in DIVA Core releases 6.5 and earlier to read tapes.

## **Universally Unique Identifier (UUID)**

Used to uniquely identify each object created in DIVA Core across all sites, except for objects created using *Copy As* requests. An object created through a *Copy As* request will contain the same UUID as the source object.