DIVA Core

Installation and Configuration Guide

Release 8.0

Version 1.7

April 2022

Copyrights and Trademark Notices

Contents

2 DIVA Core Security

3 Database Installation and Configuration

4 Cluster Manager Installation

5 DIVA Core Installation

6 DIVA Core Configuration Overview

9 Actor Configuration

11 Checksum Support Configuration

12 DIVAmigrate Installation and Configuration

13 Transcoder Installation and Configuration

14 Frequently Asked Questions

D Dynamic Configuration Changes

E ADIC SDLC Installation and Configuration

Glossary

Preface

This book describes initial and general installation and configuration of the DIVA Core Suite system. The manual assumes a working knowledge of the Windows and Linux operating systems, and additional concepts such as networking, RAID, tape drives, and fiber channel technologies.

Audience

This document is intended for the Telestream Installation Team, System Administrators, and system users.

Documentation Accessibility

For information about Telestream's commitment to accessibility, visit the Telestream Support Portal located at https://portal.goecodigital.com.

Access to Telestream Support

Telestream customers that have purchased support have access to electronic support through the Telestream Support Portal located at https://portal.goecodigital.com.

Related Documents

For more information, see the DIVA Core documentation set for this release located at https://portal.goecodigital.com.

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

Document Updates

The following table identifies updates made to this document.

Date	Update
September 2021	Removed references to *Site Configuration* document.
March 2022	Added permissions for Google Cloud Storage buckets in Chapter 7.
April 2022	Added information for Oracle 19c support.

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.
italic	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.
blue text	Blue text indicates a link to an outside source, or to another chapter, section, or glossary term in this book.

1

Overview

This chapter describes the DIVA Core 8.0 release, and includes the following information:

- Release Overview
- Port Utilization
- Enhanced Features and Functionality
- DIVA Core Media Storage Formats
- Complex Objects
- Core Software Components
- Additional Software Components
- DIVA Core Utilities

Release Overview

The DIVA Core architecture enables integration of many different types of servers and technologies, for example Broadcast Video Servers, Storage Area Networks, and Enterprise Tape Libraries. The DIVA Core installation varies from site to site, therefore the exact configuration of your specific DIVA Core platform is not described in this book.

Note: The File System Interface is not released with DIVA Core 8.x and is only supported by special request.

See Appendix A for DIVA Core options and licensing.

Port Utilization

The following table lists the standard ports used by the DIVA Core system. If you need assistance contact Telestream Support.

Service	Port Number	Description and Notes
FTP	21/tcp	Port depends on configuration
SSH	22/tcp	Linux hosts only
HTTP	80/tcp	DIVA View
SQLNet	1521/tcp	Manager database access
RDP (*Microsoft Terminal Services*)	3389/tcp	Remote Desktop access

Service	Port Number	Description and Notes
DIVA Core Robot Manager	8500/tcp	Robot Manager
DIVA Core Manager	9000/tcp	Manager Unsecure Port
	8000/tcp	Manager Secure Port
DIVA Core Actor	9900/tcp	Actor
Flip Factory	9000/tcp	Flip Factory
DIVA Core AMC	6101/tcp	Avid AMC

Enhanced Features and Functionality

Refer to the *DIVA Core Release Notes* in the DIVA Core documentation library at https://portal.goecodigital.com.

DIVA Core Media Storage Formats

This section describe the media storage formats available in this DIVA Core release.

AXF (*Archive eXchange Format*)

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

An AXF object is an IT-centric file container that can encapsulate any number, and any type, of files in a fully self-contained and self-describing package. The encapsulated package contains its own internal file system, which shields 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.

Tape groups or disk arrays used by complex object requests must be in an AXF format, because complex objects cannot be stored in Legacy format. Because all complex objects are written in the AXF format, any instance of a complex object will also be in the AXF format.

Native File and Folder Support

Users can see their files and folders in native format on archive devices rather than as an AXF container files. You can also access files and folders on storage devices like object storage. This access opens the archive to the use of third party software to perform operations on the archive (*for example, metadata collection, face recognition, transcoding, and so on*).

Tape Groups

In DIVA Core, a *Tape Group* or *Disk Array* has a media format parameter that indicates which storage media format to use when creating Archived objects. You can set the media format to either *DIVA Core Legacy Format* or the *AXF Format*. This setting can be changed at any time and does not influence content already stored. It is possible to have more than one storage media format within tape groups and disk arrays.

A DIVA Core object instance is only written in 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. An object can contain multiple instances, each of which can be stored in either Legacy or AXF format.

Although a tape group can contain more than one storage format, an individual tape has at most one storage media format. The format of a tape instance is the format of the tape on which the instance resides. *All instances on a tape must have the same format*.

The media format for an empty tape is assigned when the first object on that tape is written. The tape is assigned the format of the tape group that appears in the request. After the media format for a tape is assigned, you cannot change it unless all objects on the tape are deleted. After deletion of all objects from a tape, the tape's format becomes unassigned until content is again written to the tape. *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. Nevertheless, 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.

Note: 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. If an instance spans across multiple tapes, then all tapes used to span the content will have the same format.

Disk Arrays

Unlike tapes, disks do not have a format. DIVA Core 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.

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.

You can use the Copy To Group, or Copy As New requests to migrate objects from Legacy media format to AXF media format (*or back*). However some AXF objects cannot be copied to the Legacy format; copying objects from Legacy format to AXF format does not present any issues. In DIVA Core the only limitation on copying an object instance from AXF format to Legacy format is the complex object feature.

Complex Objects

Complex objects have significantly expanded the object component boundaries, allowing up to one million files and ten thousand folders per object.

Complex objects maintain information about files and folders in the archive. They store subtotals for each folder, including the total number of files and subfolders within the folder, and the total size of all files within the folder and within any subfolders.

DIVA Core uses the configurable *Complex Object Threshold* parameter during archival to determine whether a new object should be complex based on the number of components. This value is set in the manager.conf configuration file. If the number of components is greater than the *Complex Object Threshold*, the object becomes a complex object. After an object is identified as a complex object it will always be complex; even if it is copied using the Copy As command, or imported using the Export/Import Utility.

Telestream recommends that the threshold remain at the default value (*1,000 components*) unless there is a specific reason to adjust the value. Contact Telestream Support for assistance as required.

A complex object differs from a non-complex object in several 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 files are located in the Metadata Database root directory. *Complex objects must be stored in AXF format whether on tape or on disk*.

Complex objects can contain hundreds of thousands of files. However, some DIVA Core API commands (*for example, GetObjectInfo*) will not return the entire set of files. Instead, these commands return a single placeholder file which prevents downstream applications from being overwhelmed by file and folder information. Also, the entire set of files on a tape are not displayed in the Control GUI *Object Properties* and *Tapes* screens, only a single placeholder file is shown. The DIVA Core API includes a command to return all of the files and folders within a complex object. See the appropriate DIVA Core API documentation in the *DIVA Core documentation* libraries for details.

DIVA Connect does not currently support replication of complex objects.

The following features do not support complex objects:

- ***Delete on Source*** option
- ***Verify on Restore*** (*VFR*) checksum feature
- ***Verify on Archive*** (*VFA*) checksum feature
- ***deleteFile*** API call
- ***getObjectListbyFileName*** API call
- ***GetByFilename*** API call (*for Avid connectivity*)
- ***DeleteByFilename*** API call (*for Avid connectivity*)

Complex Objects and FTP

When archiving complex objects using the FTP protocol, and an FTP Client with default settings (*FileZilla is recommended*), the transfer will typically fail when archiving any object with more than approximately 3,900 files.

Occasionally, during the directory scan, the Actor connection times out before the size of the object can be computed. More often, a request terminates in the middle of the transfer because the FTP server is consuming all of the available sockets.

You can add the following parameters in the ***Source/Destination Command Options*** or in the ***Options*** of the command itself to resolve timeout issues:

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

See Appendix C for detailed parameter information.

Use the following procedure to include the parameters in the Source/Destination frame in the Configuration Utility:

1. Open the DIVA Core Configuration Utility.
2. Navigate to the **System** tab.
3. Double-click the desired Source/Destination in the *Sources and Destinations* frame to open the edit dialog box.
4. Add the two parameters (*-transfer_timeout 1200 and -list_timeout 600*) in the ***Connect Options*** field.
5. Click **OK** to save the changes.

6. Notify the Manager of the changes using the Control+N key combination.

Telestream recommends setting the following corresponding parameters in the FileZilla server under **General Settings**:

Connections Timeout = 600

No Transfer Timeout = 1200

1. Open the FileZilla server interface.
2. Click the **Server Options** icon on the tool bar.
3. Adjust the settings in the **General Settings** area.

If requests terminate unexpectedly during transfers, adjust the Windows Registry parameters as follows:

1. Open regedit.
2. Modify (*or create*) the following values under HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters:

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

   1. If the desired registry parameter does not exist, right-click and create a new double word (*DWORD*) value.
   2. If the parameter does exist, double-click it and enter the values.
3. Restart the computer to enable the new registry values.

Core Software Components

DIVA Core includes the core software components discussed in the following subsections. All core DIVA Core components support Oracle Linux 7 x86_64 and later. See the *DIVA Core Supported Environments Guide* for information about certain limitations when running in the Linux environment.

