

Oracle® DIVArchive

Operations Guide

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Preface

This book outlines general operational guidelines for the Oracle DIVArchive Suite 7.6. Included are start-up and shut-down procedures for various software and hardware components of a typical Oracle DIVArchive system, and the control and monitoring aspects of the DIVArchive platform using the DIVArchive Control GUI and Configuration Utility.

Audience

This book is intended for operations and administration personnel.

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Related Documents

For more information, see the Oracle DIVArchive documentation set for this release located at <https://docs.oracle.com/en/storage/#csm>.

For information on Oracle Storage Cloud visit the following links.

For information regarding metered and non-metered accounts:

<http://docs.oracle.com/en/cloud/get-started/subscriptions-cloud/csgsg/>

For up to date Cloud information:

<http://docs.oracle.com/cloud/latest/>

For further assistance:

http://docs.oracle.com/cloud/latest/storagecs_common/index.html

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	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.

Introduction

This chapter describes the general concepts of a DIVArchive system and includes the following information:

- [Oracle DIVArchive Overview](#)
- [New and Enhanced Features and Functionality](#)

Oracle DIVArchive Overview

The DIVArchive architecture enables integration of many different types of servers and technologies (for example Broadcast Video servers, Storage Area Networks, and Enterprise Tape Libraries). The installation of DIVArchive varies from site to site, so the exact configuration of your specific DIVArchive platform is not covered in this guide. Refer to your System Administrator and your DIVArchive Site Configuration for details on your specific DIVArchive system installation and configuration.

The Site Configuration is a document prepared by Oracle. (or an affiliated system integrator) after installation of DIVArchive at your site. It is a complete record of the configuration of the DIVArchive sub-systems, third party interfaces, site details and contacts, user names and passwords, and remote access codes.

Your Site Configuration is referenced at various points in this guide. Refer to your Site Configuration where applicable.

New and Enhanced Features and Functionality

Refer to the *DIVArchive Release Notes* for 7.6.1 in the DIVArchive documentation library at <https://docs.oracle.com/en/storage/#csm>. See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Oracle DIVArchive Concepts

This chapter describes the different concepts used in the DIVArchive system and includes the following information:

- Oracle DIVArchive Sources and Destinations
- Oracle DIVArchive Arrays, Disks, and Cache
- Oracle DIVArchive Tape Groups and Sets
- Oracle DIVArchive Media Storage Formats
- Oracle DIVArchive Objects
- Oracle DIVArchive Complex Objects
- Oracle DIVArchive Object Instances
- Oracle DIVArchive Requests
- Oracle DIVArchive Request Types
- Oracle DIVArchive Metasources
- Oracle DIVArchive Symbolic Links
- Oracle DIVArchive Storage Plan Management
- Oracle DIVArchive Content Verification
- Oracle DIVArchive Quality of Service

Oracle DIVArchive Sources and Destinations

A *source* is defined as any connected system that has content intended to be transferred to DIVArchive. A *destination* is defined as any connected system that requires content to be transferred to it from DIVArchive. Examples of both are Broadcast Video servers, FTP servers, or Disk Storage.

Actors in the Linux operating system do not support UNC paths for CIFS sources and destinations. However, you can define a local path to a mounted SMB share.

UNC paths are supported for SMB Source/Destinations and managed disks if the UNC path is directly mounted on the Windows Actors.

The sources and destinations that are used in DIVArchive requests are predefined in the DIVArchive configuration and are accessible by the **Sources Destinations** button under the **Home** tab. In DIVArchive's Source/Destination configuration, each server type or disk file system is given a unique name and are configured as follows:

Source Only

DIVArchive will only archive files from the server or disk file system.

Destination Only

DIVArchive will only restore files to the server or disk file system.

Source and Destination

DIVArchive will archive and restore files to and from the server or disk file system.

Although a detailed explanation of the configuration of a source or destination is beyond the scope of this guide, a brief overview of the configuration is included because they can influence how requests are issued to them, and influence how two or more simultaneous requests to them are managed in the *Current Requests Queue*.

Generally, each source and destination has the following parameters configured. These are common to all requests that involve that Source/Destination

- The *Source Type* is the protocol or access method used when interacting with the target device.
- The maximum number of read and write transfer sessions and the total maximum number of read/write sessions combined. This identifies the limits on the number of simultaneous requests that DIVArchive will execute concurrently on the target device, or prioritizing write (restore) operations over read (archive) operations.
- Define the maximum bandwidth allowable to DIVArchive for transfers to or from the device. This may be used to throttle data transfers where the target device is shared with other production systems or third party applications.
- The *Default Quality of Service (QOS)*. This is the QOS used when **Default** is specified in a request's *Quality of Service* field.
- Define *Connect Options* that must be provided (or that can also be optionally specified) for the specific protocol or access method of the target device. Examples of *Connect Options* are recursive subfolders, user names or passwords, or other options specific to the selected source type. DIVArchive ignores this parameter if no options are specified.
- The *Root Path* to the files to be archived on the source, or restored to on a destination. This is always specified as an absolute directory path on the target device. For example `c:\Exported\MPEG2` for Windows based file systems, or `/Movies/MPEG2` on Linux based file systems. The *Root Path* configuration also depends on the source type, and can be left blank in some cases (and will be ignored by DIVArchive).

For **Local** or **Disk** source types, the *Root Path* specifies the mount point of the device in the local file system.

If the *Connect Options* and *Root Path* parameters have been defined for a Source/Destination configuration, they may not be appropriate for every request submitted. DIVArchive allows these parameters to be specified in a DIVArchive request to that source or destination (at the request level). Whether a request can override these Source/Destination attributes depends on the source type. See the *DIVArchive Sources and Destinations Table* in the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for a comprehensive list of these options, paths, and how they interact with those specified at the request level.

The *Files Path Root* specified in a request can either be appended to the *Root Path* specified in the Source/Destination configuration, or override the *Root Path* entirely if it is specified as an absolute path.

EMC ECS (Elastic Cloud Storage) Integration

Instances stored on EMC Elastic Cloud Storage are local instances whose priority is lower than other types of local disk instances, but a higher priority than tape storage instances.

In DIVArchive 7.6 you can define Oracle *Storage Class* and *Storage Location* separately. If you require new cloud or local arrays in the future, you can specify all of these parameters as options. You can set the *Media Priority* of a source instance for a Restore, Oracle DIVArchive Partial File Restore, and Copy to Group requests, which enables restoring an instance stored on a local non-EMC ECS array with a higher priority than an instance on an EMC ECS array. If the priorities for the media are all the same, then the Manager decides which source instance is preferred during these requests.

See the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation library* for information.

Oracle Cloud Infrastructure (OCI)

DIVArchive 7.6.1 (and later) includes support for storing your data in Oracle Cloud Infrastructure. The Control GUI is enhanced to support OCI storage operations. OCI services combine cloud elasticity and utility with granular control, security, and predictability of your on-premise infrastructure. OCI delivers high performance, flexibility, availability, and is cost-effective.

Data Expedition Integration

DIVArchive can (optionally) interface with the Source/Destination named **Data Expedition Expedat Source/Destination Server**. The Expedat Server (also known as **servemat**) is very similar to the DIVArchive **FTP_STANDARD** server and CIFS, and offers AES encryption capabilities. The main difference among them is the protocol used for operations.

The *Expedat Client API* is integrated into the Actor computer and the Expedat server is integrated into DIVArchive (either on an Actor computer or other additional server within the system) just like the **FTP_STANDARD** server and CIFS, but is faster when used on high latency networks when using the Data Expedition Expedat MTP Protocol (a high performance file transfer protocol), which provides better bandwidth utilization.

One record is created for each Expedat Server that DIVArchive has to move data to or from. Although the initial solution for DIVAnet transfer and restore is still functional in DIVArchive 7.6, the functionality has been enhanced and now includes complex objects. With the new functionality, there are only 2 steps required for archiving objects through DIVAnet instead of 3 steps as previously required.

Note: Actors in the Linux operating system do not support UNC paths for CIFS sources and destinations. However, you can define a local path to a mounted SMB share.

Source and Destination Configuration

One record is created for each Expedat server DIVArchive must move data from or to. Refer to the *DIVArchive Installation and Configuration Guide* for more information on Oracle Storage Cloud (OPC and OCI) and EMC integration. The following are the parameters and examples for Expedat sources and destinations:

IP Address

This is the IP address of the Expedat server.

Example:

10.80.114.21

Source Type

Set this to **EXPEDAT**.

Connection Options

The following are connection options. Some are mandatory while others are optional.

-login *username*

This is mandatory if the server is configured with authentication parameters. For example, `-login moon`.

-pass *password*

This is mandatory if the server is configured with authentication parameters. For example, `-pass ph4!hi4`.

-port *portNumber*

This must be supplied because there is no default value. For example, `-port 8080`.

-license *licenseCode*

This is mandatory and is the Expedat license number. For example, `-license 46FE464A98`.

-encryption

This is optional and there are no additional parameters. For example, `-encryption`.

-seq_buffer_size *megabytes*

Defines the size of the Data Expedition internal buffer for each transfer. The default value is 16 MB and will be sufficient for most transfers. A large buffer allows Data Expedition to continue moving data during times when the sender or receiver may not be able to process it. A small buffer will consume less memory. For example, `-seq_buffer_size 16`.

-exp_maxrate *kilobytes*

This option sets an approximate limit on the number of kilobytes per second, per transfer. The default is *unlimited* but can be used as an alternate method of controlling bandwidth. For example, `-exp_maxrate 1024`.

-exp_mindatagram *bytes*

This transfer protocol is over UDP. This option can define a minimum size for each network datagram payload that Data Expedition will send. The purpose is to prevent Data Expedition from sending too small of a packet over the network. Set this value between 2848 and 8544 when using a very fast network path (gigabit or later) and every device along the path supports Jumbo Frames (MTU 9000). Using large datagrams can greatly reduce CPU overhead. However, using this setting without Jumbo Frames being fully supported can cause severe performance issues or loss of connectivity. For example, `-exp_mindatagram 2848`.

Oracle DIVArchive Arrays, Disks, and Cache

DIVArchive uses Hard Disk Drive (HDD) technologies for both the storage of DIVArchive objects and for transient storage during data transfers (disk cache).

Any disk that DIVArchive uses is assigned to an array. An array is a logical association of one or more disks for the storage of DIVArchive objects. Disks that are configured as cache disks are also assigned to an array, typically named `CACHE`.

The storage of an object on a disk in DIVArchive is identified by the array's name rather than an individual disk itself. DIVArchive automatically allocates objects among two or more disks within any array.

Each disk in any array may be connected to a DIVArchive system either directly in an Actor host's hardware, as Network Attached Storage (NAS), or connected through a Storage Area Network (SAN) using Fibre Channel. In the case of SAN, it can also employ additional file system sharing software on the hosts if the disk is to be accessed simultaneously from multiple Actors.

Note: See the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for information on configuring EMC ECS components, including Object Stores in DIVArchive arrays, Actor-Disk connections, Array Priority, Object Storage Accounts, and configuration validation checks.

You can configure individual disks in an array as follows:

Storage Only

The disk will only be used for storage of DIVArchive objects. These types of disks will employ some level of RAID technology to ensure data redundancy and protection against individual hard disk failure.

Storage and Cache

The disk will be used for the storage of DIVArchive objects and also for caching operations. Both types will use separate subfolders on the disk. These types of disks will employ some level of RAID technology to ensure data redundancy and protection against individual hard disk failure.

Cache Only

The disk will only be used for caching, tape to tape copying, tape spanning, or tape repacking operations. These types of disks may employ RAID technology to improve performance (for example, RAID 0).

Storage and Nearline

The disk will be used for the storage of DIVArchive objects, and also for Nearline operations. Both types will use the same subfolder on the disk. These types of disks will employ some level of RAID technology to ensure data redundancy and protection against individual hard disk failure.

Cache and Storage and Nearline

The disk will be used for the storage of DIVArchive objects, caching, and Nearline operations. Both storage and Nearline types will use the same subfolder on the disk. However, the cache type will use a separate subfolder. These types of disks will employ some level of RAID technology to ensure data redundancy and protection against individual hard disk failure.

DIVArchive also enables individual disks to be configured for Read-Write access, Read-Only access, or can be disabled temporarily.

The file system of any DIVArchive managed disk should never be manipulated directly by any file manager or utility (such as Windows Explorer) or equivalent. If the

folder structures or files are moved, renamed or deleted, this may cause DIVArchive to mark that disk as **Out of Order**.

Caution: Using such a utility in any fashion will completely destroy the file system on that disk.

Disks that have file sharing software installed to provide shared host access (for example, SNFS or MetaSAN) can appear as an unknown file system or as not initialized to utilities such as Windows Disk Manager.

Oracle DIVArchive Tape Groups and Sets

Disks are logically assigned to arrays for the storage of objects, but tapes are logically associated together in *Groups*.

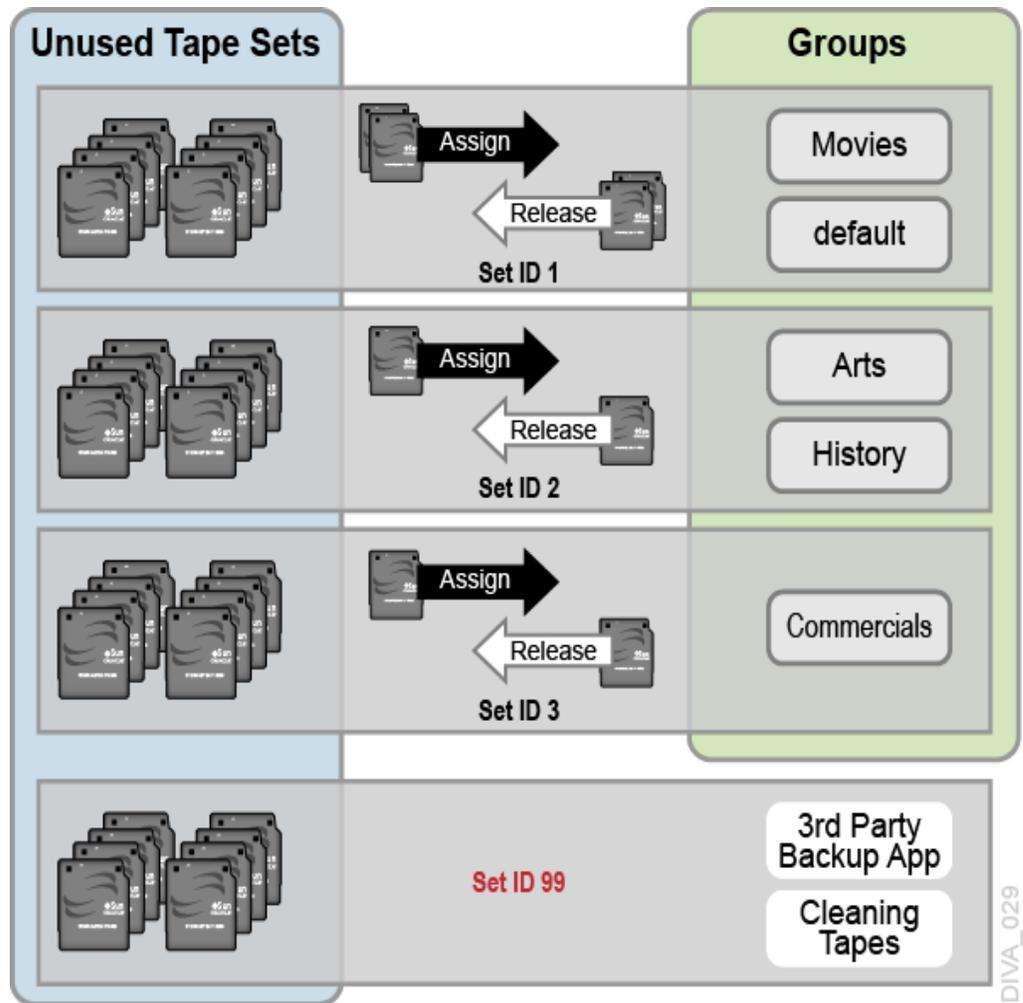
Tapes are initially divided into *Sets*, and assigned a number called a *Set ID*. A Set ID enables partitioning of pools of tapes in a library and assigning them for use with specific groups. A group draws upon the pools by associating the group with a Set ID.

More than one group may use the same Set ID. An unused tape will not actually belong to any of those groups until DIVArchive writes the first object to that tape. When all objects have been deleted from a group-assigned tape, it will be unassigned from that group, and may subsequently be assigned to another group using the same Set ID.

Since groups are a user-defined concept they can differ from one DIVArchive installation to another. The exception is the **Default** group, which exists in all installations and can neither be renamed nor removed. In a DIVArchive system, groups are created and managed in the Configuration Utility's **Sets, Groups & Media Mapping** tab.

When a tape is assigned a Set ID of 99 it indicates to DIVArchive that the tape is not to be used and is not related to the operation of DIVArchive. Examples are tapes that belong to a non-DIVArchive application in a shared library environment or the library's cleaning tapes.

The following figure shows how tape sets and groups are associated and used:



Tape Compression

Tape compression is supported at the tape group level starting with the DIVArchive 7.6 release. You enable (or disable) tape compression on the *Groups* view in the Configuration Utility **Sets, Groups & Media Mapping** tab.

When tape compression is enabled, any empty tape assigned to the group will have compression enabled, and instances written to the tape will be compressed. Tapes assigned to the group before compression was enabled remain uncompressed, and instances written to the uncompressed tape will be uncompressed.

When exporting a tape, compression is tracked using the `isCompressionEnabled` attribute. This attribute value can be either `true` or `false`.

When writing to a group with a compression setting (enabled or disabled), only used tapes with the same compression setting, or empty tapes associated with the set linked to the group, will be used.

Tape Group Encryption

Starting with the DIVArchive 7.6 release, tape drive encryption securely supports bulk tape migration between DIVArchive systems.

See the *Oracle DIVArchive Installation and Configuration Guide*, and the *Oracle DIVArchive Export/Import User's Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for detailed configuration, and export and import information.

Sony ODA Drives

DIVArchive supports the Sony optical drives and their WORM media (using a UDS format). You can only write AXF formatted objects to Blu-ray discs. The drives are controlled by the Robot Manager and the media is viewed as a tape cartridge.

These drives are shown as *Unknown Medium Changer* under the **Medium Changer** devices section in the Windows Device Manager because there are no device drivers for them. The drive itself will also appear as an *Optical SCSI Device* with the make and model number under the **Disk Drives** section.

Using Optical Drives and Discs

The following list is additional information related to the use of the optical drives and discs:

- In the DIVArchive Control GUI the optical discs are displayed under the **Drives** tab.
- Write-Once media must be finalized, and therefore zero remaining space will be reported to the Manager.
- Objects are spanned when there is 100 MB remaining on the disc so that there is enough space left to finalize the disc. After an object is spanned, the disc is considered full and is automatically finalized.
- The Actor will auto-finalize the discs when there is 500 MB of space remaining (unless an object was spanned). However you can finalize a disc manually through the *Optical Disc Archive Utility*.
- If you manually mount a drive, and view it in Windows Explorer, the numeric value at the beginning of each object's file name identifies the object's location on the tape.

Tape Spanning

When the capacity of a tape group begins to reach full capacity (that is, the group's associated Set ID has no more blank tapes to draw upon), DIVArchive may attempt to maximize the storage utilization of the existing tapes in the group by filling the remaining free space of each tape by segmenting the object across two or more tapes (tape spanning).

By default, the tape spanning feature is configured in the DIVArchive Manager Configuration (file) to not span tapes. If an object cannot be spanned across the remaining free space of two tapes within that group the request will be terminated by DIVArchive. You can configure tape spanning to span across more than two tapes at your site, or disable it altogether in the `manager.conf` configuration file.

During the restore of a spanned object, DIVArchive mounts all associated spanned tapes and automatically joins the spanned object back together. It cannot do this directly, and must copy all segments of the spanned file to a cache disk first. Therefore, restoring a spanned object must use a **Cache Only** or **Cache and Direct QOS**. A **Direct QOS** results in the request terminating.

For Write-Once media, objects are spanned when there is 100 MB remaining so that there is space left and the disc can be finalized. After an object is spanned the disc is considered full and is automatically finalized.

If spanning is disabled and an object is too large to fit on the selected tape, DIVArchive will retry to fit all content on a single empty tape. You can configure the retry logic. You can optionally retry with a used tape with the least or most remaining space.

Note: Tape spanning is not compatible with the **Associative Copy** function.

If spanning is disabled and the content is too large to fit on the currently selected tape, DIVArchive will retry to fit all contents on a single tape. The type of tape DIVArchive selects on retry is configurable in the Manager configuration file through the `DIVAMANAGER_RETRY_ON_SPAN_REJECTED_ALGORITHM` configuration parameter.

Protected Mode

When a tape is ejected from the library it is automatically set to *Protected Mode*. When this attribute is set it prevents further archive operations from being performed on the tape and prevents the tape from being repacked.

DIVArchive assumes that when a previously ejected tape is reinserted into a library to perform a restore operation it will then subsequently be ejected and put back into offline storage. Without the *Protected Mode* feature new DIVArchive objects may get written to the tape while it is temporarily in the library and prevent it from being ejected without first moving these required objects to another tape.

Write operations on a protected tape are not allowed unless the *protected* attribute is set back to `false` in the DIVArchive Configuration Utility after the tape is reinserted into the library. This attribute does not prevent delete operations on instances located on these tapes (whether internalized or externalized).

You may also need to reset this attribute on a tape if the tape was mistakenly ejected from a library, or if the tape was stuck in a tape drive and removed by opening the library door and manually ejected from the library. When the library is then resynchronized with the DIVArchive database the missing tape will be deemed externalized and *Protected Mode* set to `true` (the tape is protected).

Tape Label Management

When a tape is first mounted and objects written to it, DIVArchive writes a *Label* to the beginning of that tape. The label contains important information relating to the management of objects written to, or deleted from, the tape during archive operations. From an operational perspective the most important information in the tape label is the *Barcode Number* of that tape. The barcode is an alphanumeric number on the physical label adhered to the back of the cartridge, and is also written to the label on the magnetic media of the tape.

Whenever a tape is mounted DIVArchive automatically checks the label written on tape to verify that it matches the tape barcode label it instructed the tape library to mount.

This mechanism provides the following two safety features:

- Confirmation that the mapping between the physical drives in the library matches that of the logical connections to each tape drive from the Actor. This prevents

data being written to the wrong tape if there is a configuration mismatch between the physical drives in the library.

- Prevents tapes with foreign labels (that is, tapes previously used by another archive system) from being overwritten in error. This behavior is for environments where DIVArchive shares a library with another archive application and the tapes used by that archive application have not been set to Set ID 99.

If DIVArchive identifies a mismatch between the expected label and that of the tape, it will generate an I/O Label Error, and the tape will be set to *Not Writable* and will not be selected for any further write operations.

Oracle DIVArchive Media Storage Formats

This section discusses the media formats available in DIVArchive.

AXF Disk and Tape Storage Formats

Archive Exchange Format (AXF) is an open format that supports interoperability among disparate content storage systems and ensures the content's long-term availability regardless of 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 valuable data from the underlying operating system and storage technology. It's like a file system within a file that can store any type of data on any type of storage media.

Storage Media Format

In DIVArchive, a tape group or disk array has a *Media Format* parameter that indicates which storage media format to use when creating new archived objects. The *Media Format* can be set to either DIVArchive **Legacy** format or one of the **AXF** formats. You can change this setting at any time and it does not influence content already stored. Therefore, it is possible to have more than one storage media format within tape groups and disk arrays.

DIVArchive writes an object instance in one and only one media format. Therefore, if an object spans tapes, each tape used as part of an object instance will be written in the same media format. In DIVArchive 7.6, an object can contain multiple instances, each of which can be stored in either Legacy or one of the AXF formats.

Complex objects must be stored in AXF format. Because all complex objects are written in the AXF format, every instance of a complex object will be in the AXF format.

Tape Storage Media Format

Although a tape group can contain more than one storage format, an individual tape has (at most) one storage media format. DIVArchive assigns the tape media format to an empty tape when it writes the first object to that tape. The tape is assigned the format of the tape group that appears in the request. After the media format for a tape is assigned, it cannot be changed unless all objects on the tape are deleted. After deletion of all objects from a tape, the tape's format becomes unassigned until DIVArchive writes content to the tape again. If the tape was in use, the tape format cannot change unless it is empty and cleared.

Both Legacy and AXF formatted tapes can exist in the same group. Objects in AXF format will only be written to AXF formatted tapes, and objects in Legacy format will

only be written to Legacy formatted tapes even though they are in the same tape group.

In the current release of DIVArchive, a Repack request will always write the destination tape in the same media format as the source tape. Similarly, tape spanning operations will always use the same format across all tapes storing spanned objects.

Disk Storage Media Format

Unlike tapes, disks do not have a format. DIVArchive allows storing objects in different media formats on the same disk. If a disk contains objects in Legacy format and that disk is then assigned to an AXF formatted array, it will still contain objects in Legacy format. However, new objects written to the disk will be in AXF format.

Object Instances Media Format

Every tape and disk object instance is assigned a format of Legacy or AXF. The format of a tape or disk instance is assigned when the instance is created and is the format of the tape on which the instance resides. All instances on a tape must have the same format.

If a disk instance is non-complex and permanent (not a cache instance) it is stored in the format of the destination array. If a cache instance is non-complex it is stored in the format of the group specified in the request.