Long path names are supported on both Windows and Linux. Absolute path names are supported on both Windows and Linux to a maximum of 4000 characters. Relative path names are limited to 256 characters on Windows systems (*only*).

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 equates to /home/diva/DIVA/Program in the Linux environment.

Note: Linux commands, paths, and file names are case-sensitive.

Archive and restore operations of symbolic links are now supported in Linux. Shortcuts created using the Windows operating system are not represented as symbolic links because they are treated as files. Only symbolic links created on the UNIX platform are archived and represented as symbolic links in DIVA Core.

The Java and C++ APIs file list returned from a getFilesAndFolders call includes symbolic links, and the export and import operations type attribute contains the letter *S* to represent a symbolic link.

The following features require Windows-based Actors:

- DIVA Core Avid Connectivity

- Transcoder integration
- Tape Reading Utility

On Linux actors, standard commands like DD and MT are alternatives of Tape Reading Utility. Linux Actors support QuickTime, GXF, and MXF and MPEG2 Transport stream wrappers for DIVA Core Partial File Restore (*video*). *See Appendix A for DIVA Core options and licensing information*.

Due to degraded performance, Windows IIS and FileZilla FTP sources and destinations cannot be used for complex objects. Telestream only supports Linux-based FTP servers when operating in a Linux environment. The Windows IIS and FTP servers cannot accommodate large numbers of files.

DIVA Core Manager

The DIVA Core Manager is the main component in a DIVA Core system. All archive operations are controlled and handled by the DIVA Core Manager. Operation requests are sent by initiator applications through the DIVA Core Client API. DIVA Core supports Main and Backup DIVA Core Managers (*see Appendix A for DIVA Core options and licensing information*).

DIVA Core Actor

The DIVA Core Actor is the data mover between devices in your production system. Actor supports interfacing and data transfer between many different types of devices.

All Actor operations are initiated and coordinated by the DIVA Core Manager through a TLS 1.2 secure connection. Key benefits of the distributed design of the DIVA Core Actors are:

- You can expand the archive subsystem to increase the overall bandwidth by adding more Actors to the system. *See Appendix A for DIVA Core options and licensing information*.
- You can share SAN based disk and tape drive resources among multiple Actors.
- In combination with the DIVA Core Manager, multiple Actors provide scalability, load balancing, redundancy, and failover. You can take individual Actors offline for maintenance without shutting down the DIVA Core system.

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

DIVA Core 7.5 and later supports archive and restore of empty files and folders. *Empty files and folders are only supported by AXF*. When *Legacy* format is in use, DIVA Core reports an error if an empty file or folder is discovered during the transfer.

DIVA Core Client APIs

The DIVA Core Client APIs are a set of functions enabling external applications, acting as clients, to use the services offered by the DIVA Core system.

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

Currently available APIs include C++, Java, and Web Services (*DIVA Enterprise Connect*). Refer to the appropriate *DIVA Core API documentation* and the *DIVA Enterprise Connect documentation* for more information.

DIVA Core Database

The DIVA Core software is bundled with an Oracle database installation. The database stores all information relating to the DIVA Core system including its configuration. SQL queries used by the Manager are optimized to support configurations with up to 58 million components.

In DIVA Core 7.5 and later, the JDBC Thin Driver enables replacing the Oracle SID setting with the Oracle Service Name.

When installing DIVA Core in a 64-bit environment, the latest 64-bit DIVA Core Oracle release must be installed to use 64-bit support.

DIVA Core 8.0 supports Oracle Database 11.2.0.4 or greater.

Oracle 19c can be used with DIVA Core 8.0 and later, and supports the following Windows and Linux Oracle packages:

- OracleDivaDB_3-2-0_19_3_0_0_0_SE2_Windows_64-bit
- OracleDivaDB_3-3-0_19_3_0_0_0_SE2_Linux_x86_64

The Oracle database is not intended to be modified directly by customers, but rather by using Oracle utilities. *Direct modification of this database by customers through Oracle utilities is not supported by Telestream*.

DIVA Core Metadata Database

DIVA Core stores object metadata separately from the Oracle database in the *DIVA Core Metadata Database*. The metadata database contains files stored in a file system local to the DIVA Core Manager. The files are located in the Metadata Database root folder. This storage method enables DIVA Core to effectively operate with large volumes of files, folders and other metadata.

The metadata database is very high performance, and has almost unlimited scalability. You must treat the metadata database with the same caution as the Oracle database, and it must be backed up at regular intervals through the DIVA Core Backup Service.

DIVA Core Control GUI

The DIVA Core Control GUI connects to both the DIVA Core Manager and the DIVA Core database. You use it to monitor, control, and supervise operations in DIVA Core. you can operate multiple Control GUI instances simultaneously from any computer that has TCP/IP connectivity to both the DIVA Core Manager and the DIVA Core database.

The Control GUI is not intended for the intensive archive operations of a DIVA Core system. Archive operations are typically initiated to DIVA Core from a Broadcast Automation or MAM (*Media Asset Management*) system.

See the *DIVA Core Operations Guide* in the *DIVA Core documentation* library for more information on using the interface.

The refresh rate for the Control GUI is set in the **Manager Setting** tab of the Configuration Utility in the ***GUI: Dashboard Refresh Delay*** field.

Additional Software Components

Additional modules are available to expand your DIVA Core system capabilities. Most of these options are currently covered in separate documents, but are briefly described here for completeness. *See Appendix A for DIVA Core options and licensing information*.

DIVA Core Robot Manager

You can use DIVA Core to only manage disk storage, but storage capacity can be further expanded by adding one or more tape libraries. In these cases, the DIVA Core Robot Manager module provides an intermediate software layer for the DIVA Core Manager to interact with many different types of tape libraries. It is connected to the DIVA Core Manager through TCP/IP. *See Appendix A for DIVA Core options and licensing information*.

This distributed architecture provides substantial flexibility including:

- Libraries controlled using a SCSI interface are limited by the cable length. Because the connection to the DIVA Core Robot Manager from the DIVA Core Manager is over TCP/IP, the library does not need to be colocated near the DIVA Core Manager host computer.
- Enabling installation of multiple, or dissimilar, libraries by configuring additional DIVA Core Robot Manager modules.
- Enabling rapid development to support new types or models of libraries.
- You can restart the robotics interface without needing to restart the DIVA Core Manager.

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

DIVA Core VACP (*Video Archive Communications Protocol*) Service

VACP (*Video Archive Communications Protocol*) is developed by Harris Automation Solutions and used by some automation systems for interfacing to an archive system. DIVA Core has its own API for communicating with the DIVA Core 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 DIVA Core API commands on computers that have TCP/IP connectivity to DIVA Core.

DIVA Core SPM (*Storage Plan Manager*)

The SPM (*DIVA Core Storage Plan Manager*) provides automatic migration and life cycling of material within the archive, based on the rules and policies defined in the SPM configuration. The DIVA Core DSM (*Disk Space Monitor*) works with SPM to delete material from SPM managed arrays (*based on disk space watermarks*).

DIVA Core SNMP (*Simple Network Management Protocol*) Agent

The DIVA Core SNMP (*Simple Network Management Protocol*) interface supports status and activity monitoring of different DIVA Core components. DIVA Core MIB (*Management Information Base*) is provided to third party SNMP monitoring applications. *The SNMP Agent uses the Windows SNMP Service and has not been ported to the Linux environment*.

DIVA Connect

DIVA Connect provides DIVA Core client authentication and authorization. It can act as an intermediate gateway between DIVA Core components (*for example the VACP converter*) or third party applications and the DIVA Core Manager, and can restrict that component or application from access to the DIVA Core system.

DIVA Connect is a powerful feature that allows multiple DIVA Core platforms to exchange archive resources and content, whether the archive systems are local to each other or remote.

The DIVA Connect is used in DIVA Connect installations and is the portal for multiple DIVA Core systems to communicate with each other. See the *DIVA Connect Installation, Configuration, and Operations Guide* for more information.

DIVA Core DFM (*Drop Folder Monitor*)

The DIVA Core DFM (*Drop Folder Monitor*) provides automatic monitoring of newly created files in multiple local directories or FTP folders (*or combinations thereof*). One file, or multiple files, per DIVA Core object are supported. When a new file is identified, DFM issues an archive request automatically to DIVA Core to archive the new file. After the files are successfully archived, they are then automatically deleted from the source. Refer to the *DIVA Core Drop Folder Monitor (DFM) User's Guide* for more information.

When DFM is used in a Linux environment to monitor an FTP folder, you must configure it as in the following example:

User
diva

User Home Directory
/ifs

Folder to be monitored
/ifs/folder1

A correct DFM configuration with these parameters is:

```
ftp://diva:password@host_ip/folder1
```

An incorrect DFM configuration with these parameters is:

```
ftp://diva:password@host_ip/ifs/folder1
```

DIVA Core Transcoder Support

The DIVA Core Actor can integrate with a transcoder engine to provide real time transcoding of material as it is archived or restored, or to create objects from already existing content within the archive. Currently, integration to BitScream products, Telestream Flip Factory, and Telestream Vantage are supported. However, multiple transcoders are only supported for Vantage.

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

Linux-based Actors only support Telestream Vantage for transcoding operations.

DIVA Core assumes a local transcoder address of 127.0.0.1 if a transcoder address is not specified in the transcoder's working directory.

The Promedia Carbon (*formerly Rhozet*) transcoder is supported in DIVA Core. You select the transcoder type **tre** from the Configuration Utility to use this transcoder. Both the ***Name*** and ***GUID*** are supported as options for *Presets* and *Profiles* format types.

DIVA Core Avid Connectivity

The following sections describe general Avid connectivity with DIVA Core.

See the *DIVA Core Avid Connectivity User's Guide* in the *DIVA Core Additional Features documentation* library for more information. *Also see* Appendix A *for DIVA Core options and licensing information*.

Avid DHM (*Data Handler Module*) Interface

The Avid DHM (*Data Handler Module*) interface support in DIVA Core enables finished content to be shared between post-production Avid environments and On Air Video servers. This eliminates the need for tape based content exchange. Timecode based Partial File Restores of content to On Air environments, and finished Avid Sequence submissions to On Air servers are key to the DHM functionality offered within DIVA Core. DHM support is implemented in DIVA Core TMC (*Transfer Manager Communicator*).

Avid DET (*Dynamically Extensible Transfer*) Interface

The Avid DET (*Dynamically Extensible Transfer*) interface support in DIVA Core allows storage expansion of Avid Unity infrastructures and enables editors to move native Avid content in and out of the DIVA Core storage system. Partially edited content stored within DIVA Core through the Avid DET interface can be later restored to Unity, and an editor can then resume editing at the point where they stopped. DIVA Core stores these files in native Avid format. DET support is implemented in DIVA Core TMC (*Transfer Manager Communicator*).

Archive Manager Interface

An interaction between the Avid Archive Manager solution and DIVA Core is implemented in a separate service called AMC (*Archive Manager Communicator*). AMC handles Archive, Restore, Partial File Restore, and Delete commands from the Avid Archive Manager using DIVA Core to store Avid content in its native MXF OP1 Atom format.

DIVAprotect

The DIVAprotect option is a utility that collects operational statistics from the DIVA Core system to monitor and maintain the archive's subcomponents (*servers, media, drives, tapes, and so on*). Analysis of these statistics allows both proactive and reactive maintenance of the DIVA Core system. See the *DIVA Core DIVAprotect User's Guide* for more information.

DIVA Core OTU (*Object Transfer Utility*)

The OTU (*Object Transfer Utility*) is an optional feature of the Control GUI providing a drag and drop interface to archive and restore content between DIVA Core and a (*supported*) source or destination server. *See* Appendix A *for DIVA Core options and licensing information*.

DIVA Core Utilities

The following sections describe utilities available in the DIVA Core system

DIVA Core Configuration Utility

You use the DIVA Core Configuration Utility to configure the DIVA Core system. It connects directly to the DIVA Core database, and can be run on any computer with TCP/IP connectivity to the host running the DIVA Core database.

DIVA Core Robot Manager Utilities

During configuration and troubleshooting of the library and its tape drives, DIVA Core provides both a command-line interface and GUI utility to send commands directly to the tape library through the Robot Manager. These utilities are not (*and must not be*) used while the DIVA Core

Manager is running because this can adversely affect archive operations. *See Appendix A for DIVA Core options and licensing information*.

DIVA Core Backup Service

The DIVA Core Backup Service ensures reliability and monitoring of both the Oracle Database and Metadata Database backups.

The DIVA Core Backup Service component is installed as an integral part of the standard DIVA Core system installation. The component is typically installed on the same server as the DIVA Core Manager and Oracle Database. The DIVA Core Backup Service enables configuration of scheduled backups through its configuration file. The DIVA Core Backup Service manages and monitors the entire backup process.

See CROSSLINK for more information.

DIVA Core Scandrive Utility

This utility is provided on both Windows and Linux platforms. It assists in obtaining detailed device information such as serial numbers, firmware releases, and SCSI information from tape libraries or tape drives for use in the DIVA Core configuration.

DIVA Core Tape Reading Utility

Caution: This utility *must not* be used while the DIVA Core Manager is running.

This utility is provided on both Windows and Linux platforms and is primarily used with the Robot Manager Client utilities to send manual Eject commands to a tape drive connected to an Actor. This utility also provides advanced tape based operations, such as tape formatting, but should only be used under guidance from Telestream Support.

The Tape Reading Utility is only supported by Windows-based Actors. You must use standard commands, for example, DD and MT when operating in a Linux environment.

DIVA Core DIVAscript

This utility allows DIVA Core C++ API commands to be executed using UNIX or DOS based scripts. It is designed to run automated tasks for testing rather than for any intensive uses. There is no Linux-based DIVAscript release.

DIVA Core RDTU (*Recover Damaged Tape Utility*)

The DIVA Core RDTU (*Recover Damaged Tape Utility*) is designed to recover object instances contained 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 or array*) within a local or remote DIVA Core system.

2

DIVA Core Security

This chapter explains the general principles of DIVA Core application security.

General Security Principles

Keep Software up to Date

Stay current with the version of DIVA Core that you run. You can find current versions of the software for download at the Telestream Software Delivery Cloud located at https://portal.goecodigital.com.

Restrict Network Access to Critical Services

DIVA Core uses the following TCP/IP ports:

- DIVA Core Robot Manager uses tcp/8500
- DIVA Core Manager uses tcp/8000 for secure connections (*this is the default*), and tcp/9000 to accommodate legacy versions of the DIVA Core API to connect to the DIVA Core 8.0 Manager.
- DIVA Core Backup Service uses tcp/9300
- DIVA Core DIVA Connect uses tcp/9500
- DIVA Core Actor uses tcp/9900
- DIVA Core Migrate Service uses tcp/9191
- DIVA Core Proxy Hub uses udp/8800

Run as DIVA User and use Principle of Least Privilege Where Possible

Do not run DIVA Core services using an Administrator (*or root*) operating system user account. You must always run all DIVA Core services using a dedicated operating system user (*or group*) named DIVA.

The DIVA Core Control GUI provides three fixed user profiles (*Administrator*, *Operator*, and *User*). The Administrator and Operator accounts require a password to obtain access. You must assign an Administrator and Operator password in the Configuration Utility before using these profiles.

You create passwords during installation and configuration for both the Administrator and Operator accounts. The passwords must be changed every 180 days (*minimum*) thereafter. Passwords must be made available for Telestream Support if needed.

Monitor System Activity

Monitor system activity to determine how well DIVA Core is operating and whether it is logging any unusual activity. Check the log files located in the installation directory under /Program/log/.

Keep up to Date on Latest Security Information

You can access several sources of security information. For security information and alerts for a large variety of software products, see http://www.us-cert.gov.

The primary way to keep up to date on security matters is to run the most current release of the DIVA Core software.

Secure Installation

This section outlines the planning process for a secure installation and describes several recommended deployment topologies for the systems.

Understand Your Environment

To better understand security needs, the following questions must be asked:

Which Resources Need to be Protected?

You can protect many of the resources in the production environment. Consider the type of resources that you want to protect when determining the level of security to provide.

When using DIVA Core, protect the following resources:

Primary Data Disk
There are Data Disk and Cache Disk resources used to build DIVA Core systems. They are typically local or remote disks connected to the DIVA Core systems. Independent access to these disks (*other than by DIVA Core*) presents a security risk. This type of external access might be from a rogue system that reads or writes to these disks, or from an internal system that accidentally provides access to these disk devices.

Database Disk, Metadata Disk, and Backup Disks
There are Database Disk, Metadata Disk and Backup Disk resources used to build DIVA Core systems with complex objects. They are typically local or remote disks connected to the DIVA Core systems. Independent access to these disks (*other than by DIVA Core*) presents a security risk. This type of external access might be from a rogue system that reads or writes to these disks, or from an internal system that accidentally provides access to these disk devices.

DIVA Core Tapes
It is a security risk to allow independent access to tapes, typically in a tape library controlled by DIVA Core systems, where data is written.

Export Tape Metadata
Tape Metadata dumps that are created from export operations contain data and metadata. This data and metadata permissions must be restricted to only the Administrator (*or root*) operating system account, or the DIVA operating system user (*or group*) during a routine export or import activity.

Configuration Files and Settings
DIVA Core system configuration settings must be protected from operating system level non-administrator users. Making the configuration files writable to non-administrative

operating system users presents a security risk, therefore, these file permissions must be restricted to only the Administrator (*or root*) operating system account, or the DIVA operating system user (*or group*).

From whom are the resources being protected?

In general, the resources described in the previous sections must be protected from all non-administrator access on a configured system, or from a rogue external system that can access these resources through the WAN or FC Fabric.

What will happen if the protections on strategic resources fails?

Protection failures against strategic resources can range from inappropriate access (*that is, access to data outside of normal DIVA Core operations*) to data corruption (*writing to disk or tape outside of normal permissions*).

Recommended Deployment Topologies

This section describes how to install and configure an infrastructure component securely. Consider the following points when installing and configuring DIVA Core:

Separate Metadata Network

For connections between DIVA Core services components, connection to Metadata Database, and the connection from its clients, provide a separate TCP/IP network and switch hardware that is not connected to any WAN. Because the metadata traffic is implemented using TCP/IP, an external attack on this traffic is theoretically possible. Configuring a separate metadata network mitigates this risk and also provides enhanced performance. If a separate network is infeasible, at least deny traffic to the DIVA Core ports from the external WAN and any untrusted hosts on the network. *See* Restrict Network Access to Critical Services.