Groups or arrays used by complex object requests must be in an AXF format because complex objects cannot be stored in Legacy format. Therefore, any instance of a complex object will be in the AXF format.

You must use a migration job to change a tape format from Legacy to AXF: repacking a tape will not change the tape format. Repacking of existing Legacy format objects retains the format of the tape even if the tape group format was updated in the configuration from Legacy to AXF.

Oracle DIVArchive Objects

Each asset that is archived to DIVArchive is called an **Object**.

An object is a DIVArchive logical container for all files consisting of an asset from the original source. Assets from some sources may have separate video, audio and metadata files. When archived in DIVArchive all of these files are referenced as a single object. When the object is restored to a destination, all files that were originally associated with that asset are automatically restored by DIVArchive.

An object is uniquely identified in DIVArchive by its name and category. The object name does not necessarily need to match that of the source file being archived. DIVArchive will always restore the archived files as they were archived, regardless of the DIVArchive object name. Therefore, the same source file can be archived more than once in the same category, if each instance has a unique object name.

After an object exists within DIVArchive, it cannot be replaced unless it is first deleted. If an Archive request uses the same name and category of an existing object, DIVArchive will automatically stop the request. However, multiple copies (or instances) of an object can be created after the asset is archived.

If a source asset is to be stored in a variety of encoding formats (for example, MPEG2 Long GOP, DV50, or low resolution proxies), you can use specific categories to archive the same object based on its encoding format.

Oracle DIVArchive Complex Objects

When the Metadata Database feature is enabled, the *complex object* feature is available. DIVArchive can track significantly more than the 10,000 file per object limit set for non-complex objects using complex objects. The actual amount scales with system processing power and storage capacity. A complex object stores more information about the files and folders in an archive, such as subtotals for each directory.

When an object is archived, DIVArchive determines whether the new object should be complex or non-complex based on its number of components (files). If the number of components is greater than 1,000 (the default complex object threshold - configurable), the object becomes a complex object; otherwise, the object is non-complex. When an object is deemed a complex object, it will always be complex - even if it is copied using the **Copy As** command, or imported using the Oracle DIVArchive Export/Import Utility.

Complex versus Non-Complex Objects

A **Complex Object** differs from a non-complex object in some key ways. For example, the file and folder metadata information of a complex object is stored in a file not in the Oracle database. The file contains the file names, folder names, checksums, and files sizes. The directory that contains these files is the *Metadata Database Root Directory* (the following section describes how to configure this parameter). A complex object must be stored in AXF format either on tape or on disk.

A complex object can contain hundreds of thousands of files. In the DIVArchive Control GUI the entire set of files on a tape are not displayed in the Object Properties and Tapes dialog boxes - only a single *placeholder* file is shown to represent the complex object.

Not all DIVArchive operations are supported for complex objects. For example, the **Delete on Source** feature is disabled for complex objects. The checksum features **Verify on Archive** and **Verify on Restore** are also disabled for complex objects. Oracle DIVAnet does not currently support replication of complex objects.

Certain DIVArchive API operations used in Oracle DIVArchive Avid Connectivity (such as `GetByFilename` and `DeleteByFilename`) are not currently supported for complex objects.

A complex object maintains information about the folders and files in the archive. Complex objects store subtotals for each folder, including the total number of files and subdirectories within the folder, and the total size of all files within the folder and any subfolders.

The *Complex Object Threshold* is a configurable parameter used by DIVArchive to determine whether a new object should be complex. If a new object has many components (files) that exceeds the threshold, the object automatically becomes a complex object. This value is set in the `manager.conf` configuration file. *Oracle recommends leaving the threshold at the default value (1000 components) unless there is a specific reason to adjust the value.*

Metadata Database

To effectively operate with large volumes of files and folders and other metadata, DIVArchive stores the metadata separately from the Oracle database in the *DIVArchive Metadata Database*. The DIVArchive metadata database contains files stored in a file system local to the DIVArchive Manager. The directory that contains these files is the *Metadata Database Root Folder*.

The metadata database has very high performance and almost unlimited scalability. The Metadata Database should be treated with the same caution as the Oracle database, and should be backed up at regular intervals using the DIVArchive Backup Service.

Complex Objects and FTP

When archiving Complex Objects with the FTP protocol and using FileZilla with default settings, the transfer will typically fail when archiving any object with more than approximately 3900 files. There are two reasons for this possible failure:

- The Actor connection times out before the size of the object can be computed.
- A request stops in the middle of the transfer because the FTP server (for example a FileZilla server) is consuming all of the available sockets.

Note: Oracle only supports Linux-based FTP servers on DIVArchive systems running in the Linux environment, not FileZilla and IIS FTP servers.

Actor connection timeouts can be resolved by setting the following two parameters either in the *Source/Destination Command Options*, or in the options of the command itself as follows:

```
-transfer_timeout 1200
-list_timeout 600
```

Oracle also recommends setting the corresponding parameters in the FileZilla server under the *General Settings*:

```
Connections Timeout = 600
No Transfer Timeout = 1200 (this is the default)
```

If a termination occurs, which may happen during transfer, there are two registry parameters that must be created or modified (typically created):

```
TcpTimedWaitDelay = 10
MaxUserPort = 90000
```

Oracle recommends contacting Oracle Support for more information on these parameters and to make FTP server and computer registry changes if no qualified personnel are on site.

Oracle DIVAnet Complex Object WAN Transfers

DIVArchive has (optional) WAN acceleration functionality built in that allows it to take full advantage of long distance, high latency, network paths (such as private site to site links or the public internet), and can perform transfers of complex objects efficiently using the *Data Expedition MTP/IP* protocol.

Example:

The procedure is as follows:

1. DIVA1 restores the complex object to the DIVA2 system by first creating a new AXF file on the DIVA2 system's Data Expedition server.
2. DIVA1 restores all of the files from the local storage to the new AXF file created on the DIVA2 Data Expedition server.

3. The DIVA2 system creates a new AXF file on the destination (tape, disk, and so on).
4. The DIVA2 system archives all of the files from the Data Expedition AXF file (created by DIVA1 on the Data Expedition server) to the newly created AXF file on the destination.

See the *Oracle DIVAnet Installation, Configuration, and Operations Guide* in the *DIVAnet documentation* library, or contact Oracle Support for more information and assistance (if necessary).

Oracle DIVArchive Object Instances

The storage managed by DIVArchive falls into three distinct categories:

- Online Storage (tapes within a library)
- Nearline Storage (disks and cloud storage)
 - See *Appendix A* for Oracle DIVArchive options and licensing information.
- Offline Storage (externalized tapes)

The name and category of an object in DIVArchive must be unique. However, multiple copies of that object can be created in one or all three of the above classes. Each copy of an object (including the original archived object itself) is known as an **Object Instance**.

Apart from creating backup copies, the object instances concept also allows lifecycling of material within DIVArchive. An object may initially be created in online storage for rapid access and also backup instances created on one or more tapes. When the object is no longer required for online or Nearline access the disk instance can be deleted and the tape externalized. Automatic lifecycling of objects, based on their age and location within the archive, can be provided by the DIVArchive SPM (Storage Plan Manager) option.

The first instance of an object is created when it is first archived to DIVArchive. Additional instances of the archived object can then be created with the **Copy** and **Associative Copy** commands.

An additional instance of an object cannot be created by re-archiving the original object with the same name and category. This request will be automatically stopped by DIVArchive with the *Object already exists within DIVArchive* error.

Instances are initially numbered sequentially with the original object that is archived to DIVArchive being *Instance 0*. As new instances are created and older instances deleted, the instance numbering may no longer be sequential when an object's properties are viewed in the Control GUI's *Objects View* (under the **Manage** tab). However, an instance number from a previously deleted instance may be subsequently reused by DIVArchive in additional copy requests.

The following restrictions apply to creating new instances of an object within DIVArchive:

- A tape group can contain two instances of the same object if both can be located on separate tapes. If no additional tapes for that group are available to store the second instance the copy request is terminated.
- A disk array can contain two instances of the same object if both can be located on separate disks within the array. If no additional disk is available, the copy request is terminated.

When an object has multiple instances within the archive and a Restore request is issued, DIVArchive will perform as follows:

- If no instance number is specified in the request, DIVArchive will choose the instance that will allow the request to complete in the shortest possible time. A disk instance is preferred over a tape instance. However, a tape instance may be selected in some configurations if the QOS specified in the request is **Cache Only** or **Cache and Direct**.
- If no instance number is specified in the Restore request and a disk instance exists, but the disk is offline, the tape instance will automatically be selected.
- If two or more instances are present on tape and no disk instances exist, and one tape is currently in use by another request (or is externalized), the tape containing the other instance will automatically be selected.
- If two or more instances exist on tape, and a read error occurs on the first instance selected, the request will automatically be attempted on the other instances until the request can be completed successfully. If no instances can be read, the request will be terminated.
- If a specific *Instance Number* is specified in the restore request, DIVArchive will only use that instance. If the media containing the instance is offline (for disks), externalized (for tapes), or an I/O or read error occurs, the request will be terminated.

Requiring and Releasing Instances

Requiring and releasing instances enables an application, such as a third party Media Asset Management (MAM) system, or a DIVArchive user, to flag the DIVArchive objects (or instances) that are externalized but need to be restored (**Required**), and which instances are no longer needed and can be externalized (**Released**). The release mechanism is a more precise alternative to a group externalization approach for externalizing instances.

The **Required Release** view in the Control GUI's **Manage** tab is provided to check instances whose internalized/externalized status is in discrepancy with their **Released/Required** status. This view also provides a fast easy method for identifying which tapes are to be entered in the library or can be externalized.

By default, object instances are assumed to be available in DIVArchive. The **Release** command must be invoked on instances before ejecting their corresponding tapes. However, the **Eject** command provides an option that automatically performs the release on every instance entirely located on the tapes to be ejected.

After being created by a Copy or an Archive request, an instance is assumed to be required to be available, so its status is `INSERTED` and `REQUIRED`. Executing a **Require** command on a released instance results in a *Required Instance*. Correspondingly, releasing a required instance results in a *Released Instance*.

Oracle DIVArchive Requests

A request is a command that is issued to DIVArchive to perform an operation. Requests can be issued through the Control GUI or an Archive Initiator.

The most common request types are for transferring content to the archive (referred to as an Archive request), or transferring content out of the archive (referred to as a Restore or Oracle DIVArchive Partial File Restore request).

You use other request types for managing the objects within the archive once they have been created. Examples of other request types are Copy, Delete, and Repack Tape requests.

Each request is automatically given a unique identifier by DIVArchive (called the *Request ID*), which you can use later to retrieve event logs or other properties of each request. DIVArchive stores the records of up to 50,000 requests in its database.

Because multiple requests may be received simultaneously by DIVArchive, they are all placed into a queue and are executed on a first come, first served basis. The execution order of requests can be prioritized using the *Request Priority* parameter. The **Current Requests** frame of the **Manager View** in the Control GUI displays the queue of requests that are currently being processed by DIVArchive.

When restoring the same file to the same destination twice in parallel, the behavior on Windows and Linux is different. On Windows, the first restore (they cannot arrive exactly at the same time) will lock the file so that the second one will terminate. On Linux, there is no such lock at the file system level. Both restores are executed at the same time, and both will write to the same file. The content of the resultant file is not predictable.

The DIVArchive available *Request Options* are as follows:

Archive Requests

-delete_on_source

Restore Requests

-do_not_overwrite

-do_not_check_existence

-delete_and_write

Request Options take precedence over the normal *Additional Service* specification. Also, the normal *Additional Service* specification takes precedence over the *Source/Destination Connect Options*.

You can also specify the *Additional Services* available for a Restore request in the *Source/Destination Connect Options*. If specified, the Source/Destination will use the *Additional Service* setting as a default. This can be overridden by specifying the *Additional Service* at a request level in the normal way, or as a new *Request Option*. Because these connect options are specific to a Restore request, the options are ignored for any other type of requests using the Source/Destination.

Oracle DIVArchive Request Types

This section describes the various DIVArchive request types available.

When connected to the DIVArchive Manager, you access the **Action** tab from any view in the Control GUI. This tab enables you to execute requests to be issued to DIVArchive. You can use a third party initiator application (for example, an Automation System) instead of, or in addition to, the Control GUI interface. The options in this area are only accessible when you are logged in with the *Administrator* profile.

The different requests available under the Control GUI's **Action** tab are as follows:

Archive

Copies a file from a source to DIVArchive.

Delete

Deletes all instances, or a selected instance, of a DIVArchive object.

Require

Sets an object's status to **Required**. The associated tape must be inserted into a DIVArchive managed library.

Release

Sets an object's status to **Released**. After an object is released, it can be externalized.

Cancel

Cancels a previously submitted request by either specifying the *Request ID* or selecting a request beforehand in the *Current Requests* view.

Change Priority

Increases or decreases the pending requests scheduler priority.

Assign Storage Plan

Assigns a Storage Plan to the selected object.

Restore

Copies a file from DIVArchive to a single destination.

Partial Restore

Copies only part of a file (based on timecode, byte offsets, folders, or DPX frames) from DIVArchive to a destination.

Multiple Restore (or N-Restore)

Restores an object from DIVArchive to more than one destination simultaneously.

Copy

Enables an existing object to be copied to another group.

Copy As

Enables an existing object to be copied to another name, group, or category.

Associative Copy

Enables multiple objects from various locations in the archive to all be copied to a single tape with a single command.

Repack Tape

Issues a manual Repack request for the selected tape.

Verify Tape

Issues a Verify Tape request for the selected tape.

Insert Tape

Used to insert tapes into a DIVArchive library through its **CAP (Cartridge Access Port)**.

Eject Tape

Ejects the selected tape(s) from the library to the CAP.

Export Tape

Enable exporting a tape (and its objects) from one DIVArchive system to another.

Migrate Content

Transfers the existing content of a tape group to another group or array.

Automatic Repack

Issues an Automatic Repack request for the selected tape.

Oracle Storage Cloud Transfers

The Oracle Storage Cloud is an object storage solution that offers two types of accounts usable with DIVArchive: *metered* and *non-metered* accounts. Visit http://docs.oracle.com/cd/E60880_01/VLPFN/what_is.htm#BABDADAE for information on Oracle Storage Cloud storage accounts.

The non-metered account enables the creation of standard class containers. Objects written inside standard containers are accessible immediately at any time.

With a metered account, DIVArchive can archive to standard and also to archive class containers. With archive containers, objects written to a deep archive storage device require a restoration process before they can be downloaded.

An object located in deep archive requires a maximum of 4 hours to restore to a configured DIVArchive destination because the content will first be transferred from tape to Cloud cache, and then transferred from cache to the final destination.

When a Restore request is made for an object with a cloud instance, DIVArchive will *always* attempt to restore a local (non-cloud) instance of an object. If all local instances are offline, no local instances exist, or when a cloud instance is explicitly requested (a Restore Instance request), then DIVArchive will restore from a cloud instance.

Only Actors configured for **CLOUD ARCHIVE** can transfer content to the cloud. Only Actors configured for **CLOUD RESTORE** can transfer content from the cloud. See [Appendix A for Oracle DIVArchive options and licensing information](#).

Object Storage Destinations

DIVArchive 7.6 enables restoring content to a destination, and archiving content from a source, linked to an Oracle Object Storage account. You can restore any type of object to these destinations. However, these destinations do not support symbolic links.

The *Files Path Root* for the destination must contain a value, and can contain an optional prefix. The value identifies the name for the target container. You use the optional prefix if you do not want to restore to the container root directory. The prefix must be separated from the container name using either / or \. For example, `container`, `container\folder`, and `container/subdir1/subdir2` are all valid paths.

EMC ECS Object Store Integration

DIVArchive 7.6 supports local arrays that include disks with *Swift* interfaces, for example EMC ECS Object Store.

During an upgrade from an earlier DIVArchive release, all disk instances with an **ARCHIVE** or **STANDARD** Storage Class are updated with a storage option containing `-storage_location=CLOUD` and `-oracle_storage_class={ARCHIVE|STANDARD}`. All disk instances with a **NONE** Storage Class are updated with a storage option containing `-storage_location=LOCAL` and `-oracle_storage_class=NONE`. All Actor-Disk connections with **cloud** as the interface are updated to **Swift** for the interface.

See the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for detailed configuration information.

True Remaining Tape Size and Last Written Position

For some specific tape drives (Oracle T10K and IBM LTO) the Actor now returns the *True Remaining Size* on the tape and the *Last Written Position* on tape to the Manager during a transfer of content to tape. The remaining size is given in number of bytes of uncompressed data.

The Manager uses the remaining size and last written position (instead of relying on the size of the tape type) to obtain the true total and remaining size on the tape in all tape based operations.

Export and import operations also now include the total tape size.

Archive Requests

An Archive operation is defined as the transfer of files to DIVArchive. The files are then stored as a DIVArchive object. You issue an Archive request by selecting the **Archive** option from the Control GUI **Action** tab. The request submits an object Archive request to the DIVArchive Manager for processing.

The following fields are included in the Send Archive Request screen:

Object Name

The name of the object to be archived.

Category

The category of the object to be archived.

Source

The name of the source (for example, a video server, browsing server, and so on). This name must be known to the DIVArchive configuration.

Media

This field designates either a group of tapes or an array of disks declared in the configuration where the instance must be created. When this parameter is a null string, the default group of tapes named **DEFAULT** is used.

Files Path Root

The root folder for the files (see the examples in the following section).

Storage Plan

This field defines the Storage Plan to use for this object. If no Storage Plan is assigned the default Storage Plan will be used.

Add. Service

Select this check box to delete the original file after it has been archived.

Note: Delete on Source is not supported for Broadcast Servers.

Quality of Service

One of the following codes:

DIVA_QOS_DEFAULT

Archiving is performed according to the default Quality of Service (currently direct and cache for archive operations).

DIVA_QOS_CACHE_ONLY

Use cache archive only.

DIVA_QOS_DIRECT_ONLY

Use direct archive only - no disk instance is created.

DIVA_QOS_CACHE_AND_DIRECT

Use cache archive if available, or direct archive if cache archive is not available.

DIVA_QOS_DIRECT_AND_CACHE

Use direct archive if available, or cache archive if direct archive is not available.

Additional and optional services are available. To request those services, use a logical OR between the previously documented Quality of Service parameter and the following constant:

DIVA_ARCHIVE_SERVICE_DELETE_ON_SOURCE

Delete source files when the tape migration is done. Available for local sources, disk sources, and standard ftp sources. *This feature is not available for complex objects.*

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Files

The file names to be archived from the source. If multiple file names are specified, all are referenced by the DIVArchive object name.

Comments

Optional information describing the object. This field is optional and can be left empty.

Options

Additional options for performing the transfer of data from the source to DIVArchive. These options supersede any options specified in the DIVArchive configuration database. Currently the possible values for *Options* are as follows:

No Entry

No entry in this field specifies no options.

-r

Using **-r** specifies that every name in *filenamesList* that refers to a folder must be scanned recursively. This also applies when *FilesPathRoot* is specified and an asterisk designates the files to be archived. This option can be used when archiving from a local source or from a standard FTP Server.

-login

A user name and password is required to log in to some sources. This option obsoletes the **-gateway** option from earlier releases.

-pass

The password used with **-login**.

Archive Request Files Path Root and Files Parameters

The *Files Path Root* and *Files* parameters in the Archive Request window determines the main folder location, and the subfolders and files to be archived. Each serves a different purpose, yet both parameters work with each other. Identify a logical business object before filling in these parameters and executing the request.

The *Files Path Root* field identifies the path to the main file folder (the top folder). For example, `c:\DROPFOLDER\Media\Object1\`.

What you enter in the *Files* field text box identifies the individual files under the main folder (the identified *Files Path Root*) and any additional subfolders and files. For example, `subfolder1\file3`.

The *Files* field may contain an absolute path. However, this is not recommended because it prevents the object from being restored to a different root folder.

Assuming a *Files Path Root* is identified, do not use the full file path in the *Files* field. You must only use the folder names and file names that are located under the identified *Files Path Root* folder. Alternatively, the *Files Path Root* field can be left blank and the full file path and name may be entered into the *Files* field.

The following are examples of how these parameters can be utilized:

Correct Examples

The following entries will archive only the specified files located in `C:\DROPFOLDER\Media\Object1\` and the `subfolder1\file3`.

Files Path Root

`C:\DROPFOLDER\Media\Object1\`

Files

`file1`
`file2`
`subfolder1\file3`

The following entries will archive all folders and files located in `C:\DROPFOLDER\Media\Object1\`.

Files Path Root

`C:\DROPFOLDER\Media\Object1\`

Files

`*`

The following entries are correct but not recommended, because in the future the object cannot be restored to a different location. The system will lose flexibility and compatibility with other storage devices and in some scenarios, transcoding and Partial File Restore capabilities will also be limited. In this example, the *Files Path Root* was left blank and the absolute paths are entered in the *Files* field.

Files Path Root

Files

`C:\DROPFOLDER\Media\Object1\file1`
`C:\DROPFOLDER\Media\Object1\file2`
`C:\DROPFOLDER\Media\Object1\subfolder1\file3`

Incorrect Example

The following entries will result in an error and the Archive request will not be completed.

Files Path Root

C:\DROPFOLDER\Media\Object1\

Files

C:\DROPFOLDER\Media\Object1\file1

C:\DROPFOLDER\Media\Object1\file2

C:\DROPFOLDER\Media\Object1\subfolder1\file3

Archive Request with Delete on Source

There are instances where you must delete content, and possibly the parent folder, on a server. There are two options available to satisfy all possible scenarios:

-r

Recursive delete

-delete_fpr

Recursive deletion including the parent folder

The two options work either separately or together as indicated in the following workflow examples:

Example 1**Files Path Root**

C:\source\root

Files

*

Options

-r

DIVArchive will delete the content of C:\source\root recursively because of these settings.

Example 2**Files Path Root**

C:\source\root

Files

*

Options

-r -delete_fpr

DIVArchive will delete the content of C:\source\root recursively and the parent folder (root) because of these settings.

Example 3**Files Path Root**

C:\source\root

Files

*

Options

DIVArchive will delete only the content of `C:\source\root` because of these settings.

Example 4**Files Path Root**

`C:\source\root`

Files

*

Options

`-delete_fpr`

DIVArchive will delete only the content of `C:\source\root`, and eventually the parent folder (`root`) if it is empty, because of these settings.

Example 5**Files Path Root**

`C:\source\root`

Files

`object*`

Options

`-r`

DIVArchive will delete the content of `C:\source\root\object` recursively and the parent folder (`object`) because of these settings.

Example 6**Files Path Root**

`C:\source\root`

Files

`object*`

Options

`-r -delete_fpr`

DIVArchive will delete the content of `C:\source\root\object` recursively, then delete `C:\source\root\object`, and finally delete `C:\source\root` if it is empty because of these settings.

Example 7**Files Path Root**

`C:\source\root`

Files

`object1*`

`object2*`

Options

-r

DIVArchive will delete the content of C:\source\root\object1 recursively, delete C:\source\root\object1, delete the content of C:\source\root\object2 recursively, and delete C:\source\root\object2 because of these settings.

Example 8**Files Path Root**

C:\source\root

Files

object1*

object2*

Options

-r -delete_fpr

DIVArchive will delete the content of C:\source\root\object1 recursively, delete C:\source\root\object1, delete the content of C:\source\root\object2 recursively, delete C:\source\root\object2, and delete C:\source\root if it is empty because of these settings.

Example 9**Files Path Root**

C:\source\root

Files

object1*

object2*

Options

-r -delete_fpr

DIVArchive will delete the content of C:\source\root\object1 recursively, delete C:\source\root\object1, delete C:\source\root\object2\subfolder\clip.mov, delete C:\source\root\object2\subfolder if it is empty, delete C:\source\root\object2 if it is empty, and delete C:\source\root if it is empty because of these settings.

Restore Requests

A *Restore* is defined as the transfer of a DIVArchive object to a destination. You can initiate a Restore request from the Control GUI **Action** tab. Alternatively you can use the Objects view under the **Manage** tab by right-clicking the object to restore and selecting **Restore** from the resulting menu.

This request submits an Object Restore request to the DIVArchive Manager and the Manager chooses the appropriate instance to be restored. The request will fail if the requested object is on media that is not available.

The following fields are included in the Restore Request screen:

Object Name

The name of the object to be restored.

Category

The category assigned to the object when it was archived. This parameter can be left empty but this may result in an error if several objects have the same name.

Instance

If multiple instances of an object reside in DIVArchive, you can specify which particular instance to restore. If left blank, DIVArchive will select the instance that provides the most optimum transfer.

Destination

Destination (for example, a video server or browsing server) for the object files. This name must be known by the DIVArchive configuration. Use the drop-down list to select the desired Destination.

Files Path Root

The root folder on the destination where the object files will be placed. This option appends or overrides the *FPR* used in the original archive request. If left empty, the files will be placed in the *Files Path Root* folder specified when archiving the object.

Options

Additional options for performing the transfer of data from DIVArchive to the destination. These options supersede any options specified in the DIVArchive configuration database. Currently the possible values for *Options* are as follows:

No Entry

No entry in this field specifies no options.

-login

A user name and password is required to log in to some sources. This option obsoletes the **-gateway** option from earlier releases.

-pass

The password used with **-login**.

Quality of Service

One of the following codes:

DIVA_QOS_DEFAULT

Restoring is performed according to the default Quality of Service (currently direct and cache for restore operations).