FC Zoning

Use FC Zoning to deny access to the DIVA Core disks connected through the Fiber Channel from any server that does not require access to the disks. Preferably, use a separate FC switch to physically connect only to the servers that require access.

Safeguard SAN Disks Configuration Access

SAN RAID disks can usually be accessed for administrative purposes through TCP/IP or more typically HTTP. You must protect the disks from external access by limiting the administrative access to SAN RAID disks to systems only within a trusted domain. Also, change the default password on the disk arrays.

Install the DIVA Core Package

First, install only those DIVA Core services that you require. For example, if you do not plan to run the GUI or Configuration Utility from a system, then unselect them in the list of components to be installed during installation. The default DIVA Core installation directory permissions and owners must be restricted to only the Administrator (*or root*) account, or the DIVA operating system user (*or group*).

DIVA Core Tape Security

Prevent external access to DIVA Core tapes inside a tape library controlled by the DIVA Core system. Unauthorized access to DIVA Core tapes can compromise or destroy user data.

Backups

Set up and perform database backups using the DIVA Core Backup service. Permissions for the backup dump must be restricted to only the Administrator (*or root*) operating system account, or the DIVA operating system user (*or group*).

Post-Installation Configuration

After installing any of the DIVA Core, go through the security checklist in Appendix B.

Security Features

To avoid potential security threats, customers operating DIVA Core must be concerned about authentication and authorization of the system. These security threats can be minimized by proper configuration and by following the post-installation checklist in Appendix B.

The Security Model

The critical security features that provide protections against security threats are:

- **Authentication** - Ensures that only authorized individuals are granted access to the system and data.
- **Authorization** - Access control to system privileges and data. This feature builds on authentication to ensure that individuals get only appropriate access.
- **Tape Group Encryption** - Tape drive encryption securely supports bulk tape migration between DIVA Core systems.
- **SSL Authentication and Secure Communications** - DIVA Core 8.0 includes SSL Authentication for services, and to secure DIVA Core internal and API communications. Certificate authentication provides unique identification and secure communication for each DIVA Core Service in a network.

Authentication

The DIVA Core Control GUI provides three fixed user profiles (*Administrator*, *Operator* and *User*). The Administrator and Operator accounts require a password to obtain access. You must assign an Administrator and/or Operator password in the Configuration Utility before using these profiles.

Both the Administrator and Operator account passwords must be changed every 180 days (*or before*). Passwords must be made available for Telestream Support if needed.

Access Control

Access control in DIVA Core is divided into three profiles. The Administrator and Operator accounts require a password to obtain access. You must assign an Administrator and/or Operator account password in the Configuration Utility before using these profiles.

User - After the connection to the DIVA Core Manager is established, the Control GUI will only allow the user to monitor DIVA Core operations, and retrieve data from the database. This is known as the *User Profile*. Not all functions that issue commands to DIVA Core are accessible while in the User profile mode, enabling situations where monitoring is required but no commands are permitted to be sent to DIVA Core.

Administrator - To issue requests to DIVA Core, 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 must be assigned in the Configuration

Utility before using the profile. For more information, refer to the DIVA Core 8.0 Customer documentation located at https://portal.goecodigital.com.

Operator and Advanced Operator - In addition to User Profile permissions, the *Operator Profile* provides access to the Object Transfer Utility and requires a password configured in the Configuration Utility before using the profile. Both Operator and Advanced Operator profiles in the Control GUI can now optionally enable privileges for canceling and changing the priority of requests. The options are defined in the *Manager Configuration* panel of the *Configuration Utility*. By default, this option is disabled.

Tape Group Encryption

The DIVA Core 8.0 release includes tape drive encryption that securely supports bulk tape migration between DIVA Core systems.

After enabling encryption on a tape group, all additional tapes added to the group will also be encrypted. However, any existing tapes in the group remain unencrypted if encryption was previously disabled.

Enabling encryption on a tape group generates an encryption key, which is also encrypted. You can change the encryption key at any time. New tapes added to the group after the change will use the new encryption key. The existing tapes that were already encrypted will continue to use the original key. Therefore, tapes in the same tape group can have different encryption keys. You must notify the Manager of the change when updating the encryption key.

Disabling encryption (*after it is already enabled*) only affects additional tapes added to the group, and the existing tapes remain encrypted.

SSL (*Secure Sockets Layer*) and Authentication

DIVA Core 8.0 includes SSL Certificate Authentication for authentication of services, and securing the internal and API communications in DIVA Core. Certificate authentication provides unique identification and secure communications for each DIVA Core service in a network.

DIVA Core 8.0 includes a Default Root CA (*Certificate Authority*) called DIVA_CA. The DIVA_CA Certificate Authority is a self-signed authority that signs all SSL certificates for the DIVA Core services. Every DIVA Core service now has its own password protected private key and a SSL certificate signed by the DIVA_CA authority.

Certificate authentication functions similar to identification cards like passports and drivers licenses. For example, passports and drivers licenses are issued by recognized government authorities. SSL certificates are signed by a recognized CA. An SSL certificate verifies the identity of its owner. When the SSL certificate is presented to others, it helps verify the identity of its owner based on the quality of the contents of the certificate.

You can also use an external third party CA (*for example, VeriSign, Comodo, and so on*) to generate and sign your certificates.

External Certificate Authorities

You can use external third party CAs (*for example, VeriSign, Comodo, and so on*) with DIVA Core. The external CA must create a CSR (*Certificate Signing Request*) for DIVA_CA, signed by the third party CA, and the third party certificate must be added to the *Trust Store* to satisfy the certificate chain.

Security Tools

The DIVA Core 8.0 release includes a security tool as follows:

- Windows: DivaSecurityTool.bat
- Linux: DivaSecurityTool.sh

The tool is located in the %DIVA_HOME%/security/bin directory.

DIVA Core API Changes

The DIVA Core APIs include changes to establish secure communication with the DIVA Core Manager. The DIVA Core Manager is backward compatible with earlier Java, C++ and Web Services APIs to establish connections over regular sockets. The DIVA Core 8.0 (*and later*) Java and C++ API releases can establish Manager communications using secure, or unsecure, sockets.

The Java API includes new parameters added to the SessionParameters class to facilitate secure connections to the Manager Service.

Exporting and importing encrypted tapes is also available using the Java API.

See the Java API Readme for the location of the Java API documentation.

The C++ API DIVA_SSL_initialize call is added to set the environment for secure communication with the Manager service. *See the DIVA Core C++ API Programmer's Guide for detailed information*.

The Java and C++ APIs initiators both use the default keys and certificates under the %DIVA_API_HOME%/lib/security subfolder when connecting to the Manager.

DIVA Enterprise Connect connects to the Manager Service through the unsecure tcp/9000 port. *See the DIVA Enterprise Connect Installation, Configuration, and Operations Guide for detailed information*.

The Manager Service is backward compatible with earlier releases of DIVA Connect, Java API, C++ API, and Web Services API, and establishes the connection over regular sockets.

Dual Ports

All internal DIVA Core services can only connect to secure ports. The control GUI will report an *SSL Handshake Timeout* if you attempt to connect to the non-secure port.

SSL (*Secure Sockets Layer*) and Authentication

DIVA Core consist of services in Java and C++. The format in how certificates and keys are represented are different in each. DIVA Core has the keys and certificates for JAVA services in a Java Keystore file, and in PEM (*Privacy Enhanced Mail*) format files for the C++ services.

The Manager can simultaneously support two communications ports - one secure, and one unsecure. The default secure port number is 8000 and the unsecure default port number is 9000.

All internal DIVA Core 8.0 services (*Control GUI, Configuration Utility, DBBackup, Migration Utility, Actor, SPM, DFM, SNMP, Robot Manager, RDTU, and Migration Services*) can only connect to secure ports. The control GUI will report an *SSL Handshake Timeout* if you attempt to connect to the non-secure port. Clients using the Java or C++ API are allowed to connect to either port.

The following is a relative snippet from the Manager configuration file:

```
# Port number on which the DIVA Manager is waiting for incoming connections.
# Note: If you are using a Sony library and plan to execute the DIVA Manager
# on the same machine as the PetaSite Controler (PSC) software, be aware
# that the PSC server uses the 9000 port and that this cannot be modified.
# In that situation, you have to use a different port for the DIVA Manager.
# This same warning applies to FlipFactory which uses ports 9000 and 9001.
# The default value is 9000.
DIVAMANAGER_PORT=9000

# Secure port number on which the DIVA Manager is waiting for incoming connections.
# The default value is 8000.
DIVAMANAGER_SECURE_PORT=8000
```

A new folder called %DIVA_API_HOME%/security is added to the DIVA Core API installation structure as follows:

```
%DIVA_API_HOME%
  security
    conf
```

The conf folder contains the SSLSettings.conf file that is used to configure the SSL handshake timeout.

See the DIVA Core Java API documentation included with the API, and the C++ API Programmer's Guide for detailed information.

Secure Communication with Oracle Database

With DIVA Core 7.6.1, a new DIVAOracle package version 3-1-0 was created:

- Windows: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_Windows_64-bit
- Linux: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_OEL7_x86_64

This new package includes the following

1. Secure Oracle Database listener listening on port 1522, additional on top of the regular unsecured listener listening on port 1521.
2. Oracle Database wallet for storing the Trust Certificate and DIVADatabaseServer Certificates. During installation DIVADatabaseServer.jks holding the default DIVA_CA trust certificate and Default DIVADatabaseServer certificate is import into the Oracle Database wallet for enabling the secure communication.
3. This new package also creates a secure TNSNames LIB5SSL which enables any DIVA services to connect to the Oracle database securely over SSL connecting to the new secure Oracle database listener listening on port 1522 using the TNSNames.

New Entry in TNSNames.ora:

```
LIB5SSL =
 (DESCRIPTION =
   (ADDRESS = (PROTOCOL = TCPS)(HOST = HOSTNAME)(PORT = 1522))
   (CONNECT_DATA =
     (SERVER = DEDICATED)
     (SERVICE_NAME = LIB5.WORLD)
   )
 )
```

A new Configuration Parameter DIVAMANAGER_DB_SECURE_CONNECT was added to the Manager, Migrate, DBBackup configuration file to enable secure communication to database using Hostname/IPAddress and port. This parameter has no effect if using DIVAMANAGER_TNSNAME parameter in the configuration file.

Valid parameter values are:

- TRUE - When set to TRUE, the DIVAMANAGER_DBPORT in the Manager, Migrate, DBBackup configuration file must point to the secure port of the Oracle Database.
- FALSE (*default*)

The Configuration Utility and Control GUI also supports connecting securely to the database. SPMService can connect securely only using TNSNames.

3

Database Installation and Configuration

This chapter describes installation and configuration of the DIVA Core databases and the DIVA Core Backup Service, and includes the following information:

- DIVA Core Database and Backup Service Overview
- Installing and Configuring the Oracle Database
- Installing and Configuring the DIVA Core Backup Service
- Additional Configuration
- Monitoring the DIVA Core Backup Service
- Troubleshooting

DIVA Core Database and Backup Service Overview

The DIVA Core Database and Backup Service components are installed as an integral part of the standard DIVA Core system installation. The components are typically installed on the same server as the DIVA Core Manager. The database is backed up using the RMAN components that are distributed as part of the Oracle Database Server package. The DIVA Core Backup Service manages and monitors the entire backup process. You can configure scheduled backups in the Backup Service's configuration file.

DIVA Core uses a Metadata Database to support complex object workflows. The DIVA Core Backup Service ensures reliability and monitoring of both the Oracle Database backups and Metadata Database backups.

DIVA Core 8.0 supports minimum Oracle Database Server 11.2.0.4.

Caution: See the *DIVA Core Supported Environments Guide* to confirm disk partitioning and recommended block sizes before proceeding.

Complex Objects

By default, objects archived with more than 1,000 files are considered *Complex Objects*. Complex objects have Metadata stored in both the Oracle Database and Metadata Database. You can configure the threshold on the number of files before an object is considered complex in the Manager service configuration file. You can only store complex objects in AXF format within the DIVA Core system. You must use the DIVA Core Backup Service to back up the Oracle Database and Metadata Database when complex object workflows are used.

DIVA Core Backup Service

Caution: *When using complex objects, you are strictly required to use the DIVA Core Backup Service*. The DIVA Core Backup Service is the *only* component backing up the Metadata Database and removing outdated Metadata files. When a Delete request for a complex object is sent and 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 (*defined by the Recovery Period parameter*) has been reached.

The DIVA Core Backup Service is the component responsible for backing up the DIVA Core system database. The DIVA Core Backup Service uses the Oracle Secure Backup Scripts to perform Oracle Database backups. The Backup Service has a scheduler function enabling customizable backup schedules. The DIVA Core Backup Service has features to configure separate backup intervals for the Oracle Database and Metadata Database.

If a database or system failure (*or both*) occurs, where restoring from a system backup is necessary, restoration of a stored backup is done manually and should *only* be performed by Telestream Support personnel.

Oracle Database backups and Metadata Database backups are incrementally replicated to one or more remote back up systems by the DIVA Core Backup Service. depending on your configuration.

The Backup Service files are located in the %DIVA_HOME%\Program\conf\db_backup.conf, and the %DIVA_HOME%\Program\DBBackup folders.

The Backup Service monitors and sends backup status messages to the DIVA Core Manager. The Manager relays any errors and warning messages received from the service to all connected Control GUIs that are listening for messages from the Manager. The Manager records all events to the Events Log. The Control GUI displays the messages in a dialog box. If no Control GUIs are connected at the time of the error or warning, no error dialog boxes are displayed.

Before DIVA Core 7.0, you were required to install the Oracle Secure Backup Scripts separately from DIVA Core System installation. Starting with DIVA Core 7.0 no separate installation of Oracle Secure Backup Scripts are required. All Oracle Secure Backup Scripts are now installed during the standard DIVA Core installation and are located in the %DIVA_HOME%\Program\DBBackup\rman\bin folder.

DIVA Core Oracle Database

The DIVA Core Backup Service uses Oracle's RMAN Database Backup Utility to generate Oracle Database backups. Full and incremental back up files are generated in the DB_BACKUP_LOCATION as defined in the configuration file.

By default, the DIVA Core Backup Service generates a full database backup every 24 hours, and an incremental backup every 15 minutes. The backup files are compressed with 7zip tool with the .gz extension. *See Prerequisites for Installing the Oracle Database: Configure Shared Memory for a list of prerequisites*.

The Backup Service incrementally replicates all the backup files to all configured DB_BACKUP_REMOTE_DESTINATIONS as set in the configuration file. All of the remote backup destinations must be RSYNC modules. *See the section on Installing and Configuring the Windows RSYNC Service and Module or the section on Installing and Configuring the Linux RSYNC Service and Module (depending on your operating system) for information on configuring an RSYNC module*.

Telestream recommends having the same backup location on all main and remote backup destination systems. For example, if the DB_BACKUP_LOCATION is set to H:\oraback\, on the main system, you must have the Backup Service copy the backups to the same location on all remote backup destination systems. Therefore, you must configure the RSYNC module to H:\oraback\ on all remote backup destination systems. If the paths are different, the correct Oracle Secure Backup paths must be mentioned and updated in the Oracle RMAN Backup Tool during failover. *See the Additional Configuration section for more details*.

DIVA Core Metadata Database

The Metadata Database is a binary file in the file system. To support the *Recovery Window* for the Metadata Database, the DIVA Core Backup Service uses the following techniques:

- Whenever a new complex object is archived, the Manager creates complex object Metadata files in the ***Metadata Database Path*** you configured in the Configuration Utility.
- By default, the DIVA Core Backup Service backs up Metadata files inside the Metadata Database every 15 minutes. The Metadata file is transferred to all backup systems shortly after creation so that file alterations do not influence the backup copies.

> **Note:** If there is a failure backing up to one of the configured Backup Systems, the Backup Service will continue to retry the failed backup until all backups to all configured Backup Systems are successful. Metadata Files are not marked as being successfully backed up until the backup to all configured Backup Systems is successful.

- During every Metadata Database backup, the Backup Service searches for any complex object Metadata files that are not backed up, and replicates them to all of the FBM_BACKUP_REMOTE_DESTINATIONS you configured in the configuration file. *All of the remote backup destinations must be RSYNC modules*. *See the section on Installing and Configuring the Windows RSYNC Service and Module or the section on Installing the Oracle Database Server in Linux (depending on your operating system) for information on configuring a RSYNC module*.

Telestream recommends having the same *Metadata Database Location* on all main and remote backup destination systems. For example, if the *Metadata Database Location* is set to H:\metaback\, on the main system, you must have the Backup Service copy the Metadata Database backups to the same location on all remote backup destination systems. Therefore, you must configure the RSYNC module to H:\metaback\ on all remote backup destination systems. If the paths are different, you must update the *Metadata Database Location* in the Oracle Database after an Oracle Database restore during failover. *See Failure Scenarios and Recovery Procedures for more details*.

DIVA Core Backup Service Recommended Practices

The following are recommended practices for the DIVA Core Backup Service:

- The Backup Service must be installed on the same server as the DIVA Core Manager and Oracle Database.
- At least two Backup Systems are always required to store backups. DIVA Core Actor computers can serve dual purposes and be used as both backup computers and Actor computers.
- Oracle Incremental backups should be performed every 15 minutes.
- Metadata Database backups should be performed every 15 minutes.
- The Backup Recovery Window should be set to value greater than, or equal to, 10 days.

- The Backup Clean-up function should be performed every 24 hours.
- Oracle Full Backups should be performed every 24 hours.
- If required, restoration of a system backup must only be performed by Telestream Support.
- Oracle Database data files, Oracle Database backups, and the Metadata Database must be stored on RAID disk array.
- You must allocate equal backup disk space on the main and all remote backup systems.

Installing and Configuring the Oracle Database

This section describes installation and configuration of the DIVA Core databases and Backup Service.

Exporting the Database Dump Files

There are two methods for exporting the dump files:

- Export the Database Dump Files Using DIVADBinstaller
- Export the Database Dump Files Using sqlplus

Export the Database Dump Files Using DIVADBinstaller

For 8.0, using DIVADBInstaller you can backup the database using data-pump export. The backup dump file has the naming convention USERNAME_Month_Date_Year_Hour-Minute-Second.DMP (*for example: DIVAUSER_07_11_2018_12-32-11.DMP*).