DIVA_QOS_CACHE_ONLY

Use cache restore only. Cache only restores can only restore from a tape instance. However, a tape instance on a tape in a group with a higher priority is preferred to a tape instance on a tape in a group with a lower priority.

DIVA_QOS_DIRECT_ONLY

Use direct restore only - no disk instance is created.

DIVA_QOS_CACHE_AND_DIRECT

Use cache restore if available, or direct restore if cache restore is not available.

DIVA_QOS_DIRECT_AND_CACHE

Use direct restore if available, or cache restore if direct restore is not available.

DIVA_QOS_NEARLINE_ONLY

Use Nearline restore only. Nearline restore will restore from a disk instance if one exists. Otherwise it will create a disk instance and restore from the newly created

disk instance. However, a disk instance on a disk in an array with a higher priority is preferred to a disk instance on a disk in an array with a lower priority.

DIVA_QOS_NEARLINE_AND_DIRECT

Use Nearline restore if available, or direct restore if Nearline restore is not available. However, a disk instance on a disk in an array with a higher priority is preferred to a disk instance on a disk in an array with a lower priority.

Additional and optional services are available. To request those services use a logical OR between the previously documented Quality of Service parameter and the following constants:

DIVA_RESTORE_SERVICE_DO_NOT_OVERWRITE

Do not overwrite existing files on the destination server.

DIVA_RESTORE_SERVICE_DO_NOT_CHECK_EXISTENCE

Do not check for the existence of the clip on the server.

DIVA_RESTORE_SERVICE_DELETE_AND_WRITE

Force delete and rewrite if object exists on the server.

DIVA_RESTORE_SERVICE_DEFAULT

Operate using the default setting in the Manager configuration.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Source Media Priority

This value overrides the manager configuration parameter `DIVAMANAGER_CACHE_QOS_USE_DISK`, which prefers disk instances over tape instances during a Restore request.

Additional Services

Use the menu list to select whether DIVArchive will terminate the request if the file name on the destination already exists.

Archiving and Restoring in AXF Mode

In DIVArchive 7.6, an archive request for an AXF file results in DIVArchive automatically detecting that the file is an AXF file. Instead of archiving the AXF file itself, DIVArchive will archive the contents of the AXF file, retrieving the *Checksums* and *Provenance* of the object.

The restore request optional parameter **-axf** instructs DIVArchive to restore the original asset into an AXF file. Instead of purely restoring the content of an object to the destination, DIVArchive will restore the content into a new AXF Wrapper. When combined with **-rm** or **-rxml**, you can use this option to export an object with metadata information and then drop it into a DFM Watch Folder.

The AXF archive and restore functionality includes the following:

- Archive the content of an AXF file using auto-detection.
 - Identifies the `.axf` file name extension
 - Confirms it is a single file
 - Checks the beginning of the file for specific AXF properties
 - Checks for metadata information
- Restores an object into a new single AXF file. Previously this operation would have resulted in multiple files.
- Preservation of checksums
- Preservation of metadata
- Preservation of provenances
- Complex object support

This options works with **FTP_STANDARD**, **LOCAL**, **DISK**, **CIFS**, and **EXPEDAT** Source/Destinations.

Oracle DIVArchive Partial File Restore Requests

DIVArchive supports four types of Partial File Restore. The type of Partial File Restore implemented is determined by the *format* parameter in the request. This request submits a Partial Object Restore request to the DIVArchive Manager and the Manager chooses the appropriate instance to be restored. *If the requested object is on media that is not available the request will fail.*

The following list describes each type of Partial File Restore:

Files and Folders

This type of *Partial File Restore* enables extracting entire files from the archive or extracting entire directories and their contents. You can extract multiple files and directories in the same request. The files are restored with the file names and path names that were specified in the archive. There is no valid renaming option in *File and Folder Partial File Restore*. For example, a file archived as `misc/12-2012/movie.avi` will be partially restored to a `misc/12-2012` subdirectory with the name `movie.avi`.

When a folder is specified in a *File and Folder Partial File Restore*, all files within that folder (and the folder itself) are restored. Additionally, each directory to be restored can include the **-r** option to recursively restore all folders nested within the target folder.

Byte Offset

This type enables extraction of a range of bytes from a particular file in the archive. For example, you can extract bytes 1 to 2000 (the first 2000 bytes of the file), or byte 5000 to the end of the file (or both) and store them to an output file such as `movie.avi`.

Note: The result of the *Byte Offset Partial File Restore* is usually not playable when applied to video files. The Actor will not apply the header, footer, and so on, according to the video format.

Timecode

This type of Partial File Restore enables you to select a portion of a particular media file based on a timecode. For example, you could extract from 00:00:04:00 to 00:10:04:00 (a 10 minute segment starting 4 seconds in and ending at 10 minutes and 4 seconds), and place that segment into an output file such as `movie.avi`. The resulting file is a smaller version of the original movie file.

Note: The result of the Timecode Partial File Restore is a valid clip when applied to video files. The Actor will apply the header, footer, and so on, according to the video format. If the Actor cannot parse the format, the request will be terminated. This type of Partial File Restore can only be applied to a valid video clip.

DPX

This type of Partial File Restore enables extracting a range of DPX files from the archive. The entire object is viewed as a single media item, with one DPX file representing one frame of media. Only files with a `.dpx`, `.tif`, and `.tiff` extension in the archive are considered frames for the purposes of this command.

The first `.dpx` file (or `.tif`, or `.tiff` file) in the archived object is considered *frame 1*, the second `.dpx` in the archive is *frame 2*, and so on.

In the unlikely event that the `.dpx`, `.tif`, and (or) `.tiff` files are mixed, the first sequential file of any of the three extensions will determine which files are considered to be part of the sequence. For example, if a stray `.tif` file is mixed with a collection of `.dpx` files and it came first in the sequence, the sequence is interpreted as a `.tif` sequence and `.dpx` files are ignored, even if this was not your intention.

For example, to extract frames 10 through 15 using *DPX Partial File Restore*, it restores the tenth `.dpx` file that appears in the archive, the eleventh `.dpx` file, and so on, ending with the fifteenth `.dpx` file, for a total of six files. Any other files (such as `.wav` files) are skipped by DPX Partial File Restore.

Special frame numbers 0 and -1 may be used to refer to the first and last frame respectively. *Frame 0* is valid as the start of a frame range and *Frame -1* is valid as the end of a range.

Valid frames and ranges are as follows:

- Frame 0 = first frame (select the *Start of File* check box)
- Frame 1 = the first frame in the sequence
- Frame n = the nth frame in the sequence
- Frame -1 = last frame (select the *End of File* check box)
- Specifying Frame 0 as the last frame is considered invalid.
- Specifying Frame 0 to 0 is currently invalid and will not return the first frame as might be intended.
- Specifying Frame 0 to 1 or Frame 1 to 1 will return the first frame.

- Specifying the `Frame -1` in the first frame currently produces an error. You also cannot specify `Frame -1` to `-1` to return the exact last frame if the exact number of the last frame is unknown.

Examples:

`startRange=0 - endRange=1`

Restores only the first frame.

`startRange=600 - endRange=635, startRange=679 - endRange=779`

Restores frames 600 through 635, and frames 679 through 779.

`startRange=810 - endRange=-1`

Restores all frames from frame 810 to the end of the archive.

The actual file name may (or may not) match the frame number in DIVArchive. After restore DIVArchive interrogates the archive, finds the file order, and determines the *Frame Number* from the resulting file order found, it does not consider the file name. The first `.dpx`, `.tif`, or `.tiff` file found is considered *Frame 1*.

You must be careful when archiving DPX files to ensure they can be partially restored properly because *DPX Partial File Restore* does not examine the file name or the DPX header information to determine which file is assigned to which frame. The assignment is based purely on the order in which the `.dpx` files appear in the archive. By default this order is based on ordering established by the source and is typically alphanumeric. For example, NTFS DISK Source/Destinations order files and folders case insensitively as a general rule, except where diacritical marks, such as `'`, ```, `^`, and so on are applied.

By default, when DIVArchive encounters a subfolder it recursively processes all of the children of that folder (including subfolders) before continuing with other files. If a folder appears in the alphanumeric folder listing it is archived recursively in the order it appears, but this can potentially create some issues. For example, if you want all of the subdirectories of a given directory processed first, followed by the files in the directory. Or, you might want all files processed first, then subdirectories.

DPX Partial File Restore looks at an entire object as a single piece of media. If multiple reels or clips appear in an archive, they can be stored in folders and partially restored using *File and Folder Partial File Restore*, but to *DPX Partial File Restore* they are viewed as one long movie clip. If this is a desired effect, you must ensure that the directories are sorted alphanumerically in the order the frames should be arranged.

DIVArchive does not perform any special audio handling for DPX media (other than what might be embedded in DPX files). DIVArchive can support transcoding of DPX media, but a transcoder may change the file names and (or) file order of the DPX archive.

Submitting a Partial File Restore Request

You can submit a Partial File Restore request clicking on the **Partial Restore** button under the **Action** tab. Alternatively you can view the Archived Objects under the **Manager** tab, right-clicking the desired object and selecting **Partial Restore** from the resulting menu.

Either method results in the *Partial Restore Wizard* being displayed. If no object is selected and the **Partial Restore** icon (under the **Action** tab) is used, the wizard opens to **Step 1** (of 3) and the *Object Name* and *Category* must be entered manually.

If an object was selected and the (right-click) context menu was used, the wizard will open to **Step 1** (of 2). This step is similar to **Step 2** using the previous method to open the wizard window.

Use the following procedure to navigate through the wizard:

1. Enter the *Object Name* and *Category*, or select the object in the left pane.
2. Click **Next** to proceed.
3. Select the type of *Partial File Restore* to perform using the menu list.
Each type of *Partial File Restore* has different options associated with it, except for *Files and Folders Partial File Restore*, which does not have any specific options associated with it.
4. Drag-and-drop the objects from the left pane to the right pane to add them to the request.
5. Click **Next** to proceed.
6. You must include additional parameters for the following *Partial File Restore* types by double-clicking the object name after you moved it to the right pane.

Byte Offset

No offset is entered until you open the Options dialog box and manually enter one. Add the required *Offset* parameters and click **Add** to include them in the request.

Timecode

The *File Format* list is enabled after selecting the *Timecode Partial File Restore*. Select the proper file format from the drop-down list.

Double-click the object to open the Options dialog box. Add the required *Offset* parameters and click **Add** to include them in the request.

DPX

Double-click the *DPX Frames* in the right pane to open the Options dialog box. Add the required *Offset* parameters and click **Add** to include them in the request.

7. After selecting the *Partial File Restore* type and associated options for each object, click the **Next** Button to go to the final screen.
8. Complete the required information on the final screen and click **Send** to send the request.

Note: Partial File Restore requests for AVI format files must include the same offset range (TCin, TCout) for all object components (for example, clip.avi, clip_1.wav, clip_2.wav).

The following list describes the parameters in the final Send Partial File Restore request screen:

Instance

If there are multiple instances of an object, DIVArchive will select the instance which will allow the request to complete in the least amount of time (for example, a disk instance will be selected over a tape instance). Specifying an instance number in this field will override this behavior and target the specific identified instance.

Destination

Destination (for example, a video server or browsing server) for the object files. This name must be known by the DIVArchive configuration. Use the drop-down list to select the desired Destination.

Files Path Root

The root folder on the destination where the object files will be placed. If left empty, the files will be placed in the *Files Path Root* folder specified when archiving the object.

Options

Additional options for performing the transfer of data from DIVArchive to the destination. These options supersede any options specified in the DIVArchive configuration database. Currently the possible values for *Options* are as follows:

No Entry

No entry in this field specifies no options.

-login

A user name and password is required to log in to some sources. This option obsoletes the **-gateway** option from earlier releases.

-pass

The password used with **-login**.

Quality of Service

One of the following codes:

DIVA_QOS_DEFAULT

Restoring is performed according to the default Quality of Service (currently direct for restore operations).

DIVA_QOS_CACHE_ONLY

Use cache restore only.

DIVA_QOS_DIRECT_ONLY

Use direct restore only - no disk instance is created.

DIVA_QOS_CACHE_AND_DIRECT

Use cache restore if available, or direct restore if cache restore is not available.

DIVA_QOS_DIRECT_AND_CACHE

Use direct restore if available, or cache restore if direct restore is not available.

Additional and optional services are available. To request those services use a logical OR between the previously documented Quality of Service parameter and the following constants:

DIVA_RESTORE_SERVICE_DO_NOT_OVERWRITE

Do not overwrite existing files on the destination server.

Additional Services

Use the menu list to select whether DIVArchive will terminate the request if the file name on the destination already exists.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Multiple Restore (N-Restore) Requests

If an object is required on multiple destinations simultaneously, the Multiple Restore (or N-Restore) request enables specification of all necessary destinations in one command and submits it as a single request (as opposed to multiple standard Restore requests for each destination). This is also beneficial when the restore involves a tape instance because the tape is accessed once for the transfer rather than multiple read operations for single restore requests of the same object. Up to five simultaneous destinations are currently supported.

If the object to be restored is part of a spanned tape set, it must be restored to cache before the transfer to all destinations. If the transfer to one of the destinations fails, the others will still proceed (if possible) and the request status will be **Partially Aborted**.

If multiple renaming rules are defined DIVArchive will process the rule for each Source/Destination independently.

Use the following procedure to execute a Multiple Restore request:

1. On the **Action** tab of the ribbon bar, select the **Multiple Restore** button to open the Multiple Restore Request dialog box.
2. Enter the required parameters in the appropriate fields.

To add multiple destinations, select the desired destination from the **Destination** menu list and click the double right-facing arrows to add the selected destination to the destination list text box field. Repeat this process until all required destinations are added to the list.

3. Click **Send** to process the request.

Delete and Delete Instance Requests

Use the **Delete** command to delete all instances of an object, or only a specific instance of the object from DIVArchive. *You must use this command with caution.* This command submits an object Delete request to the DIVArchive Manager and the Manager deletes every instance of the object (unless otherwise specified).

The **Instance** field of the Delete request determines exactly what will be deleted from DIVArchive. If this field is left empty, then all instances of that object will be deleted. A specific number entered into this field will only delete the specified instance.

You initiate the Delete request with the **Delete** button on the ribbon bar. You can also initiate it from the Objects view under the **Manage** tab by right-clicking the object to delete and selecting **Delete** from the resulting menu. If the **Delete** command is selected from the Objects view, the instance field is updated automatically with the selected instance. Only specific instance deletion is supported from this view.

Note: Deletes and repacks do not clear WORM media because these are Write-Once media. The instances are deleted but the space is not recoverable.

The following fields are included in the Send Delete Request screen:

Object Name

The name of the object to be deleted.

Category

The category assigned to the object when it was archived. This parameter can be a null string, but this may result in an error if several objects have the same name.

Instance

If multiple instances of the object reside in DIVArchive, you can specify which specific instance to delete. If no number is entered in this field then DIVArchive will delete all instances of that object.

Media

The media can be an existing tape group or disk array. The drop-down list will only contain those items already configured in the DIVArchive configuration.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Copy Requests

Use the **Copy** command to create an instance of an existing object in the same or another group or array. This is useful for creating a backup copy of the object on another media.

Submits a request for copying an archived object to a new object, with another name and (or) category, to the DIVArchive Manager and the Manager chooses the

appropriate instance as the source of the copy. All types of transfers (disk to disk, disk to tape, tape to disk, and tape to tape) are supported.

In the event the requested object is on media that is not available, the request will fail.

When a Copy request is issued with no instance specified, and there are multiple instances of that object, DIVArchive will select the instance that will execute the copy operation in the shortest possible time (for example, a disk instance will be selected over a tape instance). If an instance number is entered in the *Instance* field of the request, the copy operation will use that specific instance only.

You initiate the Copy request with the **Copy** button on the ribbon bar, or the Objects View under the **Manage** tab by right-clicking the object to copy and selecting **Copy** from the resulting menu.

The following fields are included in the Copy Request screen:

Object Name

The name of the source object.

Category

The category of the source object.

Instance

If multiple instances of the object reside in DIVArchive, you can identify which specific instance to copy. If no instance is specified, DIVArchive will select the instance that will provide the most optimal execution time.

Destination Media

The *Destination Media* can be either a tape group or disk array. If the new instance is being created in the same group or array, the request will only succeed if it can be copied to a separate tape or disk.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Copy As Requests

When an object is archived to DIVArchive, it is uniquely identified by its *Object Name* and *Object Category*. Neither the name nor the category can be altered once it exists within the DIVArchive database. The **Copy As** command allows creation of a new object in DIVArchive with a new *Object Name* and (or) *Category*, and then the original object can be deleted if desired or necessary (the latter must be performed manually).

You initiate the Copy As request with the **Copy As** button on the ribbon bar. You can also use the Objects View in the **Manage** tab and right-click the object, and select **Copy As** from the resulting menu.

For any DIVArchive object, the *Object Name* may not necessarily match that of the file name of the essence stored within it. If you use the **Copy As** command to create a DIVArchive object, it will still be restored using the same name with which it was originally archived.

Example:

If a file named *xyz* is archived from a server, regardless of what object name was given to it in DIVArchive, it will always restore to a destination as *xyz* regardless of its DIVArchive *Object Name*.

When a Copy As request is issued directly from the Objects View, the *Instance* field of the request is automatically left empty (you can enter an instance number manually before the request is issued). If this field is left empty when the request is submitted and there are multiple instances of that object, DIVArchive will select the instance that will complete the transfer in the shortest possible time by default (that is, a disk instance will be selected over a tape instance). This depends on the QOS specified and the DIVArchive configuration.

When the Copy As request is issued from the Object Properties View, the *Instance* field of the request is automatically updated with the number of the selected instance, and only that specific instance is copied. *Commands that are issued from the Objects Properties View must always specify an Instance Number.*

The following fields are included in the Copy As Request screen:

Source Object Name

The name of the source object.

Source Object Category

The category of the source object.

Destination Object Name

The name of the destination object.

Destination Object Category

The category of the destination object.

Instance

If multiple instances of the object reside in DIVArchive, you can identify which specific instance to copy. If no instance is specified, DIVArchive will select the instance that will provide the most optimal execution time.

Selecting *Performance Optimized Instance* instructs DIVArchive to use the instance that will achieve the request in the shortest time possible (for example, a disk instance will be selected over a tape instance).

Destination Media

The *Destination Media* can be either a tape group or disk array. If the new instance is being created in the same group or array, the request will only succeed if it can be copied to a separate tape or disk.

Destination Storage Plan

The *Storage Plan* to assign the new object on the destination.

Comments

Comments added here will be added to the new object's properties.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Associative Copy Requests

The Associative Copy request works with the Archived Objects View and enables you to copy multiple objects sequentially to a single tape in a specified group. An example is backing up the selected objects to a single tape so it can subsequently be externalized.

You initiate the Associative Copy request with the **Associative Copy** button on the ribbon bar. Alternatively, you can use the Objects View under the **Manage** tab by right-clicking the object to copy and selecting **Associative Copy** from the resulting menu.

The DIVArchive objects available for an Associative Copy request must first be obtained by executing a query in the Archive Objects view. You can target specific object by name, category, and (or) creation date.

Associative copying involves reading and writing files from the source group(s) to the destination group one file at a time. DIVArchive guarantees that these instances are stored sequentially on tapes with the following exceptions:

- It is not compatible with tape spanning. If no tape is currently available for copying all of the selected objects to a single tape, the request terminates (and is retried once) instead of spanning. If the sum of the size of the objects to copy exceeds the capacity of every individual tape present in the library, the request terminates.
- Two or more instances of an object on the same tape are not permitted. This may reduce the range of tapes that can be selected for the Associative Copy. If no appropriate tape is available to meet this condition, the request will be terminated.
- The request is complete only when every object has been copied onto the same tape.
- If a drive or tape failure during a write operation occurs, instances currently written are erased and the request is retried once.
- Choice of the tape to be used for the copy follows the policy used for the archive operation (written tapes with enough remaining size regardless of optimizations).

The following fields are included in the Associative Copy Request screen:

Main Display Field

All objects returned from the query in the Archived Objects view are displayed in the Associative Copy request. However, only those selected when the command was issued are highlighted. The highlighted entries can be subsequently selected or deselected by using either the **CTL** or **SHIFT** keys in combination with the mouse.

Destination Group

Only tape groups currently configured in the Configuration Utility will be displayed in this list. You must select your destination group from the list.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Require and Release Requests

Requiring or releasing objects is primarily a database entry for instances that are, or can be, externalized from the tape library. Tapes that can be externalized or must be internalized are determined through the Require Instances view.

Require indicates to the DIVArchive Manager that this instance must be inserted. This request has no effect if the instance is already required. You can retrieve a list of instances that are **REQUIRED** and **EJECTED** from the Control GUI.

You initiate the Require or Release request with the **Require/Release** button on the ribbon bar. You can also use the Objects view under the **Manage** tab and right-click the desired object and selecting either **Require** or **Release** from the resulting menu.

The following fields are included in the Send Require Request screen:

Object Name

The name of the required object.

Category

The category assigned to the object when it was archived. This parameter can be left empty but this may result in an error if several objects have the same name.

Instance

No value entered here forces the function to apply to every instance of the given object.

Release indicates to the DIVArchive Manager that this instance can be externalized. This request has no effect if the instance has already been released. You can retrieve a list of instances that are **RELEASED** and **INSERTED** from the Control GUI. A releasable tape is one that only contains released instances.

The following fields are included in the Send Release Request screen:

Object Name

The name of the required object.

Category

The category assigned to the object when it was archived. This parameter can be left empty but this may result in an error if several objects have the same name.

Instance

No value entered here forces the function to apply to every instance of the given object.

Eject Tape Requests

The Eject Tape request ejects the selected tapes from the associated library. You can select one or more tapes simultaneously. You initiate the Eject Tape request with the **Eject Tape** button on the ribbon bar, or in the Tapes View under the **Home** tab by right-clicking the tape to eject and selecting **Eject Tape** from the resulting menu.

The following fields are included in the Eject Tape Request screen:

Comments

Comments can be added when the tape is ejected. These may refer to its location or other information. you can view comments later by examining that tapes properties in the Tapes View.

Release instances on tape(s)

When selected all DIVArchive object instances on the tape being ejected are released.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Insert Tape Requests

This request enables inserting a tape into a library through its CAP. You can only enter the tapes in the CAP after this command is issued with some library configurations.

Note: Contact Oracle Support for instructions on bulk loading of tapes into a library.

You initiate an Insert Tape request using the **Insert Tape** button located under the **Action** tab on the ribbon bar, and then the **Tape Actions** button.

The Sony PetaSite PSC software enables you to enter a tape in its CAP and manually place it within the PetaSite. In this case, DIVArchive is not informed of the action by the PSC and will not recognize the tape until the library is audited using the Configuration Utility.

The following fields are included in the Insert Tape Request screen:

Require instances on tape

When selected, any *Released* instances on the inserted tape are set to *Required*.

Robot Manager Name

This list specifies the DIVArchive Robot Manager controlling the associated library for insertion of the tapes. See [Appendix A for Oracle DIVArchive options and licensing information](#).

CAP ID

This list is for libraries with multiple CAPs. Some libraries will not unlock the CAP, enabling the tape to be inserted, until the **Insert Tape** command is issued. You can specify which CAP to unlock from this list.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Repack Tape Requests

The Repack Tape request sends a repack request for the selected or specified tape. A tape repack operation reclaims unusable space on a tape due to object deletions, and removes fragmentation.

Caution: The repack tape function is not intended to move material from a tape that is already known to be generating read errors. Contact Oracle Support for advice in these situations.

You initiate the Repack Tape request with the **Repack Tape** button on the ribbon bar, or the Tapes View under the **Home** tab by right-clicking the tape to repack and selecting **Repack Tape** from the resulting menu.

Tape repacking can be a lengthy process and DIVArchive, by default, considers tape repacks a low priority operation. If higher priority requests are issued a tape repack request can be temporarily suspended while the higher priority requests are completed. If higher priority requests are issued sporadically it can result in frequent mount and dismount operations of the drive performing the repack. Therefore, Oracle recommends that tape repack operations should be run during off-peak periods where the frequency of higher priority requests is limited. Some installations may have a drive dedicated solely to tape repacking to prevent this scenario from occurring.

The repack process involves the following tasks (in order):

1. Mounting the source tape and reading all objects to temporary disk cache of an Actor enabled for repack operations.

Note: If the temporary disk cache is filled before reading all objects from the source tape, DIVArchive will begin proceed to Step 2 until the cache is cleared. DIVArchive will then proceed to read the remaining objects from the source tape. This process is repeated until all objects are read.

2. Mounting a tape from the *Unused Tapes Sets* pool associated with the Set ID of the group from the source tape.
3. Writing all objects from the temporary cache in Step 1.
4. Deleting the objects from the temporary cache after all objects have been successfully written to the new tape.
5. The original source tape is released to the *Unused Tapes Sets* pool and unassigned from the group.

If a read error occurs at some point during the repack process from the source tape or a write error occurs on the destination tape, the entire repack request is terminated and no objects from the source tape are deleted. If the cache filled during the repack request and objects were successfully written to another tape before the cache was cleared, those objects will remain on the destination tape.

If a read error occurred, the source tape will have the repack status and write status disabled. If a write error occurred, the destination tape will have its write status disabled and will not be used for any tape write operations. You can view the write and repack states of both tapes in the Tape States frame of the Configuration Utility.