To create a backup execute DIVADBInstaller with the following:

- Set --jobtype as backup
- Set the --dbdumpdirectory location for the backup. If --dbdumpdirectory is omitted, it will default to H:/ for Windows and /u04 for Linux.

Example

```
DIVADBInstaller --dbuser=DIVA --dbpass=divapass --syspass=syspass --dbhost=localhost --dbport=1521
--jobtype=backupjob --dbdumpdirectory=H:\Backup
```

Export the Database Dump Files Using sqlplus

For 7.6.1 or earlier releases, you must perform the following procedure on the source computer:

1. Open sqlplus and log in as the sys user.
2. Execute the following commands to create the directory object:

   ```
   CREATE OR REPLACE DIRECTORY {directory_object_name} AS {'TargetPath'};

   GRANT READ,WRITE ON DIRECTORY {directory_object_name} TO {source_username};
   ```

   Windows Example:

   ```
   CREATE OR REPLACE DIRECTORY diva_dpump_dir AS 'H:\Support\DUMPS';
   GRANT READ,WRITE ON DIRECTORY diva_dpump_dir TO DIVA;
   exit;
   ```

   Linux Example:

```
CREATE OR REPLACE DIRECTORY diva_dpump_dir AS '/u05/support/DUMPS';
GRANT READ,WRITE ON DIRECTORY diva_dpump_dir TO DIVA;
exit;
```

3. Open a command prompt and execute the following command to export to the dump file:

```
expdp {source_username}/{source_user_password} schemas={source_username} flashback_time=systimestamp
DIRECTORY={directory_object_name} dumpfile={dump_file_name} logfile={log_file_name}
```

Windows and Linux Example:

```
expdp DIVA/password schemas=DIVA flashback_time=systimestamp directory=diva_dpump_dir dumpfile=diva_
db.dmp logfile=diva_exp.log
```

Importing the Database Dump Files

There are two methods for importing the database dump files:

- Import the Database Dump File Using DIVADBInstaller
- Import the Database Dump File Using sqlplus

Import the Database Dump File Using DIVADBInstaller

For 8.0, using DIVADBInstaller you can restore or import the DIVA database from a previous state if required. using the --jobtype=restorejob, and the dump file name using --dbdumpfilename.

To restore or import the database, execute DIVADBInstaller with the following:

- Set the --jobtype to restorejob
- Specify the location of the dump file using --dbdumpdirectory
- Specify the name of the dump file using --dbdumpfilename

  If the source user name of the dump file is different from the --dbuser, you must also specify the source user name using --dbimportfromuser.

Example - Same Source User Name

```
DIVADBInstaller --dbuser=DIVA --dbpass=divapass --syspass=syspass --dbhost=localhost --dbport=1521
--jobtype=backupjob --dbdumpdirectory=/u04/backup --dbdumpfilename=DIVA_07_11_2018_12-32-11.DMP
```

Example - Different Source User Name

```
DIVADBInstaller --dbuser=DIVA --dbpass=divapass --syspass=syspass --dbhost=localhost --dbport=1521
--jobtype=backupjob --dbdumpdirectory=/u04/backup --dbdumpfilename=DIVA_07_11_2018_12-32-11.DMP
--dbimportfromuser=DIVA_75
```

Import the Database Dump File Using sqlplus

For 7.6.1 or earlier releases, perform the following procedures on the destination computer:

1. Open sqlplus and log in as the sys user.
2. Execute the following commands to create the directory object:

```
CREATE OR REPLACE DIRECTORY {directory_object_name} AS {'TargetPath'};

GRANT READ,WRITE ON DIRECTORY {directory_object_name} TO { destination_username};
```

Windows Example:

```
CREATE OR REPLACE DIRECTORY diva_dpump_dir AS 'H:\Support\DUMPS';
GRANT READ,WRITE ON DIRECTORY diva_dpump_dir TO DIVA;
```

```
exit;
```

Linux Example:

```
CREATE OR REPLACE DIRECTORY diva_dpump_dir AS '/u05/support/DUMPS';
GRANT READ,WRITE ON DIRECTORY diva_dpump_dir TO DIVA;
exit;
```

3. Open a command window and copy the exported dump file to the {'TargetPath'}.

   For example: H:\Support\DUMPS (*Windows*) or /u05/support/DUMPS (*Linux*)

4. Navigate to the %DIVA_HOME%\program\database\core\install folder in your DIVA Core installation.

5. Create a DIVA Core database user with the following command:

   Windows: create_diva_user.bat syspass DIVA2 divapass -useronly

   Linux: create_diva_user.sh syspass DIVA2 divapass -useronly

6. Execute the import command as follows:

   ```
   impdp {destination_username}/{user_password} transform=OID:n:type DIRECTORY={directory_object_name}
   dumpfile={dump_file_name} table_exists_action=replace REMAP_SCHEMA={source_username}:{destination_
   username} logfile={log_file_name}
   ```

   Example:

   ```
   impdp DIVA2/pass transform=OID:n:type DIRECTORY= diva_dpump_dir dumpfile= diva_db.dmp table_exists_
   action=replace REMAP_SCHEMA=DIVA:DIVA2 logfile=diva_imp.log
   ```

Uninstalling the Oracle Database Server (*if required*)

Before installing the new DIVA Core Oracle Database, you may be required to uninstall the existing database and database engine. If Oracle Database is already installed on the computer, then you must remove the existing database and database engine.

Uninstalling the Oracle Database Server in Windows

Use the following procedure to uninstall the existing database in Windows environments:

Caution: Use the same Oracle Database package to uninstall the database that was used to install it.

1. Stop all running DIVA Core services.

2. Export the existing database contents using the procedures previously described.

   Caution: Confirm the export completed successfully before continuing.

3. Extract the original database .zip file used to perform the installation.

4. For DIVA Core database package releases 2.3.4 and earlier, use the following commands in the exact sequence shown:

   ```
   uninstall_database.cmd

   uninstall_engine.cmd
   ```

5. For DIVA Core database packages release 3.0.0 and later, execute C:\app\Oracle\product\12.1.0\db_home1\deinstall\deinstall.bat and follow the displayed instructions.

Uninstalling the Oracle Database Server in Linux

Use the following procedure to uninstall the existing database (*package release 3.0.0 and later*) in a Linux environment:

1. Log in as the Oracle operating system user.
2. Open a terminal window.
3. Export the existing Oracle database.
4. Execute $ORACLE_HOME/deinstall/deinstall and follow the displayed instructions.

Installing the Oracle Database Server in Windows

You must log in to the computer as an Administrator. After you have backed up and uninstalled the existing database (*see the previous sections*), use the following procedure to install the new database:

1. Locate the latest release of the DIVAOracle database package for Windows and unzip it.
2. Execute install.bat to start the installation.
3. Follow the prompts through the wizard to complete the installation.
4. Import the previously exported data into the new database using the procedure previously described.

Assuming no errors occurred, you have successfully installed the database and imported the existing data from the original database.

Installing the Oracle Database Server in Linux

Before running the installer verify the following is complete:

- Yum is configured to connect to the latest release of Oracle Linux.
- The recommended partitions for the Oracle Database exist. Telestream recommends partitions that dedicate the space to the Oracle Database.
  - /u01 partition for the Oracle Binaries
  - /u02 partition for the Oracle Database files (*8 KB cluster size recommended*)
  - /u03 partition for the Oracle Archive Logs (*4 KB cluster size recommended*)
  - /u04 partition for the Oracle database backups (*64 KB cluster size recommended*)

To begin installation, locate the latest release of the DIVAOracle database package for Linux, execute it as root, and follow the displayed instructions.

Prerequisites for Installing the Oracle Database: Configure Shared Memory

If the shared memory on the server where the Oracle Database is installed is less than 16 GB, you must set it to at least 70 percent of your RAM.

1. Use the following command to confirm the computer's RAM size:

```
# free -m
```

The output will look similar to the following:

```
        total    used    free   shared  buff/cache  available
Mem:  15791     186    15456      8       148         15516
Swap: 16380       0    16380
```

2. Use the following command to check your shared memory setting in MB:

   ```
   # df -m /dev/shm
   ```

   The output will look similar to the following:

   ```
   Filesystem    1M-blocks  Used  Available  Use%  Mounted on
     tmpfs           7896     0      7896     0%    /dev/shm
   ```

3. To change the size of shared memory you must add the following line into /etc/fstab. The setting must not exceed the size of your installed memory. You must restart the computer after making this change for it to take affect.

   For example, the following command will increase the size of /dev/shm to 11GB:

   ```
   tmpfs /dev/shm tmpfs defaults,size=11g 0 0
   ```

Prerequisite for Installing the Oracle Database: Creating Drive Partitions

First you must configure the drive partitions for the Oracle Database as follows:

1. Navigate to **Applications**, and then **Utilities**.
2. Click **Disks** from the menu.
3. Locate your disk in the Disks dialog box. Selecting the disk will display the ***Device Name***.
4. In Linux you must add the disk (*that you want to add partitions to*) to the partition table using the fdisk utility. For example, fdisk /dev/xvdb1. You can use the g and w options to add it to the partitions table.
5. Click the **Plus** button on the right side of the Disks dialog box to add a partition.
6. When the Create Partition dialog box appears create the following four partitions. For each partition leave the ***Erase*** option and ***Type*** option at their default settings, and then click **Create**. Repeat this step for each partition.