During the manual repack of WORM media, the usual dialogs display, but a warning is included notifying you that the space on the source media will not be recoverable after the repack is complete. Deletes and Repacks do not clear WORM media because these are Write-Once media. The instances are deleted, but the space is not recoverable.

You initiate the Repack Tape request with the **Repack Tape** button on the ribbon bar, or the Tapes View under the **Home** tab by right-clicking the tape to repack and selecting **Repack Tape** from the resulting menu.

The following fields are included in the Repack Tape Request screen:

Repack WORM (Write-Once media) with barcode

Barcode of the tape to be repacked.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Verify Tape Requests

The Verify Tape request initiates a system read-back through every object on the selected tape one at a time and verifies all of the checksum values.

You initiate the Verify Tape request with the **Verify Tape** button on the ribbon bar, or the Tapes View under the **Home** Tab by right-clicking the tape to verify and selecting **Verify Tape** from the resulting menu.

The following fields are included in the Verify Tape Request screen:

Verify Tape with barcode

Barcode of the tape to be verified.

Priority

The priority level for this request. The level can be in the range zero to one hundred, or the value **DEFAULT**. The value zero is the lowest priority and one hundred the highest priority. Move the slide control to increase or decrease the request priority.

There are six predefined values as follows:

- **MIN**
- **LOW**
- **NORMAL**
- **HIGH**
- **MAX**
- **DEFAULT**

If the **DEFAULT** check box is selected, the slide control becomes inactive and the priority defined in the Manager configuration is used.

Export and Import Tape Requests

The Export Tape request type enables one or more tapes containing DIVArchive objects to be exported to another independent DIVArchive platform (for example, at a remote disaster recovery or partner site). See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Note: See the *Oracle DIVArchive Export/Import User's Guide* in the *Oracle DIVArchive Core documentation* library for details on tape exporting and importing, bulk tape exporting and importing, encrypted tape exporting and importing, and API exporting and importing functionality.

The metadata of each tape (that is, the object names and categories it contains and their location on the tape itself) are maintained in the DIVArchive Oracle Database. For complex objects this information is also in the Metadata Database. Additionally, the metadata of each tape is saved to an XML file when the tapes are exported. The XML file transfers the metadata of each tape into the other DIVArchive platform's database when the tapes are imported.

The **Export Tapes** command is *not* used for transferring tapes between two or more libraries controlled by the same DIVArchive Manager. Tapes (and the instances they contain) exported from DIVArchive using this command are also removed from the DIVArchive database. If the object being exported is the last (or only) instance of that object, it will be removed entirely from the database.

The following new parameters have been added for export and import tape functions. *All XML metadata files exported from all previous DIVArchive versions will not continue to be supported.*

During an export and import of WORM media, whether the media is Write-Once and the media is a cartridge is identified in the exported XML file. This information is imported with the attributes `isWriteOnce` and `isCartridge` being either `true` or `false`.

Importing WORM media is supported by DIVArchive 7.4 and later. When you import DIVArchive 7.4 (or later) WORM media into a DIVArchive release earlier than DIVArchive 7.4, DIVArchive ignores the WORM flag (it is set to `false`), and logged in the Manager log. The device will be visible in the Control GUI as a tape but unusable if finalized, or if no WORM drive is connected to the system.

The following table describes the export and import parameters:

Table 2–1 Export and Import Parameters

Parameter	XML Element or Attribute	Notes
<code>objectId</code>	Attribute of the object element	Not imported. A new Object ID is generated during import.
<code>uuid</code>	Attribute of the object element	Imported if present, otherwise a new UUID will be generated.
<code>numFolders</code>	Attribute of the object element	
<code>format</code>	Attribute of the object element and attribute of the tape element	0 = legacy 1 = AXF -1 = unknown
<code>numFolders</code>	Attribute of the object element	
<code>isHeaderValid</code>	Attribute of the object element	
<code>isComplex</code>	Attribute of the object element	
<code>footerBeginPos</code>	Attribute of the element	If exists in database

Table 2–1 (Cont.) Export and Import Parameters

Parameter	XML Element or Attribute	Notes
footerEndPos	Attribute of the element	If exists in database
compOrderNumBegin	Attribute of the element	If exists in database
compOrderNumEnd	Attribute of the element	If exists in database
fileFolderMetadataInfo	Element	Valid for complex objects
fileFolderMetadataInfo-elem	Element	Valid for complex objects
checksums and checksum	Element	Not valid for complex objects

You initiate the Export Tape request with the **Export Tape** button on the ribbon bar, or the Tapes View under the **Home** tab by right-clicking the tape to export and selecting **Export Tape** from the resulting menu.

The following fields are included in the Eject Tape Request screen:

Comments

Enter any desired comments in this field.

Delete from DB

When selected removes selected tape(s) from the *Exported Tapes* list.

Exported Tapes

This area displays tapes selected for export. These tapes and the instances they contain will be removed from the DIVArchive Database once exported. If required, select any tapes to be removed from the *Exported Tapes* list and click **Remove Selected**.

Exported Tape Metadata Files

DIVArchive writes each tape's metadata to an XML file when the tapes are exported from your system. If an object is spanned across two (or more) tapes, the XML file will encompass every tape in the spanned set. The naming format of each tape metadata XML file is `Tapeset-<Barcode>.xml` (for example, `Tapeset-000131.xml`).

The root path where the XML files are saved is defined by the `DIVAMANAGER_EXPORT_ROOT_DIR` parameter in the DIVArchive Manager configuration file (consult your Site Configuration for these details). By default, the export absolute directory root path is `%DIVA_HOME%\Program\Manager\bin\exported\`. From this root path, the XML files from each **Export Tapes** command are saved in subfolders based on the date and time the command was run.

Tape Import Workflow

To use the `importtapes` command, first ensure that the XML metadata file and the `.ffm` files that were exported exist on the DIVArchive system into which they are to be imported. The files must exist in uncompressed form (unzipped) in the DIVArchive Manager's `bin` directory (by default). The object tape group must also already exist on the target system before the import begins. This tape group does not necessarily have to be the same group that the tape was assigned to in the source system.

There are three main ways that a tape object can be treated during the import process:

- Imported as a new object

- Skipped if the object is already present in the system
- Imported as an instance of a pre-existing (in the DIVArchive database) object. *This option only functions correctly if the checksums match.*

See the *Oracle DIVArchive Export/Import User's Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for more information.

Importing Tapes

The associated XML files from exported tapes must be copied to the DIVArchive Manager bin directory on the platform where they are to be imported. Before inserting the tapes into the library, you must import the tape metadata into the DIVArchive database. You must execute this for each tape (or spanned set) to be imported.

1. Open a command prompt window.
2. Execute the following commands in the order shown:

```
cd \%DIVA_HOME%\Program\Manager\bin
importtapes <destination_group> <metadata_file>
```

destination_group

The tape group that the tape (or spanned set) and its instances will be assigned to in the destination system.

metadata_file

The file name of the XML file for the tape (or spanned set).

Example:

The tape with barcode number 000131 also contains objects that are spanned across the tape with a barcode of 000120. When tape 000131 is exported, the exported XML file is named `Tapeset-000131.xml`. This `.xml` file also encompasses the objects from tape 000120, and both tapes are ejected from the library.

After all objects from both tapes are exported to the XML file, all instances on each tape (and references to the tapes themselves) are removed from the DIVArchive database. The XML file is then copied to the `%DIVA_HOME%\Program\Manager\bin` folder of the destination DIVArchive system where it is to be imported.

You import the metadata for this tape into the group MOVIES using the following command:

```
importtapes MOVIES Tapeset-000131.xml
```

After the tape's metadata successfully imports into the database (check the Control GUI Current Requests queue), both tapes and their objects are considered externalized and can both be entered into the library with the **Insert Tape** command.

Migrate Content Requests

The Migrate request enables tape content migration to another tape group or disk array. For example, if you are upgrading to a new media type in your library and want to move the content from the old legacy tapes to the new AXF format.

Note: DIVArchive includes an embedded migration service (DIVAmigrate). It is a separate internal (to DIVArchive) service which helps users to schedule and run jobs to migrate content between different media inside of a DIVArchive system. You can use the Control GUI or command line client. Contact Oracle Support for more details.

You must use a migration job to change a tape format from Legacy to AXF, repacking a tape will not change the tape format. Repacking of existing Legacy format objects retains the format of the tape even if the tape group format was updated in the configuration from Legacy to AXF.

This request type is only available from the Control GUI Tapes View. It also uses the Oracle DIVArchive Storage Plan Manager (SPM) option to perform the migration (SPM must be installed - see [Appendix A for SPM licensing information](#)). Appropriate slots must be configured for the migration in the **Slots Tab** of the Configuration Utility. The slots indicate to DIVArchive when the migration operations are to be performed

See the *Oracle DIVArchive Storage Plan Manager (SPM) Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for more information). Also see [Appendix A for Oracle DIVArchive options and licensing information](#).

A Migrate request will perform the following functions (in the order shown):

1. Mount the source tapes and issue Copy requests to DIVArchive to copy from the source tape to the destination media (disk or tape). Any objects that are spanned will require the object to be copied first into cache.
2. Delete the source instance after the object has been successfully copied to the new media.
3. The source tapes are cleared of all DIVArchive objects and returned to the *Unused Tapes Sets* pool.

You initiate the Migrate request with the **Migrate** button on the ribbon bar, or the Tapes View under the **Home** tab by right-clicking the tape to migrate the content from and selecting **Migrate Content** from the resulting menu.

The following fields are included in the Migrate Content Request screen:

Task Name

Enter the name of the migration task in the field.

Migrate content from tapes

This list identifies the barcodes of tapes selected for migration.

Migrate Slot

Select the migration slot you want to use from the list. The slot is defined in the Slots frame of the **Storage Plans** tab in the Configuration Utility. The slots dictate when the migration requests will be issued to DIVArchive.

Dest. Medium

The destination medium (tape group or disk array) for migrated content.

Migration service jobs now have events associated with them. All job events are displayed under the **Job Events** tab in Job Properties dialog box. By default, events are loaded in descending order by *time* and *event id*. The Events table under the **Job Events** tab highlights events using different colors based on severity. Red indicates an *Error*,

yellow indicates a *Warning*, and white indicates *Information*. Clicking the **Refresh** button refreshes the entire Job Properties dialog box.

Oracle DIVArchive Metasources

The Metasource source type allows several currently defined DIVArchive Source/Destinations sharing the same online storage (or monitoring the same folder or FTP server for Drop Folder Monitors) to be combined and considered a single DIVArchive Source/Destination configuration. This unique (and optional) feature enables DIVArchive to provide automatic load balancing and failover capabilities in case of one or more of the individual Source/Destinations going offline.

When requests are issued to DIVArchive with a Source/Destination using the Metasource source type, each additional Archive or Restore request will use the next server in the Metasource list. If the server selected by DIVArchive is offline or encounters an error, DIVArchive will automatically attempt to use the next server in the Metasource list. If all servers fail to fulfill the transfer, the request will stop.

Oracle DIVArchive Symbolic Links

You can archive and restore symbolic links on Linux in DIVArchive 7.6. Symbolic links are only supported for the **AXF** format. When using **LEGACY** format DIVArchive reports an error if a symbolic link is discovered during the transfer.

Symbolic Links are only supported with an SFTP Source/Destination on Windows. You must specify the following options when configuring SFTP:

```
-login [login] -pass [password] -port 22 -socket_block_size 64
```

DIVArchive running under Linux supports **CIFS**, **DISK**, and **LOCAL** sources and destinations. **CIFS** network shares must be mounted on each Linux Actor to be supported.

When restoring an object containing symbolic links to a destination server that does not support them they are ignored and not created on the destination server.

Symbolic links created using the Windows operating system are not supported. Shortcuts created using the Windows operating system are not represented as symbolic links because they are treated as files. Only symbolic links created on UNIX platforms are archived and represented as symbolic links in DIVArchive.

In the Control GUI, the file type displays in the *Components* list on the **Properties** tab of the Object Properties window. The possible types are **File (F)**, **Directory (D)** and **Symbolic Link (S)**. Symbolic links are also displayed in the *Elements* list on the **Instances** tab of the Object Properties window, and as files under the *Components* tab of the Object Properties screen.

Oracle DIVArchive Storage Plan Management

Caution: Misconfiguration of the Oracle DIVArchive Storage Plan Manager (SPM) may lead to unexpected and disastrous results! Minor changes can lead to catastrophic consequences. For example, the deletion of hundreds of thousands of instances on tape or database corruption. Without special training and familiarity with the product, it is recommended to contact Oracle Support before making any changes to SPM. Failure to do so may result in severe damage to the DIVArchive system or even permanent data loss.

The Oracle DIVArchive Storage Plan Manager (SPM) software component enables object lifecycle (interacting with the DIVArchive Manager) management, and is typically installed on the same system as the DIVArchive Manager. For example, an archived object can reside on a specific medium the first day, and migrate (over time) to a different medium according to the policies and rules established by the user. DIVArchive executes the object lifecycle migration as a background activity by following the rules and policies defined in the corresponding Storage Plan.

The newest release of SPM supports disk cleaning based on the object's archived date. Earlier releases of SPM's disk cleaning feature only supported cleaning based on an object's last access time and object size.

Oracle DIVArchive Content Verification

The purpose of the DIVArchive Checksum Support and Content Verification program is to introduce additional levels of verification into the DIVArchive system. This feature introduces checksum generation and verification for each file managed by DIVArchive. The currently supported checksum algorithms in DIVArchive include **MD2**, **MDC2**, **MD5**, **SHA**, **SHA-1**, and **RIPMD160**.

Note: Additional checksum verification is performed at the Oracle Storage Cloud level. See the *Storage Cloud documentation* for information.

The default and recommended checksum algorithm is **MD5**. Although the other algorithms are maintained for backward compatibility, only **MD5** and **SHA-1** are recommended for best results.

When an object contains multiple files a checksum will be generated and later verified for each of the component elements. The following three types of checksum sources are distinguishable:

- Genuine Checksum
- Archive Checksum
- Deferred Checksum

The *TEXT Genuine Checksum* mode enables DIVArchive to archive all files and subfolders in a specified folder while comparing their checksum values against known values stored in an external checksum file. Files that do not have a matching checksum in the external checksum file are archived with DIVArchive's calculated checksum and the external checksum file will not be archived.

Note: The *TEXT Genuine Checksum* is a customer-specific implementation and only supports **MD5**. Unicode is not supported, and checksums must be in a `.md5` text file.

Archive Instructions

Use the following procedure to archive objects using checksum verification through the Control GUI:

1. In the Manager Control GUI, navigate to **Action** and then select **Archive**.
2. From the *Source* drop-down list, select the *Source/Destination* entry that was created in the configuration stage.
3. Enter the desired *File Path Root* in the *File Path Root* text field.
4. Enter the path to the location of the checksum files in the *Files* field and append your entry with a wildcard symbol (an asterisk).
5. Enter `-r` in the *Options* field.
6. Enter the remaining parameters in the request form and click **Send**.

Limitations

The following limitations apply when using checksum verification. See to the *Oracle DIVArchive Checksum Support User's Guide* in the *Oracle DIVArchive Additional Features documentation* library for additional information.

- DIVArchive cannot open or create files on a Windows file system if their absolute path exceeds 256 characters. The *Root Path* must be no more than a total of 256 characters.
- Only ASCII, non-UTF-8 encoded checksum files are supported.
- Each line in the checksum file must begin with an MD5 checksum, followed by 2 spaces, and then the *File Path* to the referenced file.

Genuine Checksum using AXF Transfer

The AXF Genuine Checksum mode enables DIVArchive to archive all files and subfolders in a specified AXF file while comparing their checksum values against known values stored in the AXF file. This kind of workflow is typically combined with a Restore request with `-axf` in the *Request Options* field.

Requirements

The AXF object containing the files to be archived must contain checksum information for each file. The supplied checksum in the AXF object must be the expected type as defined in the configuration.

DIVArchive Configuration Utility Settings

Use the following procedure to properly set the configuration in the DIVArchive Configuration Utility:

1. Create a new *Source/Destination* entry with *Source Type* set to either **DISK**, **FTP_STANDARD**, or **EXPEDAT** as appropriate.
2. Specify an appropriate *Root Path* if necessary. This path, along with the input files specified during the Archive request, determines the location of the checksum file.

For example, if the *Source Type* is **DISK** the *Root Path* can be `D:\root`. If the *Source Type* is **FTP_STANDARD**, the *Root Path* can be `/root`.

3. Set the *External Checksum Source* to **YES**.
4. Set the *Checksum Type* to the expected checksum type (for example, MD5).
5. Set the *GC Mode* to **AXF**.
6. Click **OK**.
7. Select **Tools**, and then **Notify Manager** from the menu to notify the Manager of the configuration.

Archive Instructions

Use the following procedure to archive an object with Genuine Checksum through an AXF transfer:

1. In the Manager Control GUI, navigate to **Action** and then select **Archive**.
2. From the *Source* drop-down list, select the *Source/Destination* entry that you created in the Configuration procedure.
3. Set the desired *File Path Root*.
4. Enter in the path to the location of the AXF file in the *Files* field. The file extension must be `.axf`.
5. Enter the remaining parameters in the request form and click **Send**.

Limitations

The workflow described only works with AXF requests generated by DIVArchive.

Verify Following Restore (VFR) is not compatible with the `-axf` option. VFR was designed to read back the restored content from a video server to verify it has not been corrupted. The `-axf` option does not create an actual restore, but rather an object export in an AXF Wrapper. These options are mutually exclusive and should not be part of the same workflow.

See the *Oracle DIVArchive Checksum Support User's Guide* in the *Oracle DIVArchive Additional Features documentation* library for more information.

Oracle DIVArchive Quality of Service

The *Quality of Service* (QOS) parameter defines how a file is transferred to and from a DIVArchive tape, from a source, or to a destination. The following *Request Options* map to their logical quality of service:

```
-qos_direct_only
-qos_cache_only
-qos_direct_and_cache
-qos_cache_and_direct
-qos_nearline_only
-qos_nearline_and_direct
```

Request Options take precedence over the normal quality of service specification. Also, the normal *Quality of Service* specification takes precedence over the *Source/Destination Connect Options*.

NEARLINE_ONLY and **NEARLINE_AND_DIRECT** QOS values are now supported in the *Source/Destination Connect Options*. These options are only valid for a Restore

request. DIVArchive ignores the setting and the usual default is applied if a source or destination server with either setting is used in any other type of request. The QOS value is no longer case-sensitive and no longer must be specified at the beginning of the options.

For example, `-login test -pass test qos=nearline_only` is a valid option.

The options for QOS are defined as follows:

Direct Only (-qos_direct_only)

The data is transferred immediately to the source as it is read from tape. Alternately, DIVArchive writes the data to tape immediately as it is transferred from a destination. If no direct transfer service is available, the request terminates.

Cache Only (-qos_cache_only)

The data is first transferred entirely to cache storage from tape, and then transferred to the destination. Alternately, the data is first transferred entirely from the source to cache storage, and then written to tape. If no cache service is available, the request terminates.

Direct and Cache (-qos_direct_and_cache)

If a direct transfer is not available, for example no Actor with direct transfer enabled is available, then a cache transfer is performed.

Cache and Direct (-qos_cache_and_direct)

If cache transfer is not available, for example no Actor with cache storage is available, then a direct transfer is performed.

Nearline Only (-qos_nearline_only)

This is only available for Restore and N-Restore requests. If a Nearline disk instance exists, the data is transferred from Nearline disk to the destination. Alternatively, the data is first transferred entirely to Nearline storage on disk from tape, and then transferred to the destination. If no Nearline service is available, the request terminates.

Nearline and Direct (-qos_nearline_and_direct)

This is only available for Restore and N-Restore requests. If Nearline transfer is not available, for example no Actor with Nearline storage is available, then a direct transfer is performed.

Default

The QOS specified in the source or destination configuration is used.

If an object to be restored has both disk and tape instances, and **Cache Only**, or **Cache and Direct** QOS is used, DIVArchive may restore the tape instance as first priority over the disk instance. This behavior depends on the `DIVAMANAGER_CACHE_QOS_USE_DISK` setting in the DIVArchive Manager configuration. If set to true, DIVArchive will restore the disk instance regardless of the QOS specified.

The **Cache** transfer method is particularly important for optimum use of DIVArchive resources when the transfer speeds between tape devices and the Source/Destination vary considerably. For example, if the tape drive in the request can write data at 400 Mbps, but the source can only deliver the data at 100 Mbps, the tape drive will never achieve its optimum transfer rate. Using the **Cache** QOS, the file can be completely transferred to cache first, and the drive can complete its write operation at its maximum speed. This method enables the drive to be used for other requests in a shorter time compared to the same transfer using the **Direct** QOS.

If an object to be restored has a disk instance the **Nearline Only** or **Nearline and Direct** QOS will restore from that instance. If an object to be restored has only tape

instances, the **Nearline Only** or **Nearline and Direct** QOS attempts to create a permanent disk instance and then restore from that instance. Every subsequent Nearline restore for the same object will be blocked and wait for the first restore process to create a disk instance. If the first restore fails to create a disk instance the process repeats with the next restore attempting to create a disk instance. All other restores are blocked until the disk instance has been created.

The default QOS for Restore and N-Restore requests is **Nearline and Direct**. If the restore request is a Transcode Restore, or if the destination server is a Movie2Me server, the Manager will switch the restore QOS to **Direct Only**. Other QOS types are not supported in this case.

DIVArchive Architecture Overview

The DIVArchive system is an integrated archive solution composed of several hardware and software components described in this chapter. Refer to the Linux installation instructions in the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for Linux-specific directions concerning running DIVArchive components as services under Linux.

All Windows batch files (.bat) have corresponding shell scripts (.sh) in Linux. You must substitute Windows paths with Linux paths when operating on Linux. For example, the Windows path C:\DIVA\Program will be /home/diva/DIVA/Program when running under Linux. Also, Linux paths and file names are case-sensitive.

- [Hardware Components](#)
- [Software Components](#)

Hardware Components

Multiple hardware components are required to install the software components and together comprise a complete archiving system. The following sections describe the main system components.

Storage Devices

DIVArchive performs operations among different types and formats of storage devices. Examples of usable devices include the following (see [Appendix A for Oracle DIVArchive options and licensing information](#)):

- RAID sets store data on hard disk drives
- Tape libraries automate storage on magnetic tapes. The tape library includes robotics, tape drives, and a set of tapes stored in the tape library.
- Tape drives can either be SCSI attached to the DIVArchive Actors, or through a Fibre Channel interface. When connected to a Fibre Channel Switch, they can be shared by multiple Actors. Sharing of resources among the Actors is controlled and coordinated by the DIVArchive Manager. The Fibre Channel Switch provides the connectivity between the Actors and any tape drives that are connected to it.
- DIVArchive 7.6.1 enables archiving operations to an Oracle Storage Cloud account, Oracle Cloud Infrastructure Storage, and Sony optical libraries.

Management Stations

At least one management station is required to run the DIVArchive Manager software component, and the library control software supplied with the library to control the

robotics. This is called the *Main Management Station*. The Main Management Station features a mirrored (RAID1) configuration for the data disk where the databases and all essential data are stored.

Because the Management Station is essential to the operations of the archive system, it is strongly recommended to also configure a backup Management Station. In case of failure, the main station is stopped and the backup station is started.

Oracle DIVArchive Actors

Dedicated Windows or Linux servers can host the DIVArchive Actor component. The DIVArchive Actor software can also typically be installed directly on a production server.

Actors running in the Linux operating system do not support UNC paths for CIFS sources and destinations. However, you can define a local path to a mounted SMB share.

Linux-based Actors only support Telestream Vantage transcoding operations.

See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Oracle DIVArchive Managers

The DIVArchive Manager is the main component in a DIVArchive system and can be installed on Windows or Linux platforms. As a purchasable option, DIVArchive also supports Main and Backup DIVArchive Managers. A Backup Manager must be configured for you to use the DIVArchive Backup Service.

See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Network Devices

The connections between the DIVArchive system components are achieved through a 10/100BaseT or Gigabit Ethernet hub or switch.

Other Components

Other systems and components interacting with the DIVArchive system include the following:

- The applications controlling the archive operations either to move objects to the archive or to retrieve objects from the archive, and to obtain information about the archive systems or objects stored within the archive. These applications are referred to as *Archive Initiators*. Examples of an Archive Initiator are Broadcast Automation systems, or a Media Asset Management (MAM) applications.
- The production servers are where objects (for example, video files) are produced or from where they are broadcast. For example, a video server is a production server. Production servers can be the source of the objects to archive or the destination of the objects to retrieve from the archive.
- The production network is typically a high-speed LAN connecting the production servers together to allow object transfer between the servers. It also allows the connection of the DIVArchive Actors that are either attached directly to the high-speed network or through a gateway device provided by the production server manufacturer.

Software Components

DIVArchive software currently includes the following components (see [Appendix A](#) for Oracle DIVArchive options and licensing information):

- DIVArchive Actor
- DIVArchive Manager
- DIVArchive Robot Manager
- DIVArchive Configuration Utility
- DIVArchive Control GUI
- DIVArchive Backup Service
- Oracle DIVAnet (optional)
- Oracle Avid Connectivity (optional)
 - AM Communicator (AMC)
 - TM Communicator (TMC)
- Checksum Support and Content Verification
- Client APIs
 - C++ (compatible with DIVArchive 6.3 and later)
 - Java
 - Oracle DIVA Enterprise Connect (Web Services API)
 - DIVAprotectWS
- Customer Information Collection Tool
- DIVAprotect
- Drop Folder Monitor (optional)
- SNMP Agent (optional)
- Oracle DIVArchive Storage Plan Manager (SPM - optional)
- VACP Converter (optional)

Third party control software may also be provided by the library manufacturer to control the library robotics. The name of the software depends on the type and brand of the library used in the DIVArchive solution.

Password Security

You cannot use the default password to log in to the Control GUI with the *administrator* or *operator* profile after DIVArchive installation is complete. You must assign an *administrator* or *operator* password in the Configuration Utility before you will be permitted to switch to the respective mode in the Control GUI.

If you attempt to switch to *administrator* or *operator* mode in the Control GUI without first assigning a password to the respective profile, a dialog box is displayed notifying you that you must set a password for the corresponding profile in the Configuration Utility. After you set the corresponding profile password in the Configuration Utility the first time, it no longer matters what you use for the *old password* when changing passwords.

DIVArchive Actor

The DIVArchive Actor is the data mover between devices in the production system. It supports the data transfer between many different types of devices and handles transcoding operations with Telestream transcoding software (optional). All Actor operations are initiated and coordinated by the DIVArchive Manager. You can configure one or more Actors to be controlled by a single DIVArchive Manager. See [Appendix A for Oracle DIVArchive options and licensing information](#).

Each DIVArchive Actor runs as a Windows service and will automatically start and begin accepting connections from the DIVArchive Manager when the Actor host is started. Actor services on each host may be managed from the Windows services dialog box.

When restoring the same file to the same destination twice in parallel, the behavior on Windows and Linux is different. On Windows, the first restore (they cannot arrive exactly at the same time) will lock the file so that the second one will terminate. On Linux, there is no such lock at the file system level. Both restores are executed at the same time, and both will write to the same file. The content of the resultant file is not predictable.

Note: Linux-based Actors currently only support Telestream Vantage transcoding operations.

The following list are the Actor executable files:

%DIVA_HOME%\Program\Actor\bin\ActorService.exe command [option]

Executes commands for the Actor Service. Appending the `-conf` (or `-f`) option after one of the following commands specifies a specific configuration file to load settings from. The `ActorService.exe` command parameters are as follows:

install (-i)

Installs the Actor as a system service.

uninstall (-u)

Removes the Actor service.

debug (-d)

Starts the Actor in console mode.

version (-v)

Displays the Actor release information and then exits.

help (-h)

Displays help information and then exits.

%DIVA_HOME%\Program\Actor\bin\scandrive.exe

Identifies the tape drives in the system. There are no command-line parameters.

%DIVA_HOME%\Program\Actor\bin\TapeReadingUtility.exe

Opens the Tape Reading Utility, which enables manually reading the tape drives in the system. There are no command-line parameters.

%DIVA_HOME%\Program\Actor\bin\VideoAnalyser.exe

Opens the Video Analyzer Utility. This utility's GUI displays the internal structure of a video format by dropping video files to the appropriate top tab of the user interface for that file type (for example, drop a `.mov` file on the **MOV** tab, a `.avi` file on the **AVI**

tab, and so on). File information is displayed in the lower window panes. There are no command-line parameters.

DIVArchive Manager

The DIVArchive Manager is the main component in a DIVArchive system. All archive operations are controlled and handled by the DIVArchive Manager. Operation requests are sent by initiator applications through the DIVArchive Client API. As a purchasable option, DIVArchive also supports Main and Backup DIVArchive Managers. See *Appendix A* for Oracle DIVArchive options and licensing information.

The DIVArchive Manager runs as a Windows Service. You can manage the service through the Windows Services screen. The static configuration file for the Manager is `manager.conf`. Most settings in this file can typically be left set to the default values. Operations of the Manager can be monitored by launching the Control GUI.

You use the batch files in the Manager's `bin` folder to perform the following major operations:

- Start, stop, and restart the Manager Service. All of these operations can be executed using the manager batch file by specifying `start`, `stop`, or `restart` after the `manager.bat` command respectively (for example, `manager.bat start`).
You can also terminate all running requests with a `graceful_shutdown` command. The `graceful_shutdown` command waits until all running requests have terminated before stopping the Manager instead of the abrupt shutdown that occurs with the `stop` command.
- Notify the Manager of any changes to the Manager's configuration using the `NotifyManager` batch file.
- Import tapes into a group using the `importtapes` batch file.
- List all active connections and end some connections (by connection identifier) with the `ConnMgr` batch file.

The `manager.bat` file enables you to run the Manager as a service or using a console window. Execute the batch file using the following command and parameters:

```
%DIVA_HOME%\Program\Manager\bin\manager.bat [command] [options]
```

For example:

```
%DIVA_HOME%\Program\Manager\bin\manager.bat start -conf config_file_name.conf
```

Appending the `-conf` (or `-f`) option after one of the following commands specifies a specific configuration file to load settings from. The `manager.bat` command parameters are as follows:

install (-i)

Installs the Manager as a system service.

uninstall (-u)

Removes the Manager service.

start

Starts the Manager.

stop

Stops the Manager immediately if it is running.

graceful_shutdown

Stops the Manager after all requests running at the time of the shutdown have terminated and ignores any new requests.

restart

Stops and subsequently starts the Manager.

reload

Requests that the current service reloads its settings.

status

Determines whether the service is running and displays the status.

dump

Requests that the Manager Service create a system dump.

version (-v)

Displays the Manager release information and then exits.

help (-h)

Displays help information and then exits.

Refer to the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for information about running Windows services in a Linux environment.

Checksum Support and Content Verification

The purpose of the Checksum Support and Content Verification program is to provide additional levels of verification for each file managed by a DIVArchive system.

During the archive process the checksum is generated automatically by the Actor and stored in the database. This checksum is not verified until an initial read-back or restore operation is performed.

Checksum verification occurs when transferring data from a Source/Destination or when reading data from a source or a storage medium. The latter occurs during the retrieval of an object from a storage medium during routine functions (**Restore**, **Copy**, **Repack**, **Transcode**, but not **Partial File Restore**), or during a read-back from storage (**Verify-Following-Write** feature), or from the source (**Verify-Following-Restore** feature).

You view the checksum verifications and failures through the Control GUI **Manager** view, **Actor** view, or other request control views. Double-clicking on the resource will display a dialog box showing verification (or failure) messages and the checksum information. you can pause over the checksum notation to open a smaller dialog box displaying the *Source*, *Component*, *Checksum Type*, and *Checksum Value*.

Note: Additional checksum verification is performed at the Oracle Storage Cloud level. See the *Oracle Storage Cloud documentation* for information.

See the *Oracle DIVArchive Checksum Support User's Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for more detailed information and new enhancements and features.

Import Tapes Tool

The `importtapes.bat` batch file imports one or more tapes into a user-specified group in the DIVArchive system. You must specify the XML files created during the tape export as a command-line parameter.

This tool only imports the tape's metadata into the database and not the actual objects (or tape) themselves into the system. You must still insert the tapes using the **Insert Tape** functions.

See the *Oracle DIVArchive Export/Import User's Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for more detailed information. See [Appendix A for Oracle DIVArchive options and licensing information](#).

Execute the `importtapes.bat` batch file using the following command and parameters:

```
%DIVA_HOME%\Program\Manager\bin\importtapes.bat [group_name] [mfiledir] [mfiledir]
```

The `importtapes.bat` command parameters are as follows:

help (-h)

Displays help information and then exits.

group_name

The tape group to which imported tapes will belong.

mfiledir

The XML files containing exported tape metadata or a folder that contains the files. The first `mfiledir` is required, additional entries are optional. Multiple files may be used as follows:

```
mfiledir1 mfiledir2 mfiledir3 mfiledir4 (and so on)
```

-skipIfNameExists

Caution: This is an advanced option and not recommended for normal use! Use of this option causes the object on the tape to become *invisible* and DIVArchive will use only the *visible* object existing in the system.

This is an advanced parameter and skips importing of objects with naming conflicts. Normally, if the object name exists the program stops and nothing is imported. This option enables skipping the existing object and continue to import the next object in the XML file.

-useImportDateAsArchiveDate

Forces use of the *Import Date* instead of the original *Archive Date* as the *Archive Date* of the object imported into DIVArchive.

DIVArchive Robot Manager

Although you can use DIVArchive to only manage disk storage, storage capacity can be further expanded by adding one or more tape libraries. In these cases, the DIVArchive Robot Manager module provides an intermediate software layer for the DIVArchive Manager to interact with many different types of tape libraries. It is connected to the DIVArchive Manager through TCP/IP. See [Appendix A for Oracle DIVArchive options and licensing information](#).

The DIVArchive Robot Manager interfaces to the library using either a direct interface to the library itself (through native SCSI or SCSI over Fibre Channel), or through an intermediate Ethernet connection to the manufacturer's own library control software.

The Robot Manager alerts the DIVArchive Manager when the collection of tapes in the associated library requires synchronization with the DIVArchive database. This functionality is specific to the SCSI Robot Manager module, and detects potential tape inventory mismatches between the DIVArchive database and the library inventory.

Potential inventory issues are trapped by the Robot Manager if the library sends unit attention codes 06h 00h 28h (inventory may be altered), or 06h 00h 29h (reset occurred). When this happens, the Robot Manager notifies the DIVArchive Manager so that it resynchronizes the database with the content of the library.

You access the DIVArchive Robot Manager Client using either the Robot Manager Client (command line based) or the Robot Manager Client GUI (graphical interface). The Robot Manager Client GUI is a graphical interface making it easy for you to interact with the Robot Manager.

Note: If intermediate robotics control software is installed between the Robot Manager and the library under control (such as ACSLS, SDLC, or PSC), it must be running before starting the associated DIVArchive Robot Manager.

When the Robot Manager Client command-line interface is started it will display a screen similar to a Windows command line. The Robot Manager Client will already be started and only the commands necessary to perform the required operations, or to display the required information, need to be entered.

The following list are the Robot Manager executable files:

Caution: Although a Robot Manager may be restarted while the DIVArchive Manager is running, an attempt to mount a tape to a drive while the Robot Manager is offline may cause the drives to be set *Out of Order*.

%DIVA_HOME%\Program\RobotManager\bin\RobotManager.exe command [options]
Executes commands for the Robot Manager Service. Appending the `-conf` (or `-f`) option after one of the following commands specifies a specific configuration file to load settings from. The `RobotManager.exe` command parameters are as follows:

install (-i)

Installs the Robot Manager as a system service.

uninstall (-u)

Removes the Robot Manager service.

debug (-d)

Starts the Robot Manager in console mode.

version (-v)

Displays the Robot Manager release information and then exits.

help (-h)

Displays help information and then exits.

```
%DIVA_HOME%\Program\RobotManager\bin\RobotManagerClient.bat [rmHost] [rmPort]
```

This is a command line utility to take control of the Robot Manager if the DIVArchive system is down.

rmHost

The remote host name for the connection.

rmPort

The remote host port for the connection.

```
%DIVA_HOME%\Program\RobotManager\bin\RobotManagerGUI.bat
```

This is a GUI utility to take control of the Robot Manager if the DIVArchive system is down.

DIVArchive Configuration Utility

The DIVArchive Configuration Utility configures a DIVArchive system. It can be run on any computer that has TCP/IP connectivity to the host running the DIVArchive database.

Caution: The Configuration Utility is intended only for experienced users. Incorrect or incomplete changes in the Configuration Utility can adversely affect DIVArchive operations, possibly delete data from the archive, or prevent the DIVArchive Manager from running. If you are unsure about making changes, contact Oracle Support for assistance before attempting to make alterations to the system configuration.

The Configuration Utility primarily connects to the DIVArchive Database, and for some tasks, directly to the DIVArchive Robot Managers. After launching the utility you must first connect to the database to edit the DIVArchive system configuration. The Oracle username and password for DIVArchive should be documented in the DIVArchive Site Configuration for your site. Although used primarily for configuration of DIVArchive, some operational functions are also performed from the Configuration Utility.

Since it is an Oracle Java based utility, the Oracle Java Runtime Environment 64-bit (build 1.8.0_45-b14) must also be installed. For the Configuration Utility to launch, the %DIVA_HOME% environment variable in the computer's operating system must be defined. This variable should match the absolute directory path to the JRE bin folder. For example %DIVA_HOME%\Java, where %DIVA_HOME% is the chosen DIVArchive installation directory).

You use the following command to launch the Configuration Utility in Windows:

```
%DIVA_HOME%\Program\Utilities\bin\configutility.bat
```

You use the following commands to launch the Configuration Utility in Linux:

```
cd /home/diva/DIVA/Program/ConfigUtility/bin
sh configUtility.sh
```

DIVArchive Control GUI

You use the DIVArchive Control GUI to monitor, control, and supervise operations in DIVArchive. Several DIVArchive Control GUIs can be running and connected to the same DIVArchive system at the same time.

You use either the Windows Start menu item, or one of the following commands to launch the Control GUI in Windows:

```
%DIVA_HOME%\Program\GUI\bin\gui.bat
```

You use the following commands to launch the Control GUI in Linux:

```
cd /home/diva/DIVA/Program/GUI/bin
sh gui.sh
```

DIVArchive Backup Service

Caution: When using complex objects, it is *strictly required* that you use the DIVArchive Backup Service. Users should have an elevated awareness of error messages produced by the Backup Service.

The DIVArchive Backup Service ensures reliability and monitoring of both the Oracle database and metadata database backups. The DIVArchive Backup Service component is installed as an integral part of the standard DIVArchive system installation, and is typically installed on the same server as the DIVArchive Manager and Oracle database. The service enables configuration of scheduled backups through its configuration file, and manages and monitors the entire backup process.

The service generates both full and incremental database backups. Oracle database backups and metadata database backups are incrementally replicated to all remote backup systems. It is the only component backing up the metadata database and removing outdated metadata files. When you send a Delete request for a complex object and it is processed, the data is removed from the Oracle database, but the metadata database file is not deleted. It is removed by the Backup Service after the configured clean up period (define by the *Recovery Period* parameter) has been reached.

Caution: Do not change the metadata location parameter when the system is running.

The DIVArchive Backup Service periodically sends status messages to the DIVArchive Manager. The Manager saves all error messages received in the Manager Events Log, and also forwards messages to all connected Control GUI applications for display in a dialog box. If no Control GUIs are connected at the time of the error, no error dialog boxes will be displayed, but they are still written to the events log for later review.

The service also incorporates the ability to send emails of issues arising from the process of backing up both database files. DIVArchive must be configured to connect to an SMTP mail provider to take advantage of this feature. The email notifications are configured through the DIVArchive Configuration Utility under the **Manager Setting** tab. Identified issues are displayed on all connected GUI systems, saved to the Events log, and notification is delivered by email.

If a database or system failure occurs, where restoring from a system backup is necessary, restoration of a stored backup is accomplished manually through existing Oracle scripts. *Oracle recommends this process be performed by Oracle Support personnel only. Contact Oracle Support for more information.*

Oracle DIVArchive Avid Connectivity

Avid Connectivity with DIVArchive transfers archival data to and from DIVArchive in specific video formats and enables archiving and retrieval of single clips, or a sequence of clips. Avid Connectivity is no longer packaged with DIVArchive and is a separate installation process. Additional installation is required for certain plugins for both AMC and TMC.

All operations for the AM Communicator are performed from Avid Interplay, not DIVArchive. All TM Communicator archive operations are performed from Avid, while all restore and delete operations are performed from DIVArchive.

DIVArchive 7.6.1 includes support for the Avid Web Services API for Archive, Restore, and Partial File Restore of clips and sequences directly from Interplay. Also included is AMC support for Interplay 3.8 and TMC support for Interplay 3.7 and 3.8.

Certain DIVArchive API operations used in Avid Connectivity (such as `GetByFilename` and `DeleteByFilename`) are not currently supported for complex objects.

See the *Oracle DIVArchive Avid Connectivity User's Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library, or contact Oracle Support for more detailed information. Also see [Appendix A](#) for Oracle DIVArchive options and licensing information.

DIVArchive Client API

The DIVArchive Client API is a set of documented functions enabling external applications, acting as clients, to use the services offered by the DIVArchive system.

A library of client functions is provided and must be linked to each DIVArchive client application. These functions encapsulate client commands into DIVArchive request messages sent over a TCP/IP connection to the DIVArchive Manager.

The `getFilesAndFolders` API call is called successively to get the complete file and folder list. Normally the first time the method is called the `startIndex` is set to 1. For successive calls, set the `startIndex` to the `endIndex` as returned from the previous call. After all requests have been returned, a call to this method will return an empty list.

Folders do not contain a checksum, but several checksums per file are provided if available including MD5, SHA1, and so on. The returned information will identify which of the checksums is the Genuine Checksum.

See the corresponding manuals in the *Oracle DIVArchive 7.6 Additional Features documentation* library for specifications and details on the use of each API. Various APIs are available as follows:

- DIVArchive C++ API (compatible with DIVArchive 6.3 and later)
- DIVArchive Java API
- Oracle DIVA Enterprise Connect (Web Services API)
- DIVArchive DIVAprotectWS API

DIVAS version 2.2 includes three WS API bundles and supports both SOAP and RESTful interfaces. The WS API uses connection pooling to enhance performance, and different API bundles can be started and used at the same time.

The included API bundles are as follows:

- DIVArchive WS 6.5 API
- DIVArchive WS 7.0 API

- DIVArchive WS 7.1 API
- DIVArchive WS 7.2 API
- DIVArchive WS 7.3 API

Note: The new release of the Web Services API is called *Oracle DIVA Enterprise Connect*. See the *Oracle DIVA Enterprise Connect documentation* library for information on installation, configuration, and operations.

Customer Information Collection Tool

The Customer Information Collection Tool is a utility feature used by Oracle Support and Development teams to collect information on the client's DIVArchive system to analyze and diagnose issues uncovered in the field. *This utility is included in the DIVArchive delivery, but is only intended to be used by Oracle personnel.*

The tool receives all customer information required for support investigations including log files, dump files, and client environment information. It receives information from all client sites in a uniform manner, and retains detailed client issue information with the originator's contact information. The tool also notifies the Oracle Development Team as soon as information is transferred to the development facility, where it is stored permanently for future issue resolution as necessary.

The `CollectSysInfo.bat` file enables you to collect the required information to send to the Oracle Support and Oracle Development teams for issue resolution. Execute the batch file using the following command and parameters:

```
%DIVA_HOME%\Program\Utilities\bin\CollectSysInfo.bat [parameter value]
```

For example:

```
%DIVA_HOME%\Program\Utilities\bin\CollectSysInfo.bat -EXMODULES VACP,  
AMCommunicator -AFTERDATE 09/25/2016 -MACHINES 172.16.3.45,172.16.3.46 -DBTYPE  
conf -CUST -CUSTOMER1
```

The main `CollectSysInfo.bat` command parameters are as follows:

-EXMODULES [MODULE_NAMES]

Excludes the specified module from collection logs and configuration files. Using `-EXMODULES ALL` will exclude all of the modules and only collect the DIVArchive Oracle Database dump. The default is collecting all modules.

-AFTERDATE [MM/DD/YYYY]

Collects logs only on or after the specified date. The default is collecting all available logs.

-MACHINES [IP:host_name,IP:host_name,and so on]

Collects the logs from any additional computers identified. Multiple host names are identified in a comma separated list. The default is to only collect logs for the current system where the script is running.

-DBTYPE [FULL|CONF]

Collects a full DIVArchive Oracle Database dump, or just a configuration dump. The default is collecting a full database dump.

-CUST [CUSTOMER_NAME]

The name of the customer where the logs are collected. The customer name will be truncated if it is longer than 13 characters. There is no default value for this optional parameter. If it is not supplied as an argument the script will prompt you to enter the Customer Name during execution.

There are also several internal parameters for the script. Each of the internal parameters has a default value that can be overridden by specifying a custom value using the script options.

Example:

```
%DIVA_HOME%\Program\Utilities\bin\CollectSysInfo.bat -EXMODULES VACP,
AMCommunicator -AFTERDATE 09/25/2016 -MACHINES 172.16.3.45,172.16.3.46 -DBTYPE
conf -CUST CUSTOMER1 -DIVALOC C:\INSTALL\DIVA
```

The additional script parameters are as follows:

-DIVALOC

The DIVArchive installation path for all computers from where the script is collecting logs. The default value is %DIVA_HOME%.

-REMOVEDIVA

The DIVArchive installation location if additional computers are specified using the -MACHINES parameter. The path set in this parameter must be shared within the network. The default value is \\RemoteSystem\C\$\DIVA.

-DUMPPATH

The location where the script will generate and output the .7z zip file. The default value is H:\.

-ORACLELOGIN

The DIVArchive Oracle Database user name and its connection details.

-CYGWIN

The Cygwin installation path. The default value is C:\cygwin\bin.

-SEVENZIP

The 7z zip tool installation path. The default value is C:\Program Files\7-Zip\7z.exe.

-TEMPDIR

The temporary directory where the script copies the logs and configuration files. This folder is created automatically at the beginning of the script execution and subsequently deleted after the script completes execution. The script will fail execution if the path set in this parameter already exists. The default value is H:/supportinfo.

DIVArchive Drop Folder Monitor (DFM)

The DIVArchive Drop Folder Monitor (DFM) provides automatic monitoring of newly created files in up to 20 local or FTP folders (or combinations of the two). One (or multiple) files in FTP folders per DIVArchive object are supported. When a new file (or FTP folder) is identified, DFM issues an archive request automatically to DIVArchive to archive the new file or folders. After the files are successfully archived, they are automatically deleted from the source.

When using DFM in a Linux environment to monitor an FTP folder, it must be configured as follows (this is an example):

- User: diva
- User home directory: /ifs
- Folder to be monitored: /ifs/folder1
- Correct DFM configuration: ftp://diva:password@host_ip/folder1
- Incorrect DFM configuration: ftp://diva:password@host_ip/ifs/folder1

The DFM Service can be started, stopped, and restarted using the operating system Services or the DFM command line utility on each host that is running a DFM installation. When the DFM Service starts, or restarts, DFM loads and validates the configuration file. If any configuration issues are detected, the process terminates and runs diagnostics.

If the configuration validation completes successfully, DFM begins scanning all of the configured Drop Folders, checks the status of all objects that were initialized before DFM was last shutdown, and updates the internal database with the current status of the objects. After all of these checks have completed DFM is in the **Running** state.

When DFM finds files in a configured Drop Folder, it updates the internal database and requests DIVArchive to archive all files found as new objects. To avoid repeated archive requests, DFM continuously updates the archive operations status in the internal database.

If DIVArchive requests fail, the DIVArchive Status Module informs the internal database about the failure. If the number of unsuccessful request attempts reaches a preconfigured number, the object status is changed to **could not be archived** and the object is marked as incomplete. DFM logs information about the incomplete files and calls the DFM File Manager Module to move them to the Trash folder.

If the request completes successfully, the internal database is updated by the DIVArchive Status Module. In the case of a File Set Object, DFM removes the Metadata File and the File Set folder.

DFM terminates upon execution of the shutdown script and stops all internal processes before all archive operations are complete. After all of the modules are stopped, all internal statuses on the disk are saved in the internal database before the DFM completes shutdown.

The DFM configuration file is %DIVA_HOME%\Program\conf\dfm\dfm.conf. Service logging is performed through the log file located in the %DIVA%\Program\log\dfm\ folder. The logging configuration is in the %DIVA%\Program\conf\dfm\dfm.trace file.

The dfm.bat file enables managing DFM from a command-line interface. Execute the batch file using the following command and parameters:

```
%DIVA_HOME%\Program\InterLink\dfm\bin\dfm.bat [command] [options]
```

Appending the -conf (or -f) option after one of the following commands specifies a specific configuration file to load settings from. The dfm.bat command parameters are as follows:

install (-i)

Installs the DFM module as a system service.

uninstall (-u)

Removes the DFM module service.

start

Starts the DFM module.

stop

Stops the DFM module if it is running.

restart

Stops and subsequently starts the DFM module.

status

Determines whether the service is running and displays the status.

version (-v)

Displays the release information and then exits.

help (-h)

Displays help information and then exits.

DIVArchive SNMP Agent

The DIVArchive Simple Network Management Protocol (SNMP) Agent and Management Information Base (MIB) supports status and activity monitoring of DIVArchive and its subsystems to a third party monitoring application through the SNMP protocol.

The DIVArchive SNMP agent is integrated with the Windows SNMP Service, which starts automatically when the server is started. SNMP information from DIVArchive to a monitoring application is obtained through the DIVArchive SNMP Agent, which in turn establishes a connection to the Manager automatically when the Manager is started.

Note: The DIVArchive SNMP Agent is not currently supported in the Linux environment.

You use the following procedure to configure the SNMP Service to monitor DIVArchive:

1. Install the Microsoft SNMP Services on the computer where the DIVArchive Manager is installed (if not already installed).
 1. On your server, navigate to the **Windows Key**, then **Administrative Tools**, and then **Server Manager**.
 2. Click **Manage**, and then **Add Roles and Features**.
 3. Click **Next** on each of the first four screens.
 4. Verify the *SNMP Services* are listed.

If the SNMP Service is not listed in the services window, use the following procedure to add the service:

1. On your server, navigate to the **Windows Key**, then **Administrative Tools**, and then **Server Manager**.
2. Click **Manage**, and then **Add Roles and Features**.
3. When you get to the screen showing services that can be installed, select *SNMP Service* and click **Add Feature**.
4. Click **Next**, and then **Install**.