   /u01
   This partition must be 10 GB in Linux. Use the operating system default block size.

   /u02
   This partition must be 30 GB in Linux. Telestream recommends using an 8 KB cluster size.

   /u03
   This partition must be 5 GB in Linux. Telestream recommends using a 4 KB cluster size.

   /u04
   This partition must be either 100 GB or all of the remaining disk space. Telestream recommends using a 64 KB cluster size.

7. When you are done creating the partitions and returned to the Disks dialog box, click the **Gears** icon on the right side of the screen.
8. Click **Edit Mount Options**.
9. Change ***Automatic Mount Options*** to **OFF**.
10. Select the ***Mount at startup*** check box.

11. Enter the appropriate mount point in the ***Mount Point*** field for that specific partition (*/u01, /u02, /u03, /u04*).
12. Click **OK**.
13. When this is completed successfully, all four partitions are identified and displaying their appropriate mount points in the Disks dialog box.

Use the following procedure for the *Managed Disk* partition (*this must be 54 GB*):

1. Locate the *Managed Disk* in the Disks dialog box.
2. Click the **Gears** icon on the right side of the screen.
3. Click **Format**.
4. Leave all settings at their defaults, but enter /managed in the ***Mount Point*** field.
5. Click **Format**.
6. When asked, click Format to confirm that you want to format the disk.
7. Click the **Gears** icon.
8. Click **Edit Mount Options**.
9. Change ***Automatic Mount Options*** to **OFF**.
10. Select the ***Mount at startup*** check box.
11. Enter /managed in the ***Mount Point*** field.
12. Confirm that the ***Filesystem Type*** is set to **ext4**.
13. Click **OK**.

Installing the Oracle Database Server

Verify you have completed the following:

- Prerequisites for Installing the Oracle Database: Configure Shared Memory
- Prerequisite for Installing the Oracle Database: Creating Drive Partitions

After completing the prerequisites, use the following procedure to install the Oracle Database Server:

1. Open a terminal console.
2. If you run in a VM (*Virtual Machine*), confirm that your host name is in the /etc/hosts file using the following command:

   ```
   gedit /etc/hosts
   ```

   If the hosts file looks similar to this:

   ```
   127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
   ::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
   ```

   You must replace localhost with your host name. For example, if the host name is clefvm015L, it will look like this:

   ```
   127.0.0.1   celfvm015L localhost.localdomain localhost4 localhost4.localdomain4
   ::1         celfvm015L localhost.localdomain localhost6 localhost6.localdomain6
   ```

3. If you made changes to the host file save the changes and exit gedit.
4. Change to the directory of the shell script for the Oracle Database Package.

5. Change the permissions on the shell script using the following command to make it an executable file:

   ```
   chmod +x OracleDivaDB_3-0-0_12_1_0_2_0_SE2_OEL7_x86_64.sh
   ```

6. Execute the script as follows:

   ```
   ./OracleDivaDB_3-0-0_12_1_0_2_0_SE2_OEL7_x86_64.sh
   ```

   If an Telestream operating system account has already been created, you may be asked whether you want to change the password. Follow the prompts if you require a password change for this account.

7. When prompted for a SYS account password, ensure you use a secure password.

If at some point during the installation you receive the following error:

[FATAL] [INS-35172] Target database memory (*5181MB*) exceeds available shared memory (*3866MB*) on the system

You must run the commands below to extend your tmpfs partition (*if it is still not large enough*):

1. Check the current size of the tmpfs partition:

   ```
   df -h /dev/shm
   ```

2. Extend the amount of the target database memory size as follows:

   1. Execute gedit /etc/fstab.

   2. Add the following line to the bottom of the file:

      ```
      tmpfs /dev/shm tmpfs defaults,size=6G 0 0
      ```

   3. Save the file and exit gedit.

3. Execute the following commands:

   ```
   umount tmpfs
   mount -a
   ```

4. If the commands in Step 3 do not work, restart the computer and run the df -h /dev/shm command again to check that the size of tmpfs has actually increased.

5. Run the Oracle Database shell script again.

Installing the DIVA Database User and Schema

DIVA Core 8.0 has DIVADBinstaller which can install a new DIVA database or upgrade an existing DIVA database on the Oracle Database Server. For 7.6.1 or earlier releases, you must manually create the user.

- Using DIVADBinstaller for DIVA Core 8.0
- Manually Create the Database User and Schema for 7.6.1 and earlier

Using DIVADBinstaller for DIVA Core 8.0

Verify Oracle Database Version

Verify the existing Oracle Database Server release before upgrading a system to DIVA Core 8.0. The Oracle Database Server must be at a minimum of 11.2.0.4. You can verify the release level by navigating to C:\app\oracle and opening the VERSION.TXT file. The release number is displayed in the file.

Installer Location

The database installer DIVADBInstaller.bat (*Windows*) or DIVADBInstaller.sh (*Linux*) can be found under <DIVA_HOME>/Database/DBInstaller/bin.

DIVADBInstaller Parameters

Parameter	Description
--dbuser=<username>	DIVA Database username - **required**
--dbpass=<password>	DIVA Database username password - **required**
--syspass=<syspassword>	SYS Database username password - **required**
--jobtype=<jobtype>	Job type to executed can be one of the following: ■ installjob — does a fresh install ■ upgradejob — upgrades the DIVA database ■ backupjob — performs a datadump export of the DIVA database ■ restorejob — performs a datadump import to the DIVA database user form the file mentioned in --dbdumpfilename If Jobtype is omitted, its defaults to installjob if the user does not exist or upgradejob if the user already exists.
--jobname=<jobname>	Given a custom name for the job execution. Optional and defaults to the system timestamp.
--dbhost=<databaseHost>	Database hostname or ipaddress. Optional and defaults to localhost.
--dbport=<databasePort>	Database port. Optional and defaults to 1521.
--dbservicename=<dbServiceName>	Database service name. Optional and defaults to lib5.world.
--dbsecureconnect=<"TRUE|FALSE">	Enables secure connection to Database. Optional and defaults to FALSE.
--dbdumpdirectory=<dbdumpdirectory>	Database dump directory. Optional and defaults to H:/ for Windows and /u04 for Linux
--dbdumpfilename=<dbdumpfilename>	Database dump filename.
--dbimportfromuser=<dbimportfromuser>	Dump filename source username if different than --dbuser,Mandatory only for --jobtype=importjob. Defaults to NULL.

Example Fresh Installation of DIVA Database

```
DIVADBInstaller --dbuser=DIVA --dbpass=divapass --syspass=syspass --dbhost=localhost --dbport=1521
--dbservicename=lib5.world  --jobtype=installjob
```

Example Upgrade Installation of DIVA Database

```
DIVADBInstaller --dbuser=DIVA --dbpass=divapass --syspass=syspass --dbhost=localhost --dbport=1522
--dbservicename=lib5.world --dbsecureconnect=TRUE --jobtype=upgardejob
```

The database installer always backs up the existing user using data-pump export before upgrading. The backup dump file is under the --dbdumpdirectory location on the Database server. If you omit --dbdumpdirectory, it will default to H:/ in Windows and /u04 in Linux.

Manually Create the Database User and Schema for 7.6.1 and earlier

Note: If upgrading release 7.2.2 and lower using 8.0 installer, you must manually update the Actor configuration and Actor Partial Restore configuration in the database using the config utility. *See* Chapter 9, "Actor Configuration".

The database user must be created using the DIVA operating system user account. Use the following procedure to create the database user:

1. Open a terminal console.
2. Change to the DIVA_HOME/Program/Database/Core/Install directory.
3. Execute create_diva_user.bat (*Windows*) or create_diva_user.sh (*Linux*), which creates the given DIVA database user and its associated tables

   Usage:

   ```
   create_diva_user syspasswd username userpasswd oracle_connection [-useronly|-tablesonly] [-custom_tablespaces
   tables_tablespace indexes_tablespace temp_tablespace]

   create_diva_user {DIVA|SYS} current_password new_password [-orapwd]
   ```

Parameter Definitions:

- syspasswd — Password of the Oracle *sys* account
- username — Username to create
- userpasswd — Associated user password
- oracle_connection — Oracle TNS service name or Oracle connection string (*such as IP_ADDRESS:PORT/ORACLE_SERVICE_NAME*)
- DIVA|SYS — Mention either DIVA or SYS to reset the respective password in the password file
- new_password — New password
- current_password — Current password. If there is no current database password, then enter the new password for the is parameter.
- -useronly — Only creates the database user and no database objects
- -tablesonly — Only creates the database objects for the given user.
- -custom_tablespaces — Use of custom tablespaces
  - tables_tablespace — tablespace for tables
  - indexes_tablespace — tablespaces for indexes
  - temp_tablespace — database temp tablespace
- -orapwd — Option to reset/generate password file.