5. After installation is complete, return to the Windows Services screen and click **Refresh** to refresh the display. The SNMP Service should now be included in the services list.
2. Stop the *SNMP Service* and *SNMP Trap Service*.
3. Navigate to the DIVArchive SNMP installation folder.
`%DIVA_HOME%\Program\SNMP\bin`
4. Confirm this folder contains the `DIVAapi.dll` file. If not, you can copy it from the API Visual Studio .Net Dynamic Release directory.
5. Enter the correct DIVArchive Manager connection information in the `config.txt.ini` file.

Also, set the `POLLING_RATE` to 60 (to poll for running requests every 60 seconds), and remove the `.ini` from the end of the file name when saving the edited file.
6. Open the appropriate registry file and edit `pathname` so that it points to the DIVArchive SNMP path being used.

For example, `%DIVA_HOME%\Program\SNMP\bin\divasnmptgt.dll`.
7. Double-click the registry file that you just edited to install the SNMP registry keys.
8. Start `regedit` and using the registry information in the registry file, navigate to each registry key and make sure the path in the registry is as displayed in the registry file.
9. Open the SNMP Service properties and edit the following parameters:
 - On the **Traps** tab, enter `public` in the *Community Name* field and add the IP address of the computer where traps will be viewed (for example, the computer where the MIB browser is installed).
 - On the **Security** tab, confirm the *Send authentication trap* and *Accept SNMP packets from any host* checkboxes are selected.
 - In the *Accepted community names* field, add `public` with **READ ONLY** rights.
 - Click **Apply**.
10. Start the SNMP service. *Do not start the SNMP Trap service.*

The SNMP Service can also be manipulated through the Windows command prompt as follows (typically the same host as that of the DIVArchive Manager):

1. Open a Windows command prompt.
2. To start the SNMP Service, enter `net start "SNMP Service"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*
3. To stop the SNMP Service, enter `net stop "SNMP Service"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*

Oracle DIVArchive Storage Plan Manager (SPM)

The Oracle DIVArchive Storage Plan Manager (SPM) provides automatic migration and lifecycling of material within the archive based on the rules and policies defined in the SPM configuration. The SPM component is also used to trigger deletion of material from SPM managed arrays (based on disk space watermarks). See [Appendix A](#) for Oracle DIVArchive options and licensing information.

You can now change the status of SPM failed actions to **Completed** by right clicking the action and selecting **Mark Action Completed** from the context menu.

Normally SPM will retry a completed **Copy** action if the *Once Only* option is set to NO, and a user manually (or accidentally) deletes the instance that SPM copied before the Storage Slot expires. SPM will also normally retry a completed **Delete** action if a user manually (or accidentally) copies an instance to the Storage Slot medium after SPM deleted it.

Actions marked as complete by a user will never be retried by SPM. However, you can reschedule a user-completed action by right clicking it and selecting **Reschedule Action** from the context menu. The *Mark Action Completed* (by a user) option is only available using the administrator profile.

Using FTP is currently not recommended for complex objects or Partial File Restore requests if the complex object has more than three thousand files included.

Although FTP servers are supported as Sources/Destinations, the recommended practice (currently) is to use a local Source/Destination, CIFS, or local disk.

The current (validated) workaround for using complex objects with FTP servers is to slow down the FTP transfer rate of either the Source/Destination or the FTP server. However, slowing down the transfer rate decreases the performance and may also be incompatible with many workflows.

A case-sensitive FTP server is recommended for SPM metadata features.

SPM will retry failed **Copy**, **Delete** and **Restore** actions after the configured failed action retry interval as set in the SPM configuration file.

SPM supports disk cleaning based on the object's archived date. Previously, the SPM disk cleaning feature only supported cleaning based on an object's last access time and object size.

Actors in the Linux operating system do not support UNC paths for CIFS sources and destinations. However, you can define a local path to a mounted SMB share.

The service requires a successful connection to the DIVArchive Manager to start. Therefore, it must be started manually either through the Windows Services component or from the command line after the DIVArchive Manager is running.

Use the following commands to start the SPM Service from the command prompt:

1. Open a Windows command prompt.
2. To start the SPM Service, enter `net start "DIVArchive SPM"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*
3. To stop the SPM Service, enter `net stop "DIVArchive SPM"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*

The `SPMService.exe` file enables managing SPM from the command-line interface. Execute the file using the following command and parameters:

```
%DIVA_HOME%\Program\SPM\bin\SPMService.exe command [options]
```

Appending the `-conf` (or `-f`) option after one of the following commands specifies a specific configuration file to load settings from. The `SPMService.exe` command parameters are as follows:

install (-i)

Installs the SPM module as a system service.

uninstall (-u)

Removes the SPM module service.

debug (-d)

Starts the SPM module in console mode.

version (-v)

Displays the release information and then exits.

help (-h)

Displays help information and then exits.

See the *Oracle DIVArchive Storage Plan Manager (SPM) Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for detailed information.

DIVArchive VACP Converter

Video Archive Command Protocol (VACP) is a protocol developed by Harris Automation for interfacing to an archive system. DIVArchive has its own API for communicating with the DIVArchive Manager, which is not compatible with VACP.

To provide interoperability without the need to redevelop the archive interface at the automation level, this module is provided to act as an interface to convert VACP commands from the attached automation system to DIVArchive API commands.

The service requires a successful connection to the DIVArchive Manager to start. Therefore, it must be started manually either through the Windows Services component or from the command line after the DIVArchive Manager is running.

Use the following commands to start the VACP Service from the command prompt:

1. Open a Windows command prompt.
2. To start the VACP Service, enter `net start "VACP Converter"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*
3. To stop the VACP Service, enter `net stop "VACP Converter"` at the command prompt. *The quotation marks are required for services with spaces in their service name.*

The `VACPService.exe` file enables you to run the VACP Converter as a service. Execute the file using the following command and parameters:

```
%DIVA_HOME%\Program\VACP\VACPService.exe command [options]
```

Appending the `-conf` (or `-f`) option after one of the following commands specifies a specific configuration file to load settings from. The `VACPService.exe` command parameters are as follows:

install (-i)

Installs the VACP module as a system service.

uninstall (-u)

Removes the VACP module service.

debug (-d)

Starts the VACP module in console mode.

version (-v)

Displays the release information and then exits.

help (-h)

Displays help information and then exits.

Miscellaneous DIVArchive Utilities

DIVArchive includes various miscellaneous utilities, some of which are associated with the modules previously listed in this chapter. The included utilities are as follows:

%DIVA_HOME%\Program\Utilities\bin\DIVAConfigurationPrinter.bat

Prints the current DIVArchive configuration. There are no command-line parameters.

%DIVA_HOME%\Program\Utilities\bin\DivaScript.exe

This utility enables using command line orders to execute DIVArchive requests and operations.

%DIVA_HOME%\Program\Utilities\bin\GetVersion.exe [application_path]

Returns the release number for a specific application. The `application_path` is the valid path to the application being checked.

%DIVA_HOME%\Program\Utilities\bin\rdtu.bat

The Recover Damaged Tape Utility (RDTU) recovers object instances that reside on a damaged tape. The utility can recover instances that have valid copies on other available media (that is, internal tape or a connected disk array) within a local or remote DIVArchive system. There are no command line parameters. The settings and configurations are defined in the `rdtu-conf.xml` configuration file.

Starting and Stopping DIVArchive

This chapter describes the steps required to start and stop DIVArchive. See the Linux installation instructions in the *Oracle DIVArchive Installation and Configuration Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for Linux-specific directions associated with running DIVArchive components as services in a Linux environment.

All Windows batch files (.bat) have corresponding shell scripts (.sh) in Linux. You must substitute Windows paths with Linux paths when operating on Linux. For example, the Windows path C:\DIVA\Program is /home/diva/DIVA/Program when running under Linux. *Linux commands, paths and file names are case-sensitive.*

- [Starting DIVArchive](#)
- [Stopping DIVArchive](#)
- [Manager Failover Procedures](#)

Starting DIVArchive

To start the DIVArchive system you must first start the hardware, and then the software in the sequence as described in the following sections.

Starting DIVArchive Hardware

Perform the following steps in sequence to start all of the DIVArchive hardware components. Wait for initialization of each hardware component to complete before moving to the following step.

1. Confirm that all required devices are installed. If they are not installed, you must install them before proceeding any further.

See [Appendix A](#) for Oracle DIVArchive options and licensing information.

1. Libraries and Drives
2. SAN RAID Arrays
3. Fibre Channel Switches
4. Networking Devices
5. Terminal Concentrator
6. Graphical Front End Hosts
7. Library Manager Host
8. External Direct Attached Devices
9. Manager Hosts

10. Actor Hosts
2. Power on the Libraries and Drives.
3. Power on the SAN RAID Arrays.
4. Power on the Fibre Channel Switches (if installed).
5. Power on the Networking Devices.
6. Power on the Terminal Concentrator (if installed).
7. Power on the Graphical Front End Hosts (if installed).
8. Power on the Library Manager Host (if installed).
9. Power on External Direct Attached Devices.
10. Power on Manager Hosts.

In installations where two Manager Hosts are installed, it may be required to always start the Main manager first, and then the Alternate (or Backup) Manager at a later time. Consult with your Oracle Installer to determine if this is applicable to your installation.

11. Power on the Actor Hosts.

Hardware start is complete if everything powered on successfully.

Starting DIVArchive Software

The following steps describe the required order that the software components of a DIVArchive system must be launched. Some software components may be set to launch automatically when the host is started (for example, the Actor Service).

The management of each DIVArchive software component, whether manually or automatically initiated, is covered in [Software Components](#). Perform the following steps in sequence to start all of the DIVArchive software components:

1. Confirm that all required components are installed. If they are not installed, you must install them before proceeding any further.
 1. Library Manager
 2. Library
 3. DIVArchive Manager
 4. DIVArchive Backup Service
 5. Complex Objects (if in use)
 6. DIVAnet
 7. DIVArchive VACP Converter
 8. DIVArchive Storage Plan Manager (SPM)
 9. DIVArchive Drop Folder Monitor (DFM)
2. Launch the Library Control software.
 1. ACSLS
 2. PCS
 3. SDLC
3. Launch the DIVArchive Robot Managers.

4. Launch the DIVArchive Actors.
5. Launch the DIVArchive Manager.
6. Launch DIVAnet.
7. Launch the DIVArchive VACP Converter.
8. Launch the DIVArchive Naming Service.
9. Launch the DIVArchive Storage Plan Manager (SPM).
10. Launch the DIVArchive Drop Folder Monitor (DFM).

Software start is complete if everything powered on successfully.

Stopping DIVArchive

You stop DIVArchive in the reverse order from starting the system. You shut down the software first and then the hardware. The following sections describe the required procedure to fully shut down DIVArchive.

Shutting Down the Software

To ensure that requests currently still in progress are not prematurely aborted by shutting down the DIVArchive system, it is recommended the DIVArchive Manager be stopped first, because any requests currently active will be completed before the Manager will complete the shut down.

See the [DIVArchive Manager](#) section for DIVArchive Manager shut down procedures. When the DIVArchive Manager is shut down all archive operations are ceased. It is not necessary to stop other DIVArchive software components before shutting down the host computer where they are installed.

Shutting Down the Hardware

Use the following procedure (in sequence) to shut down all DIVArchive related equipment and devices:

1. Shut down the Manager Host.
2. Shut down the Actor Hosts.
3. Power off all External Direct Attached Devices.
4. Power off Graphical Front End Hosts (if installed).
5. Power off Terminal Concentrator (if installed).
6. Shut down the Library Manager Host (if installed)
7. Power off Network Devices.
8. Power off Fibre Channel Switches (if installed).
9. Power off SAN RAID Arrays (if installed).
10. Power off Library and Drives.

Hardware shut down is complete if everything powered off successfully.

Manager Failover Procedures

Caution: These procedures are critical and sensitive. They should only be performed under the control of an Oracle Support Technician.

Use the following procedures to switch to a Backup Manager (if possible) if a Manager fails:

The following procedures are performed on the Main Manager computer:

1. Attempt to stop the DIVArchive Manager if it is still running.
2. Run the **DIVA DB Full Backup** scheduled task.
3. Run the **DIVA DB Backup Sync** scheduled task.
4. Shutdown the DIVArchive Manager server as cleanly as possible.

The following procedures are performed on the Backup Manager computer:

1. Change the IP address to the Main Manager computer's IP address and restart the computer.
2. Use the following steps to recover the database:
 1. Run `%DIVA_HOME%\Program\DBBackup\rman\bin\restore_lib5_from_mgr1_to_mgr2.bat`.
 2. Choose 0 for **Automatic Restore** and wait for completion.
 3. Choose 0 for **Full Backup**.
 4. Choose `q` to quit.
3. Start the DIVArchive Services (Manager, RobotManager, Storage Plan Manager, DFM, and so on depending on the configuration).

The system is now running from the new (originally the Backup Manager computer) Main DIVArchive Manager computer, enabling repair of the original Main Manager computer.

Configuration Utility Operations

Caution: The Configuration Utility is only intended for experienced users. Incorrect or incomplete changes in the Configuration Utility can adversely affect DIVArchive operations, possibly delete data from the archive, or prevent the DIVArchive Manager from running. If you are unsure about making changes contact Oracle Support for assistance.

All information relating to DIVArchive objects that have been archived including (but not limited to) where they are stored, tape locations, DIVArchive Configuration, and so on, is stored within the DIVArchive database.

You access the DIVArchive database through the DIVArchive Configuration Utility. Although the utility is only intended for use by trained administrators, from an operational perspective some functions of the utility may need to be occasionally accessed by non-administrators.

Operators should only access the Configuration Utility if they need to perform alterations of the attributes for one or more tapes, such as repack status or Set ID.

The utility can be installed and run on any host with TCP/IP connectivity to the DIVArchive database, Manager, and Robot Managers.

Disks or tape drives that have been set to **Out of Order** (displayed in the *Disks* or *Drives* views in the Control GUI) must not have the status altered until the source of the problem is investigated and rectified by an administrator.

- [Launching the Configuration Utility and Connecting to the Database](#)
- [Configuration Utility Tabs](#)

Launching the Configuration Utility and Connecting to the Database

You launch the Configuration Utility by double-click the DIVArchive Configuration Utility icon on the desktop. Use the following steps to connect to the DIVArchive database:

1. Click **File**, then **Connect**.

You can also click the **Connect** icon on the icon bar.

2. Enter the following information in the appropriate fields when the DB Connection dialog box appears:

User Name

Enter the Oracle database user name.

Password

Enter the Oracle database password.

S.I.D.

Enter the Oracle System Identifier.

IP Address

Enter the IP address of the host computer where the DIVArchive database is installed.

Oracle Port

Enter the Oracle Listener Port number.

The connection status is indicated in the Configuration Utility notification area at the bottom of the screen. If the connection fails, an error message will be generated in the notification area including the error code returned from Oracle. If you cannot connect, contact Oracle Support.

Configuration Utility Tabs

The following sections describe each tab within the DIVArchive Configuration Utility. Contact Oracle Support for more information on each tab.

System Tab

The **System** tab defines key parameters for your DIVArchive installation and is the starting point for creating your DIVArchive configuration. *See [Appendix A](#) for Oracle DIVArchive options and licensing information.*

It is recommended to create a drawing of the system components including the data and control paths between them, how they interact with each other, established naming conventions for resources (such as disks), and the workflow of the platform before entering details into the Configuration Utility. Some parameters are difficult to change later after they have dependencies from other configuration parameters in the database.

A transcoder is not coupled to a single Actor. The transcoder is selected after the Actor is selected. Therefore, you no longer need to define a **LOCAL** Transcode Actor as a destination. A local Actor destination is dynamically and temporarily (only in memory - not stored in the database) created for the Actor that is chosen as part of resource selection. The Actor column was removed from the **Transcoders** area in the Configuration Utility.

The transcoder server and cache location is embedded in the working directory on the Transcoders Entry screen in the following format:

```
[actor:actor_name,transcoder:trancoder_ip_address],cifs://username:password@\\transcoder_cache_ip_address\transcoder_cache
```

The actorPath parameter must be specified if a Linux Actor will be used for transcoding with a Vantage Transcoder as follows:

```
[actor:actor_name, actorPath:actor_path,transcoder:trancoder_ip_address],cifs://username: password@\\transcoder_cache_ip_address\transcoder_cache
```

Note: The order of the `actor`, `actorPath`, and `transcoder` settings is important. The order of the parameters must be `actor`, followed by `actorPath`, followed by `transcoder`.

The `actorPath` represents the path the Linux Actor uses to transfer content to and from the SMB network share (transcoder cache) on a Linux system.

Note: The original method of configuring Local Source/Destinations tied to actors is still supported so legacy configurations continue to function.

If a transcoder address is not specified in the transcoder's working directory, a local transcoder address of `127.0.0.1` will be assumed as the transcoder address. Linux-based Actors only support Telestream Vantage transcoding operations.

To notify the Actors of any changes in the configuration, click **Notification, Notify Actors** while connected to the Manager. The Actors must be running and connected to the Manager to receive the notifications.

Syntax Examples

These syntax examples are designed for Vantage. They can also be used with Flip Factory, but the `[transcoder: ip_address]` directives are ignored, and the CIFS URL is not used to acquire the transcoder address. The `flipFactory.host` parameter of the `actor/bin/transcoding/ffsubmitter.properties` file will be used for the `[transcoder...]` directives.

Note: DIVArchive 7.5 ended Oracle support for Telestream Flip Factory. Oracle will provide best efforts to assist customers to transition to other transcoding solutions.

Shared transcoder with both the transcode engine and share on the same `10.201.10.21` host:

```
cifs://diva:diva@\\10.201.10.21\VantageCache
```

Transcode engine on `actor1`. Either of these two examples function correctly (host `10.201.10.21`):

```
[actor:actor1],cifs://diva:diva@\\127.0.0.1\VantageCache
```

```
[actor:actor1],cifs://diva:diva@\\10.201.10.21\VantageCache
```

Shared transcoder with transcode engine on host `10.201.10.101` and share on NAS host `10.201.10.250`:

```
[transcoder:10.201.10.101],cifs://diva:diva@\\10.201.10.250\VantageCache
```

Shared transcoder with transcode engine on host `10.201.10.101` and share on NAS host `10.201.10.250` with forced Actor selection:

```
[actor:actor1,transcoder:10.201.10.101],cifs://diva:diva@\\10.201.10.250\VantageCache
```

Actor Configuration in the Database

With the exception of the *Service Name* and *Service Port*, all Actor configuration settings are located in the Configuration Utility under **Actor Advanced** and **Partial Restore Settings** tabs of the **Actor** panel under the **Systems** tab. Some settings are only available in *Engineering Mode*. Contact Oracle Support for configuration and parameter details. See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Robots Tab

The **Robots** tab is present in all DIVArchive installations (although not every installation necessarily has a library). It defines basic associations with the robotics software and hardware components.

The **Robots** tab screen consists of the following frames:

Robot Managers

This frame defines (to DIVArchive) the connection parameters to each host running a DIVArchive Robot Manager instance.

Libraries

This frame displays the tape or DVD libraries currently configured through one or more DIVArchive Robot Managers and their online status.

Media Compatibility

This frame maps the *Tape Media Type* defined in the **Tapes** tab, to the *Drive Types* defined in the **Drives** tab.

Although entries in this area can be manually removed, they can only be added or updated during a database synchronization with a Robot Manager.

Robot Managers-ACS

This frame associates each Robot Manager with an Automated Cartridge System (ACS) number.

Although entries in this area can be manually removed, they can only be added by performing a database synchronization with the specific Robot Manager.

Disks Tab

The **Disks** tab defines the physical disks that are usable by DIVArchive, how they are grouped together for either permanent or cache storage, and how each disk is logically accessed by the Actors.

The **Disks** tab screen consists of the following frames:

Arrays

An Array defines a logical association of disks in which one or more physical disks are assigned for use by DIVArchive. The *Array Name* is equivalent to the *Group Name* for a tape.

Disks

This frame displays the symbolic name and location for each disk in your system, whether confined to a single host or shared between hosts. These disks are then assigned to Arrays.

Actor-Disk Connections

In this frame you configure how each disk is logically connected to each DIVArchive Actor, and how it is to be used. A new frame has been added under the **Disks** tab where you configure Storage Cloud accounts.

For shared disks accessible by more than one Actor, the disk connection must be declared for all Actors. See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Object Storage Accounts

The *Object Storage Accounts* panel identifies available cloud storage connections. The displayed columns include *Account Name*, *Login*, *URL*, *Proxy*, *Service Name*, *Identity Domain*, *Threads Per Transfer*, *Type* (either **OPC**, **OCI**, or **LOCAL**), and *Vendor*.

Drives Tab

The **Drives** tab is where the drives in your tape libraries are identified and configured for use with DIVArchive and its Actors. In some installations, a tape library and its drives may be shared with other applications and the configuration options enable you to disable any of the identified drives from DIVArchive.

The **Drives** tab consists of the following frames:

Drives

This frame displays the drives currently identified to DIVArchive in a database synchronization and their current status.

Drive Properties

This frame displays the drive models currently configured for use with DIVArchive.

Although entries in this frame can be manually removed, they can only be added by performing a database synchronization with a Robot Manager.

Actors-Drives

Indicates to DIVArchive which Actors have access to the drives configured in the *Drives* frame.

Tapes Tab

The **Tapes** tab defines each *Tape Media Type* capacity in DIVArchive, and each individual tape's *write*, *repack* or *to be cleared* status. Tapes that do not contain any DIVArchive objects (that is, are empty or are from another archive application in a shared library environment) and have been ejected from a DIVArchive managed library can also be deleted from the DIVArchive database in this tab.

Caution: Frequent I/O errors on a tape (or many tapes) should be promptly investigated. A faulty tape drive can introduce damage to many tapes if not attended to quickly.

The **Tapes** tab consists for the following frames:

Tape Properties

This frame displays the *Tape Types* and configuration parameters currently configured in DIVArchive after a library database synchronization. *Do not alter any settings in this frame.*

Empty Ejected Tapes

This frame displays the tapes that no longer have any DIVArchive content and have been ejected from an attached library. The minus icon on the top right of this frame will remove any selected tapes from the DIVArchive database.

Inserted Protected Tapes

When a tape is externalized, DIVArchive sets it to *Protected Mode*. This state must be manually removed using the **Edit** button on the top right of the frame after reinsertion into the library if the tape is to have new content written to it.

The list displayed is not dynamically updated. Click the **Refresh** button on the top right of the frame if the tape you want unprotected is not listed. This will refresh the displayed list.

Tape States

A tape will appear in this frame if either the *Enable for Writing* or the *Enable for Repack* states is set to N. DIVArchive can automatically disable the *Enable for Writing* state if it encounters an error during a read, write, or repack operation.

The *Tape States* frame gives an overall indication of the reliability of your tape drives. Tapes appearing in this frame (if not manually inserted) indicates that either a read or write error occurred on that tape during DIVArchive operations. If you have many tapes present here, this may indicate an issue with one or more of your tape drives and should be promptly investigated.

Altering the Tape Status

You can use the **Tapes** tab in the Configuration Utility to alter the following states for one or more tapes. However, WORM Media marked as **NOT-WRITABLE** cannot be marked **WRITABLE** using the Configuration Utility.

- The *Protected Status* (as determined in the **Tapes** tab of the Control GUI). You would normally only remove this state if the tape was removed in error from the library and still requires content to be written to it.
- Remove tapes from the DIVArchive database that no longer contain any DIVArchive objects (that is, all objects from the tape have been migrated to another tape or have been deleted) and have been externalized from a DIVArchive attached library. These could be faulty tapes that will never be reused by DIVArchive, or tapes used by a third party backup application that shares a DIVArchive attached library.
- Alter the **Read-Only** or **Repack** status for one or more tapes.

Any tape that is marked not writable is displayed in the *Tape States* frame. A permanent read error on a tape will cause DIVArchive to automatically disable the repack status for that tape. Both write and repack states for a tape can be changed by using the **Edit** button on the top right of the frame.

Sets, Groups & Media Mapping Tab

You allocate new tapes into pools for use by DIVArchive on the **Sets, Groups & Media Mapping** tab. The Set ID represents each media pool and is typically used to distinguish different types of tape media. However, you can also dedicate a specific set of tapes to specific groups.

A *Group* is a logical name for the storage of DIVArchive objects. Each group is assigned a *Set ID* of tapes to draw upon. Each group can only be assigned one *Set ID*, but several groups can share the same *Set ID*.

The **Sets, Groups & Media Mapping** screen consists of the following frames:

Unused Tapes Sets

This frame displays empty tapes that are recognized by DIVArchive and the library module where they are located. you can define the *Set ID* of each tape in this frame.

Groups

You add, remove, or edit existing groups, and each group's association with the tape pools defined in the *Unused Tapes Sets* in this frame.

A group can only be removed when it no longer contains any DIVArchive objects.

Additional *Set IDs* for the *Unused Tape Sets* frame are only available after they are first created in a group. Tapes that must not be used by DIVArchive must be configured with a *Set ID* of 99.

Media Mapping

Media Mapping enables DIVArchive to automatically alter the specified media in an archive request to another Disk Array, Tape Group or Storage Plan. Therefore, the storage for Archive requests can be altered without requiring any changes in the archive initiator (automation or MAM system).

Assigning Tapes to Set IDs

When new tapes are inserted (using **Insert Tape** from the Control GUI) they are automatically assigned the default *Set ID* of 1.

If the tapes you inserted belong to a different set (for example, multiple *Set ID*'s have been used to differentiate media types in mixed drive environments) they must be manually updated with the correct *Set ID* in the Configuration Utility.

The lists are not dynamically updated. If the required tapes, groups, and (or) media mappings are not listed, you click the **Update** button to refresh the list.

When you click the *Unused Tape Sets* frame **Edit** button the Edit Row dialog box is displayed indicating the parameters for the selected Tape Set. In this dialog box, you select the *Set ID* for the tape from the list.

Selecting 99 as the *Set ID* value identifies the tape as not usable by DIVArchive. In particular, this applies to cleaning tapes installed in the library if they are reported to DIVArchive after a library audit (the typical cleaning tape barcode is CLNXXXX).

In some installations where DIVArchive shares it's libraries with other applications, tapes in use by those applications should also have *Set ID* 99 to prevent DIVArchive from using them.

The Edit Multiple Rows dialog box appears when multiple tapes are selected and you click the **Edit** button. In this case, the *Set ID* is updated on all selected tapes.

Media Tab

The **Media** tab displays information (properties) for the media identified in the DIVArchive system. This display is for informational purposes and read-only. You click the **Refresh** button to refresh the displayed list.

Storage Accounts Tab

Use the **Storage Accounts** tab to view and configure all the accounts for OPC, OCI, and EMC.

Storage Plans Tab

The **Storage Plans** tab enables creating simple and advanced rules for automated management and movement of content within the archive.

The **Storage Plans** screen consists of the following frames:

Storage Plans

This frame displays Storage Plan name definitions.

Filters

This frame identifies filter definitions related to the Storage Plan objects. It enables you to perform actions on all or specific objects (based on the object filters).

Media Groups

This frame defines the Tape Groups or Disk Arrays to be allocated to Slots, and whether content deletion will be managed by the Oracle DIVArchive Storage Plan Manager.

For detailed configuration information, refer to the *Oracle DIVArchive Storage Plan Manager (SPM) Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library. See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Slots Tab

This tab defines the Slots associated with the Storage Plans for the Storage Plan Manager. Slots define which Tape Groups or Disk Arrays are related to each storage plan, and the parameters for storage plan execution.

DIVArchive 7.6 enables SPM to retry failed **Copy**, **Delete** and **Restore** actions after the configured failed action retry interval set in the SPM configuration file.

Refer to the *Oracle DIVArchive Storage Plan Manager (SPM) Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for detailed information.

Manager Setting Tab

You use the **Manager Setting** tab in the Configuration Utility to set numerous parameters related to media, checksum, complex objects, metadata database, and export tape encryption settings.

See the *Oracle DIVArchive Installation and Configuration Manual* in the *Oracle DIVArchive 7.6 Core documentation* library, or contact Oracle Support for more information.

Control GUI Operations

The DIVArchive Control GUI is a software utility that connects to both the DIVArchive Manager, and the DIVArchive database, to monitor, control, and supervise operations in DIVArchive. Multiple Control GUI instances can be operated simultaneously from any computer that has TCP/IP connectivity to both the DIVArchive Manager and DIVArchive database. The Control GUI is based on Oracle Java and is platform independent.

The Control GUI is not intended for the intensive archive operations of a DIVArchive system. Typically, archive operations are initiated to DIVArchive from a Broadcast Automation or Media Asset Management system. The Control GUI is intended to supplement these operations rather than replace them.

The Control GUI provides the following features:

- Monitoring of the requests that have been submitted either through the DIVArchive Client API, or from a Control GUI.
- Monitoring of the status of the Actors, Drives, and Disks connected to DIVArchive.
- Initiate and submit all DIVArchive Client API available commands, such as **Archive**, **Restore**, **Partial File Restore**, and so on, to DIVArchive for execution.
- Management of tapes for each library controlled by DIVArchive (such as internalizing, externalizing, and tape repacking).
- Interrogation and data mining of the DIVArchive database.

See the section related to [Oracle DIVArchive Requests](#) or contact Oracle Support for more information. See *Appendix A for Oracle DIVArchive options and licensing information*.

This chapter includes the following information:

- [Launching the Control GUI and Connecting to the Manager](#)
- [User Permissions](#)
- [Control GUI Preferences](#)
- [Manager Log Level Configuration](#)
- [Control GUI Dashboard and Quick Launch Buttons](#)
- [Control GUI Toolbars and Navigation](#)
- [Exporting the Current View](#)

Launching the Control GUI and Connecting to the Manager

Use the following procedure to launch the Control GUI and connect to the Manager:

1. Double-click the Control GUI icon (typically on the computer desktop) to start the Control GUI.
2. After the interface loads, click the **Connect** icon on the top left of the screen. The **Connect** icon is the first icon on the left, above the **Home** tab.
3. In the Connect dialog box, enter the Manager's IP address and TCP Port in the *IP address* and *Port* fields.
4. Click the **Connect** button.

If the connection is successful, the Control GUI will show *Connected* in the connection status area on the left at the bottom of the screen. If the Control GUI cannot establish a connection the DIVArchive Manager, it will attempt to connect to only the DIVArchive database. Consult your Site Configuration for the connection parameters specific to your site.

User Permissions

After the connection to the DIVArchive Manager is established, the Control GUI will only allow you to monitor DIVArchive operations, and retrieve data from the database. This is known as the *User* profile.

Not all command functions are accessible while in the *User* profile mode. This permits situations where monitoring is required but no commands are permitted to be sent to DIVArchive.

To issue requests to DIVArchive, such as Archive or Restore requests, or to eject a tape from a library, you must change to the *Administrator* profile.

The *Administrator* profile is password protected. The password for this profile is set during system installation (contact Oracle Support for help with this password).

An *Operator* and *Advanced Operator* profile are also present in the Control GUI profiles. The difference between the two profiles is **Insert** and **Eject** tape commands are included in the *Advanced Operator* profile. During normal operation, you use the *Operator* profile unless you are inserting or ejecting a tape. When the profile is *Administrator* or *Advanced Operator*, you must select a tape or tapes before all available commands become active.

Use the following procedure to change profiles:

1. Click the **Profile** icon on the top left of the screen. The **Profile** icon is the third from the left and has two silhouettes on it.

You can also click the orb on the top left of the screen and click the **Change Profile** menu item in the resulting menu.

2. Select the desired profile from the **Select New Profile** list.
3. Enter the selected profile's password in the **Password** field.
4. Click **OK** to load the new profile.

Control GUI Preferences

You access the Control GUI Preferences from the **Start** orb on the top left of the screen as follows:

1. Click the **Start** orb on the top left of the main screen.
2. Click the **Tools** menu item.

3. Click the **Preferences** menu item to display the Preferences dialog box.
4. On the **Preferences** tab, you set the *Current Requests* in the Current Requests field.
This option identifies the maximum number of requests (including completed or aborted requests) displayed simultaneously in the *Manager Current Requests* view. When the number of requests displayed exceeds this number, the oldest request is removed as each new request is added.
5. On the **Preferences** tab, you set the *Max Rows Requestable for Database* in the *Max Rows Requestable from Database* for each of the fields. When a database query is executed, the maximum number of lines returned is limited to these values. If the results of a query exceed this number, the number of queries shown will be the designated number (maximum), and a window will be displayed stating *There are nnnn rows matching filters. Change filters to reduce this number under nnnn.*
 - *Tapes*
 - *Archive Objects*
 - *Require/Release*
 - *Logged Events*
 - *Logged Requests*
 - *SPM Actions*

You set the visual window type and color theme on the **Look-and-Feel** tab using the *Look-and-Feel* list and the *Theme* list.

On the **Fonts** tab, you can leave the fonts at the system default (select the *use system default fonts* option), or customize the display fonts used in the Control GUI. The default font for the Control GUI is *Arial Unicode MS* - which supports Unicode characters. Use the following procedure to select custom fonts:

1. Click the **Fonts** tab.
2. Select the *use custom fonts* option.
3. To the right of the *Labels* field, click the **Select** button to select the font for *Labels*.
4. To the right of the *Fields* field, click the **Select** button to select the font for *Fields*.

Manager Log Level Configuration

The Manager's log level is configurable through the Control GUI. If a greater level of detail is required to examine the Manager's activity, you can change the log level without restarting the Manager. Use the following procedure to change the log levels:

1. Click the **Start** orb on the top left of the main screen.
2. Click the **Tools** menu item.
3. Click **Modify Log Levels** menu item.
The Modify Manager Log Levels dialog box is displayed.
4. Use the *Trace Level* list to select the logging level for trace logs.
5. Use the *Service Level* list to select the logging level for service logs.
6. Click **OK** to save your changes.

Control GUI Dashboard and Quick Launch Buttons

The DIVArchive Control GUI look and feel resembles other Windows-based applications. The Control GUI Dashboard displays information at a glance as soon as the application is started.

The dashboard presents statistics representing system data in the form of bar graphs. Daily and lifetime statistics are displayed below the graphs.

The following graphs are displayed by default:

Daily Operations

This graph reflects a seven day window of **Archive, Restore, Partial File Restore, Delete,** and **Copy** operations performed, and a thirty day average of these operations.

Daily Data Transfers

This graph reflects a seven day window of outgoing and incoming DIVArchive data movement, and a thirty day average is displayed.

Storage Distribution

This graph reflects data storage distribution to Nearline disk arrays, tapes in an online ACS, tapes in an offline ACS, and tapes on the shelf.

Monthly Storage Trend

This graph reflects the monthly data archived and deleted. The twelve month average reflects data movement over the past twelve months. Activity in the current month is used for the twelve month average calculation.

Tapes Status

This graph reflects the total number of online tapes managed by DIVArchive that are empty, partially used, and totally full.

Resource Utilization

This graph reflects DIVArchive resource utilization of Actors, tape drives, and transcoders.

Quick Launch Buttons

The following quick launch buttons are located at the top of the Control GUI interface:

Connect to Manager

This is the first button on the left and enables connecting to the DIVArchive Manager. The button has two computers and plus sign images.

Disconnect from Manager

This is the second button from the left and disconnects the Manager connection. This button has two computers and minus sign images.

Change User Profile

This is the third button from the left and enables access to different user profiles (*User, Administrator, Operator, Advanced Operator*). This button has two silhouettes images.

Display the Dashboard

This is the fourth button from the left and displays the dashboard screen when clicked. This button has a clock image and bar graph image.

Display Manager

This is the fifth button from the left and displays the Manager screen when clicked. This button has a computer image and two arrows, one right-facing and one left-facing.

Display Archived Objects

This is the sixth button from the left and displays the Archive Objects screen when clicked. This button has a video play button image.

Display Logged Requests

This is the seventh button from the left and displays the logged requests screen when clicked. This button has a log file image.

Display Logged Events

This is the last button on the right and displays the logged events screen when clicked. This button has a calendar image.

Control GUI Toolbars and Navigation

DIVArchive's toolbars and navigation use a Windows-style ribbon bar and tabs. You can also perform various functions from the **Start** orb on the top left of the screen.

The **Start** orb contains the following menu items:

- **Connect** (to Manager)
- **Disconnect** (from Manager)
- **Change Profile**
- **Connection Information**
- **Tools**
 - **Export Current View**
 - **Print Current View**
 - **Generate Thread Dump**
 - **Modify Log Levels**
 - **Preferences**

You can retrieve the release information of your Control GUI by clicking **About DIVArchive CSM** on the DIVArchive **Start** orb.

You can retrieve the connection information of your Control GUI by clicking **Connection Information** on the DIVArchive **Start** orb.

The following sections describe the tabs on the ribbon bar. Each tab contains icons to display different screens as described.

Home Tab: Dashboard

Clicking this button will take you directly to the DIVArchive main dashboard screen that displays general system information and statistics. The dashboard view is described in the previous section.

Home Tab: Manager (Current Requests View)

The Current Requests view primarily displays the current requests submitted to DIVArchive that are currently in, or pending, execution. Requests that have completed,

aborted, or encountered warnings during execution are also displayed. This feature only applies when the Control GUI is connected to DIVArchive. Completed or aborted requests before the connection are not displayed. The number of pending, executing, completed, and aborted requests displayed while connected depends on the Control GUI preference settings. Right-clicking a request produces a context menu with additional options.

Request Steps

The *Step* column indicates the current operation of the request being performed by DIVArchive. A short description of each step is as follows:

Mounting

A tape is being inserted into a drive. The mounting step is completed once the tape is fully threaded, positioned at the tape header, and the DIVArchive label on tape verified with that of the barcode label.

If the label does not match, the request will be aborted, and the tape will be set to **Not Writable**. This situation could occur if there is a mismatch in the DIVArchive Actor-Drives configuration, or the tape has already been used in another archive system (and therefore has a tape label not usable by DIVArchive). The latter example is a protection feature in shared library environments, where the tape has not been set to *Set ID* 99 (that is, not in use by DIVArchive).

Tapes from other archive systems must first have their tape label cleared before using them in DIVArchive. Contact Oracle Support for assistance to use such tapes.

Dismounting

This step involves ejecting a tape from a drive. A DIVArchive Actor first issues an **Eject** command to the drive (in which it rewinds, unthreads and ejects the tape), and the DIVArchive Robot Manager issues a **dismount** command to the library to return it to a tape bin. If the drive cannot complete the request, the request is terminated and the drive set to **Out of Order**.

Positioning

When reading from tape, the tape is positioned to the selected object. When writing to tape, the tape is positioned to the End of Data (that is, to the position where the last object was written). If this process takes too long, DIVArchive will time out the operation and attempt to dismount the tape. If this also fails, the drive will be set to **Out of Order**.

Reading

The DIVArchive object displayed in the *Object* column is being read from tape. If this step takes too long (for example, the drive is in a hung state), DIVArchive will time out the step and attempt to use another drive (or instance if available).

Writing

The DIVArchive object displayed in the *Object* column is being written to tape. If this step takes too long, (for example, the drive is in a hung state), DIVArchive will attempt to write the object to another tape in another drive.

Deleting

This step is rewriting the tape's label and moving the End of Data pointer therein before writing to the tape in an archive operation. This will be seen on a tape which has previously been used by DIVArchive but has since had all objects deleted and consequently returned to the Unused Tapes Sets.

Transferring

Data is either being transferred to a source from an Actor cache or from a destination to the Actor cache.

Waiting for Operator

This step holds the request in a suspended state and is waiting for human intervention, such as inserting tapes in library's Cartridge Access Port.

Waiting for Resources

DIVArchive resources required for this request are currently in use by another request and the request will be executed when they become available. Resource availability can also be influenced by the *Request Priority* of other requests much lower in the queue.

DIVArchive incorporates an intelligent feature (which must be enabled in the DIVArchive configuration) whereby requests with a lower request priority will be boosted over higher priority requests if they involve a tape that is already mounted from a previous request. This feature can substantially reduce the amount of tape mounting and dismounting, and speed up the executions of all requests overall.

Clearing Completed Requests

Completed, **Aborted**, **Partially Aborted**, or **Cancelled** requests can be cleared from the Current Requests Queue by clicking the **Clear** or **Clear All** buttons on the **View** tab or the **Current Requests** context menus.

Canceling a Request

You can cancel a running or pending request by first selecting the specific request to be canceled, and either clicking **Cancel** from the command menu or from the Current Request context menu.

Note: The current operation (or step) on a request that is currently being executed may need to complete before the request is actually canceled by DIVArchive.

Changing the Request Priority

If there are several pending requests in the Current Requests Queue, DIVArchive will process each request based on its *Request Priority*.

If you need a specific request to execute before (or after) the requests that precede it in the queue, you can manually adjust that request's priority to be higher (or lower) than that of the preceding requests. Raising (or lowering) a request's priority can also be achieved through the DIVArchive Client API using a third party archive initiator.

Raising a pending request's priority does not stop, or pause, any requests that are currently executing. This simply changes the order in which the pending request will be processed by DIVArchive, except if a resource being used by a running request (such as a specific tape) becomes available after that running request has completed an operation. The order of request execution may also be influenced if the `DIVARCHIVE_PRIORITY_TIER` setting in the DIVArchive configuration is enabled (that is, a request lower in the queue will have this value added to its request priority if it involves a tape already mounted).

By default, DIVArchive will periodically increment the request priority of all requests in the queue. This prevents low priority requests (such as Copy to Group) from

continually being overridden by higher priority requests and getting stuck indefinitely in the queue.

Retrying a Request

You can resubmit a previously completed or failed request to DIVArchive using the **Retry** command. This is useful for resubmitting similar requests where few of the details change between them. For a request that was terminated (for example, because a parameter was incorrectly entered, or a Source/Destination was briefly offline), the failed request can be retried without having to submit a completely new request.

Home Tab: Actors

The Actors view provides an indication of the status of each Actor defined in the Configuration Utility and any currently running requests. This view is displayed by selecting **Actors** in the **Home** tab.

Selecting one of the Actors will display the currently running request on that Actor in the window below it. If the DIVArchive Manager cannot establish a connection to an Actor, it is displayed as **Off**. Right-clicking on an Actor displays that Actor's configuration.

Home Tab: Robot Managers

The **Robot Managers** button on the **Home** tab displays the robots identified in the DIVArchive system.

Home Tab: Libraries

The Libraries view gives the information and an indication of the status of each of the libraries connected to DIVArchive. This screen displays the *Serial Number, Name, Type, ACS, Status, First Utilization Date, Total Tapes, Total Data Stored, Total Capacity, and Free Capacity* for the connected libraries.

You double-click the library to display the Library Entry Detail screen. This view offers information concerning the specified library.

Home Tab: Drives

The Drives view displays the status of each tape drive in the libraries connected to DIVArchive, what (if any) tape is mounted in each drive, and current operations being performed on the tape in the drive. Online or offline status for a drive is configured in the *Drives* frame of the **Drives** tab in the Configuration Utility.

If DIVArchive encounters a problem with a particular drive, it will set the drive to **Out of Order** as a safety measure. When a drive is set to this state it will not be used for DIVArchive operations.

Note: If a drive has been set to **Out of Order**, the cause of the error must be investigated before setting the drive back to **Working Well** in the Configuration Utility.

Home Tab: Disks

The Disks view displays the online status and capacities of disks configured in DIVArchive. The status of a disk can be set through the **Disks** tab of the Configuration Utility. If DIVArchive has automatically set a disk to **Out of Order**, the cause of the

error must be investigated before setting the disk back to **Working Well**. If DIVArchive encounters an I/O error with the disk, it is set to **Out of Order** automatically by DIVArchive.

The column titled *Consumed Size* represents the space in kilobytes consumed by the content on disk. This column is especially useful for cloud accounts with unlimited disk space, because it provides visibility into the amount of content stored in the cloud.

Note: A disk linked to an OCI storage account will always report a Consumed Size of 0.

The *Cloud Storage Class* column associated with the array is also displayed in this view. Non-cloud disks have a storage class of **NONE**. OPC Cloud disks have a storage class of **Standard** (immediately available for download from the cloud) or **Archive** (requires a maximum four hours to download from the cloud). OCI cloud disks only support STANDARD storage.

Viewing Storage Options

You can view the disk storage options on the **Home, Disks** screen in the Control GUI. When you click an object in the **Manage, Objects** screen, the *Object Properties* window is displayed. You can see the instances storage options for the selected object in the *Instances* area of the window.

Home Tab: Tapes

You display this view by selecting **Tapes** on the **Home** tab. You must at least be connected to the DIVArchive database to access this view. The Tapes view provides flexible search criteria (located at the top of the screen) to execute DIVArchive database queries about the tapes managed by DIVArchive. You can execute search queries independently whether the DIVArchive Manager is running or not. However, the Control GUI must be connected to the DIVArchive database.

For Sony Optical Drives, you can view whether a media is Write-Once by clicking on the tape (the Write-Once property is displayed in the Tape Properties window). The Blu-ray discs are shown as tapes and viewable in the Tapes view panel of the Control GUI. The *Write Once Media* column displays this information as either **Y** or **N** indicating whether the tape is Write-Once. You can also filter the view so only Write-Once media is displayed.

Right-clicking on a specific tape in the Tapes view will produce a context menu with the additional options you can perform on the selected tape. The Tape Properties dialog is for informational purposes only. No data within the tape can be directly manipulated by an *operator* from this dialog box. Selecting the **Properties** menu item on the **Tapes** context menu displays the Tape Properties screen for the selected tape.

Tape Compression

Tape compression is supported at the tape group level starting with the DIVArchive 7.6 release.

When tape compression is enabled, any empty tape assigned to the group will have compression enabled, and instances written to the tape will be compressed. Tapes assigned to the group before compression was enabled remain uncompressed, and instances written to the uncompressed tape will be uncompressed.

To view all tapes with compression enabled, you must select the **Home, Tapes** icon in the Control GUI, and set the *Compression* filter to **Y**.

Tape Drive Encryption

Starting with the DIVArchive 7.6 release, tape drive encryption securely supports bulk tape migration between DIVArchive systems. Group level encryption is enabled, disabled, or updated in the *Groups* view of the **Sets, Groups & Media Mapping** tab in the Configuration Utility.

You can view the encryption status of the tape on the **Home, Tapes** screen in the Control GUI. The tape encryption status is also displayed on the *Tape Properties* screen when you double-click a tape in the **Tapes** view.

See the *Oracle DIVArchive Installation and Configuration Guide*, and the *Oracle DIVArchive Export/Import User's Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for detailed configuration, and export and import information.

Home Tab: Sources Destinations

The Control GUI Sources Destinations view provides information about the sources and destinations identified in the DIVArchive system. You view this display by clicking the **Sources Destinations** button on the **Home** tab. This view displays the source or destination *Name, Product System, Type, Address, and First Utilization Date*. Double-clicking one of the entries displays the Entry Details dialog box.

The information in the dialog box *Core* frame includes *Name, Type, Production System, Site ID, and First Utilization Date* fields.

The information in the dialog box *Connection* frame includes *Address, Root Path, and Options* fields.

The information in the dialog box *Data Limits* frame includes *Max Throughput, Max Accesses, Max Read Accesses, and Max Write Accesses* fields.

The information in the dialog box is not editable and is only for informational purposes.

Action Tab

You perform most object-based operations (**Archive, Restore, Copy, Delete**, and so on) from the **Action** tab on the ribbon bar.

When restoring the same file to the same destination twice in parallel, the behavior on Windows and Linux is different. On Windows, the first restore (they cannot arrive exactly at the same time) will lock the file so that the second one will terminate. On Linux, there is no such lock at the file system level. Both restores are executed at the same time, and both will write to the same file. The content of the resultant file is not predictable.

On the right side of the **Action** tab is the **Tape Actions** button. You click the **Tape Actions** button to perform various tape operations. Most tape operations are self-explanatory. However the **Automatic Repack** operation requires some description and is covered in the following section.

Automatic Repack

When DIVArchive writes an object to a tape, the object can only be appended to where the last object was written on that tape. When any object is subsequently deleted from a tape, the space from that object cannot be reused. Eventually, as more and more

objects are deleted, tape fragmentation occurs and potentially develops a considerable amount of unusable space in the tape library.

This unusable space can be reclaimed by repacking the tape. The DIVArchive repack process reads all material from the tape being repacked to a temporary cache and then writes it back to a new tape in the same group as the original (sequentially).

You can perform a manual tape repack by clicking the **Repack Tape** button, or triggered automatically when tape fragmentation and used capacity thresholds are exceeded.

You enable or disable **Automatic Repack** by clicking the **Automatic Repack** button on the **Action** tab.

Note: **Automatic Repack** ignores WORM Media. If WORM Media is repacked manually, the space is not recoverable.

Clicking the **Automatic Repack** button displays a dialog box. To enable **Automatic Repack** select the check box, and then click the **Send** button. To disable it, deselect the check box, and then click the **Send** button.

After enabling **Automatic Repack**, a second dialog box is displayed for you to configure the repack parameters including *Tape Filling Threshold (%)*, *Tape fragmentation threshold (%)*, *Start Time*, *Duration*, and *Repack tapes from selected group*.

OTU (Object Transfer Utility) for Cloud Sources and Destinations

The first icon on the **Actions** tab is for OTU (Object Transfer Utility). After an OPC cloud destination is defined, you can use OTU to browse through the container directory tree for objects in an Oracle Object Storage Account. OTU loads the immediate children of the container folder, and additional files and folders are added to the tree dynamically.

You can also use OTU to restore content to a container and folder of an object in an Oracle Object Storage Account destination, or archive an object from an Oracle Object Storage Account source to DIVArchive.

The Cloud OTU can also identify a manifest file and remove all file fragments included in the manifest file so that a single file is displayed.

See the *Oracle Object Transfer Utility (OTU) User's Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for configuration and operational details.

Manage Tab: Objects

You display this view by clicking **Objects** on the **Manage** tab. You must at least be connected to the DIVArchive Database to access this view. You can search objects

You select an object and right-click it to display the objects context menu. These commands are a subset of those from the **Action** tab menu and perform the same functions. At this context level, the request window (by default) does not automatically specify an instance of the object in the *Instance* field of the request. You can manually enter a specific instance in this field before the command is sent. If the *Instance* field is left blank, the command will deal with all instances of the object. For example, if you select **Delete** from this menu, and no instance number is specified in the request, DIVArchive will delete *all* instances of the object.

The Object Properties dialog box displays an object's properties, instances, and components. A valid instance number must be specified in any command issued from this view or you will receive an error message when submitting the command.

This includes removing the instance number entirely from the request. For example, you cannot delete all instances of an object from this menu by leaving the *Instance* field empty. This view will not permit the last instance of the object to be deleted and DIVArchive will automatically terminate this request.

If a *file* (or part thereof) of an object instance is spanned across two or more tapes, and only one tape of the set is externalized, the instance is still considered externalized. However, an *object* (that is, all instances) is only considered externalized if all instances of that object are externalized.

Clicking on the **Instances** tab in the bottom section of the Object Properties screen displays the object's Instances screen. This view displays the instances of the object and the elements of each instance.

Clicking on the **Components** tab in the bottom section Object Properties screen produces the Object Component screen. Clicking on a displayed component will display the component's information at the bottom of the window.

Manage Tab: Requests

You display this view by clicking on **Requests** on the **Manage** tab. This view is limited to 300 lines by default. Completed, canceled, and aborted requests are cleared if the Control GUI is disconnected or relaunched. The **Requests** view is provided for retrieval of previously completed requests from the DIVArchive database. It is commonly used by Oracle Support to troubleshoot a previously reported issue.

Errors can be identified quickly by clicking the *Errors* column. Once a particular request's *Request ID* is determined, it can be entered in the **Events** view to export the request's event log from the Control GUI to a text file. You can search the displayed requests using the search area at the top of the screen.

Double-clicking on a request displays the Request Properties screen for viewing information (including Request Properties, Object Properties, Archive Properties and Events List) about the selected request. Up to fifty thousand logged requests are stored in the DIVArchive database. Once this number of requests is reached, the oldest requests are overwritten. For most facilities, this provides at least approximately six to twelve months of logged requests.

Manage Tab: Media

You display this view by clicking on **Media** on the **Manage** tab. This view displays information for each of the tape groups and disk arrays identified in the DIVArchive system. You filter the search using the lists at the top of the screen.

The *Name* list can be a full or partial media name including wildcards. An asterisk will display all media names.

You use the Type list to select viewing **All** media types, only **Groups**, or only **Arrays**.

You click **Refresh** after making your filtering selections to update the display.

Double-clicking on the tape group or disk array displays a dialog box with details about that group or array. The screen is for informational purposes only and is not editable.

Source Media Priority

The *Source Media Priority* determines which source instance is preferred (according to the media where the instance resides) during the instance selection process of a Restore, Partial File Restore, and Copy To Group request. Instances on media with a higher priority are preferred. Cloud instances are only copied or restored if all local instances are offline, or no local instances exist. This is an absolute condition independent of the *Source Media Priority*.

See the *Oracle DIVArchive Operations Guide* in the *Oracle DIVArchive 7.6 Core documentation* library for detailed information.

Manage Tab: Require/Release

You display this view by clicking on **Require/Release** on the **Manage** tab. You must at least be connected to the DIVArchive database to access this view. This view allows an *operator* to query the DIVArchive database for the following:

- Released instances that can be externalized from any libraries managed by DIVArchive.
- Externalized instances that are required to be inserted into a library.
- A list of tapes that must be inserted to fulfill Restore requests (required tapes).
- A list of tapes you can externalize from a library (releasable tapes).

Note: A releasable tape only contains released instances.

You use the filters at the top of the screen to limit the type and number of results returned from your query. You run your query by clicking **Refresh** on the top right of the screen. There are only two filters available as follows:

Dates

Select the *Begin* and *End* dates and times to search. Select the *Enable* check box to enable this option for the query. Deselect the check box to not include this option in the search.

Demand

You use this list to select viewing either **Required & Externalized** tapes (only required tapes that are externalized are displayed), or **Released & Inserted** tapes (only released tapes that are internalized and inserted are displayed).

At the bottom of the screen are the **Required Tapes** button and the **Releasable Tapes** button. The **Required Tapes** button generates a list of tapes required to be inserted into the library. The **Releasable Tapes** button generates a list of tapes that have their instances released, and can be externalized from the library.

Clicking either button displays the associated dialog box. The Required Tapes screen enables you to view, print, or save the list to a text file. The Releasable Tapes screen enables you to view, print, save the list to a text file, or eject the tape by clicking the **Eject Tape** button.

Manage Tab: SPM Actions

You display this view by clicking on **SPM Actions** on the **Manage** tab. You must at least be connected to the DIVArchive database to access this view. This view is only applicable to installations having the Oracle DIVArchive Storage Plan Manager (SPM) installed. It enables more detailed information to be extracted from the DIVArchive

database related to the actions that have been initiated to DIVArchive from the SPM module. See [Appendix A](#) for Oracle DIVArchive options and licensing information.

You use the filters at the top of the screen to limit the type and number of results returned from your query. You run your query by clicking **Refresh** on the top right of the screen.

Right-clicking on a result returned by the SPM Actions query displays the SPM Actions Context menu. The menu has only two options as follows:

Request Properties

This displays the request's events list associated with the SPM Action. This is only applicable to SPM Actions where the *Request ID* is nonzero.

Reschedule Action

If the SPM-initiated request failed (for example, the medium or associated Actors for the slot were unavailable), this enables you to retry that SPM Action.

Analytics Tab: Metrics

You display this screen by clicking on **Metrics** on the **Analytics** tab. The Metrics view provides a set of filters to narrow your searches. Information can be filtered by *Metric Definition*, *Collection Interval*, *Aggregation Item*, *Resource Name*, *Value*, *Count*, *Start Date*, and *Last Update Date*. The *Metric Definition* list contains the metrics defined in the Configuration Utility plus the built-in ones (DIVAPROTECT*).

See the *Oracle DIVArchive DIVAprotect User's Guide* in the *Oracle DIVArchive 7.6 Additional Features* documentation library for more information.

Analytics Tab: Events

You display this screen by clicking **Events** in the **Analytics** tab. You must at least be connected to the DIVArchive database to access this view. The Events view is typically used with the Requests view for troubleshooting purposes. You can filter the displayed results using the filters at the top of the screen including *Dates* (**Start** and **End** dates and times), *Severity* (**Information**, **Warnings**, **Errors**, and **Critical**), *Request ID*, and *Description*.

When a particular request fails, you can export the log of that request to a text file and send it to Oracle Support (when requested). This information can also be collected directly by the Oracle Support Engineer using the *DIVArchive Customer Information Collection Tool*.

When the query is run for the failed request's *Request ID* (usually retrieved from the Requests view), it shows the same events of that request's event log. You can save this file as a text file by selecting **Export**.

DIVArchive stores a maximum of one million events in its database. When the number of logged events exceeds this value, DIVArchive will begin overwriting the existing events beginning with the oldest entry.

Analytics Tab: Drive Alert Logs

You display this screen by clicking **Drive Alert Logs** in the **Analytics** tab. This view lists errors reported by tape drives. This information is vendor-specific and may vary depending on the make and model. You can filter your search using the filters at the top of the screen. For example, you can look for errors related to a particular tape.

Analytics Tab: Library Alert Logs

You display this screen by clicking **Library Alert Logs** in the **Analytics** tab. This view lists errors reported by direct-attached SCSI protocol libraries. This information is vendor-specific and may vary depending on the library make and model. You can filter your search using the filters at the top of the screen.

Analytics Tab: DIVArchive Information

You display this screen by clicking **DIVArchive Information** in the **Analytics** tab. The amount of storage that DIVArchive will manage is dictated by the DIVArchive configuration. When the total managed capacity reaches ninety percent of the capacity, DIVArchive will begin issuing periodic warning messages in the **Manager Requests** view of the Control GUI.

The warning messages become more frequent when the managed capacity meets the configured capacity. When this limit is reached, no further Archive requests are accepted by DIVArchive and they will be automatically terminated. However, Restore requests will continue to be accepted.

See [Appendix A](#) for Oracle DIVArchive options and licensing information.

Analytics Tab: Database Logs

You display this screen by clicking **DIVArchive Information** in the **Analytics** tab. This view lists errors reported to the Oracle database. A set of filters is available to narrow down searches. For example, you can look for errors related to a particular tape.

View Tab: Properties, Clear, Clear All

You use the **View** tab to view the properties of selected items in other Control GUI screens. You highlight the items (object, system component, and so on) in the original screen, click the **View** tab, and then click the **Properties** button.

The **Clear** and **Clear All** buttons on the **View** tab clear one or more requests, errors, warnings, and so on from the appropriate screens.

Exporting the Current View

To export the information currently displayed in almost any Control GUI view, click the **Start** orb, and then click **Export Current View** from the **Tools** menu.

Exporting is available for the [Home Tab: Tapes](#) view and all other views in the Control GUI *except* the following tables:

- [Home Tab: Manager \(Current Requests View\)](#)
- [Home Tab: Actors](#)
- [Home Tab: Robot Managers](#)
- [Home Tab: Libraries](#)
- [Home Tab: Drives](#)
- [Home Tab: Disks](#)
- [Home Tab: Sources Destinations](#)
- [Action Tab](#)
- [Manage Tab: Requests](#)

In the file save dialog box that appears, select an existing file or specify the name of a new file that will receive the information in the currently displayed table. Use the following procedure to save, and then view, the events in a spreadsheet such as Excel:

1. Enter the `.csv` extension after your file name in the *File Name* field.
2. Click **Export** to complete the export of the view.

The content of the exported view will depend upon the current filter selection. If the filters have been modified since the last query, and you have not clicked **Refresh**, the exported log will not represent the current filter selections. Also, if the table in the Detailed View is empty when the view is exported, the destination file will contain nothing except two lines indicating the current filter selections.

Monitoring DIVArchive

During normal DIVArchive operations, you must periodically monitor the *Errors* column in the Manager Current Requests view for warnings and (or) errors.

An orange exclamation mark indicates that the request had recoverable errors.

A red exclamation mark indicates that the request had an irrecoverable error and was terminated.

When a system notification is generated (a warning or error), a large red X icon is displayed in the bottom right of the Control GUI. If there are no errors the X icon will be gray. Double-clicking the icon automatically changes the current screen to the **Events** view.

- [DIVArchive Request Warnings](#)
- [DIVArchive Backup Service Warnings and Notifications](#)

DIVArchive Request Warnings

A warning status indicated on a request signifies that an unexpected error occurred during the requests execution, but the request was still completed.

The following are three example Scenarios:

An I/O error occurred when reading an object from tape. However, there was a second instance of the object on another tape. DIVArchive attempted to use the second instance and this time the object transferred successfully. You must attempt to investigate the tape from the first restore attempt. If multiple events of this type occur across multiple tapes, you must establish whether they all relate to a specific tape drive. If the errors are severe, DIVArchive will automatically mark the drive **Out of Order**.

An object is being transferred to a disk array. Because multiple disks can be assigned to an array, an unexpected I/O error may have occurred with one of the disks in the array. DIVArchive automatically selects another disk from the array to transfer the object to, and this attempt is successful. The disk where the I/O error occurred is marked **Out of Order** by DIVArchive and not used again. The offline disk must be examined for the cause of the error.

An object is being archived to tape and a write error occurs with the selected tape. DIVArchive attempts to use another tape and drive to fulfill the request. The tape from the first write attempt is marked **Read-Only**, and not used for additional archive requests.

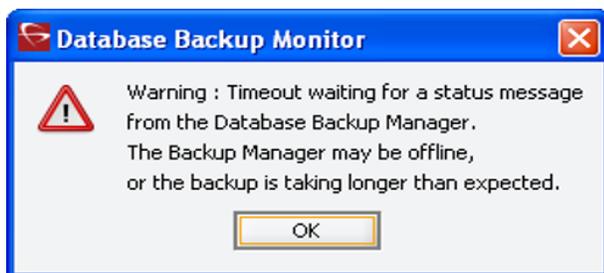
DIVArchive Backup Service Warnings and Notifications

The DIVArchive Backup Service notifies the Manager on all backup errors and warnings. The Manager broadcasts the backup errors and warnings to all connected DIVArchive Control GUIs and records them in the Manager events log.

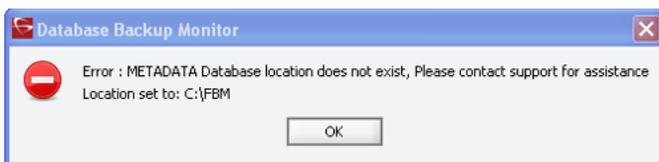
Caution: You must have an elevated awareness of error messages from the DIVArchive Backup Service. Contact Oracle Support for assistance when necessary.

The following are the warning and error notifications shown on the Control GUI:

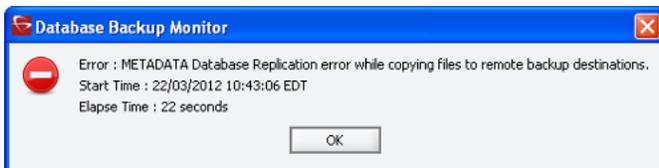
The following warning notification indicates that the DIVArchive Manager timed out waiting for a connection from the DIVArchive Backup Service because the Backup service failed to start. If the Metadata Database is enabled, Manager expects a connection from the Backup Service within 15 minutes (configurable) from the time that Manager started running.



The following error notification is displayed when the Metadata Database Location is not configured or invalid.



The following error notification is displayed when copying the Metadata Database Files to any of the remote backup destinations fails.



The following error notification is shown when the Oracle Database Backup fails or Copying Oracle Backups to a remote backup system fails.



Operational Boundaries

- Number of Manager Connections
- Number of Simultaneous Manager Requests
- Number of API Tasks
- Recommended API Connection Use
- Special Authorized Characters
- Maximum Number of Allowed Characters
- File Path Limitations

Number of Manager Connections

The number of connections to the DIVArchive Manager is limited by the Manager and set in the Manager configuration file. The default configuration limit is two hundred. This boundary includes connections to GUIs, Actors and all API clients. When the configured limit is reached, the API will not create additional connections.

See the `manager.conf` file for more information.

Number of Simultaneous Manager Requests

The maximum number of simultaneous requests processed by the Manager is configurable in the `manager.conf` file as the value of the `DIVAMANAGER_MAX_SIMULTANEOUS_REQUESTS` parameter. The default value has been raised from two hundred to five hundred in DIVArchive 7.6. The maximum number has been verified up to two thousand. Additional simultaneous requests beyond the value set in this parameter are rejected by the Manager.

Number of API Tasks

The number of API tasks that will be accepted to the API Processing Queue is configurable in the `manager.conf` file as the value of the `DIVAMANAGER_API_TASK_QUEUE_SIZE` parameter. The default value is two thousand and DIVArchive 7.6 has been verified at this value. If the queue is full subsequent commands are rejected.

Recommended API Connection Use

Oracle recommends that a new connection between the Manager and an API client *not* be created for each request or command sent to the Manager. Whenever possible, let the connection remain open for the lifetime of the session or application.

Special Authorized Characters

Many requests require alpha numeric text parameters. Special characters can be used in these fields as defined in the following table. The request is rejected if an invalid special character is used. In a Windows environment, file and folder names cannot consist of one or more spaces, and cannot contain a double-quotation mark.

Table 8–1 Special Authorized Characters in DIVArchive

Field (across) Character (down)	Name	Category	Source	Media	Path	File	Comments	Options
~	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
'	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
!	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
@	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
#	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
\$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
%	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
^	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
&	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
*	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
(	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
+	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
=	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
|	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
\	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
}	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
{	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
[	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
:	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
;	Yes	Yes	Yes	Yes	Yes ¹	Yes	Yes	Yes
"	Yes	Yes	Yes	Yes	No	Yes	Yes	No
'	Yes	Yes	No	No	Yes ¹	Yes	Yes	Yes
<	Yes	Yes	Yes	Yes	No	Yes	Yes	No
,	Yes	Yes	Yes	Yes	Yes ¹	Yes	Yes	Yes
>	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
.	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Table 8–1 (Cont.) Special Authorized Characters in DIVArchive

Field (across) Character (down)	Name	Category	Source	Media	Path	File	Comments	Options
?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
/	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Space	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

¹ Depends on file system restrictions.

Maximum Number of Allowed Characters

The maximum number of characters that can be used for request parameters is displayed in the following list. If these limits are exceeded, the request will be rejected.

Name

Maximum of 192 characters.

Category

Maximum of 96 characters.

Source

Maximum of 96 characters.

Media

Maximum of 96 characters.

Path and File Name

Maximum of 1536 characters.

Comments

Maximum of 4000 characters.

Options

Maximum of 768 characters.

File Path Limitations

DIVArchive 7.6 supports absolute path names on both Windows and Linux up to a maximum of four thousand characters. Relative path names are limited to two hundred fifty-six characters on Windows systems (only).

A DIVArchive Windows local path is structured in the following order and terminated with a NUL character:

```
Drive_Letter:\Component_Name\Component_Name\File_Name.Extension
```

A DIVArchive Linux local path is structured in the following order:

```
/Component_Name/Component_Name/File_Name.Extension
```

The following are several example paths used in DIVArchive - Windows first and then Linux. The <NUL> character used in the example represents the invisible terminating null character for the current system code page and need not be typed in. The < and > characters are used in the examples for clarity only and must not be part of a valid path string.

Generic Path:

D:\Some_256-Character_Path_String<NUL>

/Some_4000-Character_Path_String

Actor Executable:

D:\diva\diva\Program\Actor\bin\DIVArchive.exe

/home/diva/diva/std_linux

Manager Configuration:

D:\diva\74\Program\conf\manager\manager.conf

/home/diva/DIVA/Program/conf/manager/manager.conf

Frequently Asked Questions

In general, refer to the documentation for the specific DIVArchive component for Frequently Asked Questions about that particular component. This chapter includes some basic examples from those documents and answers the following questions:

- How do I access the system in Engineering mode?
- What is the Administrator log in and password?
- How often are metrics updated?
- What should be done if SPM is not working as desired?
- What is the export XML file compatibility?

How do I access the system in Engineering mode?

Contact Oracle Support to access the system in Engineering Mode. Engineering Mode is accessible for Oracle Support personnel only to avoid accidental misconfiguration of the system, which could possibly result in degradation of DIVArchive operations.

What is the Administrator log in and password?

Contact Oracle Support for this information.

How often are metrics updated?

Data Metrics are calculated and updated every hour through an automated database job that runs in the background.

What should be done if SPM is not working as desired?

First, confirm the SPM configuration. Refer to the *Oracle DIVArchive Storage Plan Manager (SPM) Guide* in the *Oracle DIVArchive 7.6 Additional Features* documentation library for details.

Check the SPM Actions panel in the GUI to confirm that the actions are changing states (**In Process**, **Completed**, **Failed**, and so on).

Check the SPM log file for new entries.

Collect the system logs and database dumps using the Customer Information Collection Tool and submit them to Oracle Support. *Contact Oracle Support for assistance using the Customer Information Collection Tool.*

What is the export XML file compatibility?

The exported XML (when generated) can be imported into the release of DIVArchive that it was exported from, and later releases of DIVArchive. DIVArchive allows more than one set of tapes (spanned or not) to be exported to and imported from a single file.

DIVArchive Options and Licensing

The following table identifies DIVArchive options and licensing metrics.

Part Number	Description	Licensing Metric
L101163	Oracle DIVArchive Nearline Capacity	Per TB
L101164	Oracle DIVArchive Archive Capacity	Per Slot
L101165	Oracle DIVArchive Actor	Per Server
L101166	Oracle DIVArchive Manager	Per Server
L101167	Oracle DIVArchive Partial File Restore	Per Wrapper
L101168	Oracle DIVArchive Avid Connectivity	Per Server
L101169	Oracle DIVArchive Application Filtering	Per Server
L101170	Oracle DIVArchive Storage Plan Manager (2 storage plans are included with a DIVArchive Manager License)	Per Server
L101171	Oracle DIVAnet	Per Server
L101172	Oracle DIVAdirector	Per User
L101918	Oracle DIVArchive Export / Import	Per Server
L101919	Oracle DIVArchive Additional Archive Robotic System	Per Tape Library
L101920	Oracle DIVArchive Automatic Data Migration	Per Server



Repack and Verify Tape Request Limitations with Checksum Workflows

The repack request will fail if the tape contains any corrupted objects or the object fails checksum verification. You must manually resolve the conflict before performing the repack.

Repack of WORM media is not automatic. Manual repack is available for WORM media, but the space is not recoverable after repack is complete.

A checksum is not generated for any spanned objects during Repack or Verify Tape requests. The Actor will identify any spanned files and the Manager will not attempt to verify them. A warning event will be displayed stating that a checksum was not generated or verified for the spanned content. In this case the repack operation will not be terminated, but the object instance will be marked as **Not Verified**.

Additional checksum verification is done at the Oracle Storage Cloud level. *See the Storage Cloud documentation for information.*

Glossary

Action

A pre-determined reaction of a metric surpassing a threshold value by one of the variables from its internal state. This term is used in the Oracle Storage Plan Manager (SPM).

Array

An array designates a collection of disks designated by their name as they are declared in the DIVArchive configuration. A disk name is associated with a mounting point. Archive requests can be submitted with an array as the destination. DIVArchive is responsible for choosing the disk location to write the data when several disks belong to the same array.

AXF (Archive Exchange Format)

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 making the format truly open and non-proprietary. AXF helps ensure long-term accessibility to valued assets, and keeps up with evolving storage technologies.

CAP (Cartridge Access Port)

The Cartridge Access Port is used for inserting and removing tape cartridges to and from a Robotic Tape Library without interrupting library operations.

Category

Categories are an approach to grouping an object with other similar objects having particular shared characteristics. It must not be confused with mediums or arrays, which are storage concepts.

Checksum and Checksum Types

A mathematical value computed from a group of data being transmitted, and transferred with the data. The receiving device compares the checksum with its own computation, and if it differs from the received checksum, it requests the transmitting device to resend the data or generates an error. Each checksum has a specific algorithm, each of which has its own level of verification.

Additional checksum verification is done at the Oracle Storage Cloud level. See the Storage Cloud documentation for information.

Complex Object

An Object is defined as a Complex Object when it contains one thousand (configurable) or more components. Complex object handling may differ from non-complex objects as noted throughout this document.

Component

A file that is part of a DIVArchive object.

Destination

A system on which archived objects are restored.

DFM (Drop Folder Monitor)

The Drop Folder Monitor (DFM) monitors preconfigured drop folders on the system. When new files are detected, one or more operations are performed on the files depending on the folder configuration. Refer to the *Oracle DIVArchive Drop Folder Monitor (DFM) User's Guide* in the *Oracle DIVArchive 7.6 Additional Features documentation* library for more details

Dynamically Extensible Transfers (DET)

Dynamically Extensible Transfers are an Avid protocol.

Drop folder

A folder on a local disk, FTP server, or a CIFS shared folder designated for Single File mode or File Set mode that is monitored by DFM, and from which files will operations performed on them.

Event

One operation (such as a request) usually requires multiple events to complete an operation. An event provides all applicable information relating to the single task (for example, names, IDs, parameters, numbers, and so on).

Externalization

An object instance is ejected when one of the tapes containing the object's instance elements is ejected. An object is externalized when all of its instances are ejected. An object is considered inserted when at least one instance of the object is inserted.

Media Format

DIVArchive tapes and disks can be formatted as either AXF or Legacy (format used before release 7.0) format. The format is set for tape groups and disk arrays during configuration. Complex objects must be stored on AXF-formatted media.

Medium

Set of storage resources. Currently DIVArchive provides two types of media: groups of tapes and arrays of disks. `DIVA_archiveObject()` and `DIVA_copyToGroup()` requests transfer to a Medium (media).

Metric

An instance of one Metric Definition for a specific resource can be either enabled or disabled. Each Metric is associated with a specific resource and can receive a flow of measurements from that attached resource.

A metric has an internal state that consists of several numeric values are updated when given new measurements while providing read access to this logically consistent

state. Each metric can be used as a measurement value for the state of another metric. The internal state can be reset at any time.

Metric Definition

Defines how a metric is calculated by specifying which events are examined, which measurements are extracted, how they are aggregated (collection type), and which resource the aggregation is based on.

See the *Oracle DIVArchive DIVAprotect User's Guide* in the *Oracle DIVArchive 7.6 Additional Features* documentation library for more information.

Object

Objects are archive entries. An object is identified by a pair (Name and Category) and contains components. A component is the DIVArchive representation of a file. The components are stored in DIVArchive as object instances.

Object Instance

Mapping of an object's components onto a set of storage resources belonging to the same storage space. Deleting instances cannot result in deleting the related object. The deletion of a unique instance is not permitted.

Request

A request is an operation running in DIVArchive which progresses through steps (migration, transfer, and so on) and ends as **Completed**, **Aborted**, or **Cancelled**.

Resource

Used to denote the necessary elements involved for processing requests (for example, Actors, disk, drive, and tape). A resource is a uniquely identified element of the DIVArchive system. DIVAprotect references them by events and metrics. See *Appendix A* for Oracle DIVArchive options and licensing information.

Set (of tapes)

Every tape in a DIVArchive system belongs to one and only one Set. If the tape is not available to DIVArchive, it belongs to Set #0, otherwise it belongs to a set with a strictly positive ID (for example, Set #1). Each group is associated with a Set. When the group needs an additional tape, it takes it from its associated Set.

Source

A system that produces data to be archived in the DIVArchive system (for example, video servers, browsing servers, remote computers, and so on).

Spanning

Splitting an object's component onto several tapes (usually two). This can occur when the component size is larger than the remaining size left on the initial tape.