Secure Communications with Oracle Database

With DIVA 7.6.1, a new DIVAOracle package version 3-1-0 was created:

- **Windows**: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_Windows_64-bit
- **Linux**: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_OEL7_x86_64

This new package included the following:

1. Secure Oracle Database listener listening on port 1522, additional on top of the regular unsecured listener listening on port 1521.
2. Oracle Database wallet for storing the Trust Certificate and DIVADatabaseServer Certificates. During installation DIVADatabaseServer.jks holding the default DIVA_CA trust certificate and Default DIVADatabaseServer certificate is import into the Oracle Database wallet for enabling the secure communication.
3. This new package also creates a secure TNSNames LIB5SSL which enables any DIVA services to connect to the Oracle database securely over SSL connecting to the new secure Oracle database listener listening on port 1522 using the TNSNames.

New Entry in TNSNames.ora:

```
LIB5SSL =
 (DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCPS)(HOST = HOSTNAME)(PORT = 1522))
  (CONNECT_DATA =
   (SERVER = DEDICATED)
   (SERVICE_NAME = LIB5.WORLD)
  )
 )
```

A new Configuration Parameter “DIVAMANAGER_DB_SECURE_CONNECT” was added to the Manager, Migrate, DBBackup configuration file to enable secure communication to database using Hostname/IPAddress and port. This parameter has no effect if using DIVAMANAGER_ TNSNAME parameter in the configuration file.

Valid parameter values are:

- TRUE - When set to TRUE, the DIVAMANAGER_DBPORT in the Manager, Migrate, DBBackup configuration file must point to the secure port of the Oracle Database.
- FALSE (*default*)

The Configuration Utility and Control GUI also supports connecting securely to the database. SPMService can connect securely only using TNS names.

Migrating Oracle Database Server from 11.2 to 12.1

This section describes the procedures to migrate DIVA Core releases with Oracle 11*g* installed. Typically this procedure is performed to upgrade installations with legacy DIVA Core installations to a current release.

Preparing the Source Computer (*DIVA Core Manager with Oracle Database 11.2*)

Use the following procedure to export the DIVA Core Manager and file system data from the source computer:

1. Stop all running DIVA Core services, and then export the database to a dump file. *See Exporting the Database Dump Files*.
2. Copy the dump file from the source computer to the target computer.

Updating the Destination Computer (*DIVA Core Manager with Oracle Database 12.1*)

Use the following procedure to import the DIVA Core Manager and file system data to the destination computer:

1. Stop all running DIVA Core services.

2. Install Oracle 12.1 on the destination computer. *See Installing the Oracle Database Server in Windows,or Installing the Oracle Database Server in Linux for instructions depending on your operating system environment*.

3. Import the database dump file on the destination computer. *See Importing the Database Dump Files*.

Installing and Configuring the DIVA Core Backup Service

This section describes installing and configuring the DIVA Core Backup Service.

DIVA Core Backup Service Overview

The DIVA Core Backup Service enables configuration of scheduled backups through its configuration file, and manages and monitors the entire backup process. *It is strictly required to use the DIVA Core backup service when using complex objects*.

The service uses existing DIVA Core Backup scripts (*these scripts use the Oracle RMAN tool*) to generate full database backups, and incremental database backups of the Oracle Database. Generated Oracle Database backup files and Metadata Database files created by the Manager (*when complex objects are created*) are incrementally replicated by the Backup Service to remote backup servers using the RSYNC tool.

DIVA Core Backup Service Prerequisites

The following components and services are prerequisites for using the DIVA Core Backup Service component. CYGWIN with the RSYNC service is required for the Backup Service to function. The DIVA Core Manager server, DIVA Core Backup Manager server, DIVA Core Database server, and all remote backup systems must have the following installed:

Caution: The first two modules must be installed in the specific sequence shown before proceeding.

- CYGWIN must be installed using the DIVA Core Prerequisites package.
- RSYNC
  - CYGWIN must be installed before running the RSYNC installation.
  - http://rsync.samba.org
  - You must configure the RSYNC modules.
  - You must have the RSYNC service running.
- You must install the DIVA Core Backup Service on the server where the DIVA Core Manager and Oracle Database are installed.
- You must download and install 7zip for 32-bit Windows (*http://www.7-zip.org/*).
- You must download and install Oracle Java JDK/JRE build 1.8.0_45-b02.

Installing the DIVA Core Backup Service Software

The DIVA Core Backup Service component is installed as an integral part of the standard DIVA Core system installation. You must install the component on the same server as the DIVA Core Manager and Oracle Database. Also, the Backup Service does not support installation with the Manager and Oracle Database installed on separate computers.

You must configure the DIVA Core Backup Service to replicate files across multiple backup servers for redundancy. Therefore, you must identify the following systems before installation for successful use of the DIVA Core Backup Service:

- Which computer is called *Backup System 1* (*required*)
- Which computer is called *Backup System 2* (*required*)
- Which additional computers are called *Backup System additional_number*. The *additional_number* identifies additional backup server numbering, for example *Backup System 3,* or *Backup System 4*. This is optional and only required to have more than two backup systems.

You must ensure the ***Database*** check box is selected on the *Choose Components* screen during DIVA Core installation to install the DIVA Core Backup Service.

Configuring the DIVA Core Backup Service

By default, the Backup Service is installed in the %DIVA_HOME%\Program\DBBackup folder. The default Backup Service configuration file is named backup.conf.ini and is located in the %DIVA_HOME%\Program\conf\db_backup folder.

You must configure the settings in both the DIVA Core Configuration Utility and the Backup Service configuration file. You must rename the configuration file from backup.conf.ini to backup.conf.

You must edit the configuration file, set the application parameters, and verify the default values.

Note: You must use a slash instead of the normal backslash for the folder separator in the configuration file.

The following two parameters define the scope of operations in the DIVA Core Backup Service's backup.conf configuration file. If you set both of these parameters to N (*indicating no, or disabled*), the DIVA Core Backup Service will not start.

BACKUP_SERVICE_MANAGE_DATABASE_BACKUPS
This parameter enables or disables backup of the DIVA Core Oracle Database. The default value is Y (*indicating yes, or enabled*).

BACKUP_SERVICE_MANAGE_METADATA_BACKUPS
This parameter enables or disables backup of the Metadata Database. The default value is N (*indicating no, or disabled*).

You must set the following parameters in the DIVA Core Configuration Utility's **Manager Setting** tab. You must set the Metadata Database file location to an existing, valid location. The Manager uses this value to save the Metadata Database files. For example, F:\META_DATABASE_ROOT\.

Complex Objects Metadata Database Location

This is the path to the Metadata Database. There is no default path specified. The path must exist, and is validated by the DIVA Core Manager and the Backup Service. You must use a drive with ample storage. *See Sizing the Metadata Database for information on calculating space requirements*.

This parameter is not reloadable and is only checked one time when the Manager and the Backup Service services start. If you make any changes to this parameter you must restart the Manager and Backup Service.

Database Backup Notification

You select the desired notification level from the list as follows. The default setting is **ERRORS AND WARNINGS**. You must restart connected Control GUIs if any changes are made to this parameter.

ERRORS AND WARNINGS

Dialog box notifications are displayed in all connected Control GUIs when there is a Backup error or warning. Errors and warnings are also recorded in the event log. This is the default setting.

ERRORS

Dialog box notifications are displayed in all connected Control GUIs only for Backup errors. Errors and warnings are also recorded in the event log.

DISABLED

Dialog box notifications are disabled, but all of the errors and warnings are recorded in the event log.

Enable Metadata Database Feature

The DIVA Core Manager can archive complex objects and Backup Service can backup up the Metadata Database only when you enable this parameter (*the check box is selected*). When disabled (*the check box is unselected*) DIVA Core Manager cannot archive complex objects and the Backup Service cannot backup the Metadata Database. *This parameter must be left at the default enabled setting*.

This parameter is not reloadable and is only checked one time when the Manager and the Backup Service services start. You must restart the Manager and Backup Service services if any changes are made to this parameter.

If the BACKUP_SERVICE_MANAGE_METADATA_BACKUPS is set to Y (*indicating yes, or enabled*) in the Backup Service configuration file, the values of ***Enable Metadata Database Feature*** and ***Complex Objects Metadata Database Location*** in the Configuration Utility is validated when the Backup Service starts. If the ***Enable Metadata Database Feature*** parameter is set to N (*indicating no, or disabled*), or the ***Complex Objects Metadata Database Location*** is invalid, the Backup Service will fail to start.

You must set the following values on the **Manager Setting** tab of the Configuration Utility before starting the Manager and Backup Service services:

DIVAMANAGER_HOST

This parameter identifies the name of the computer where the Manager is installed. The default value is localhost.

DIVAMANAGER_PORT

This parameter identifies the port number the Manager is listening on for connections. The default value is 9000.

SERVICE_NAME

This parameter identifies the name of the Windows service. The default value is DIVA Core Backup.

SERVICE_PORT

This parameter identifies the port number where the service is running. The default value is 9300. You must change this value if it conflicts with other services.

DIVAMANAGER_DBHOST

This parameter identifies the IP address of the database to connect to from the Manager.

DIVAMANAGER_DBPORT
This parameter identifies the port number of the database to connect to from the Manager. The DIVA Core Database installation uses the Oracle default 1521 port number.

DIVAMANAGER_DBUSER
This parameter identifies the database user name; typically diva.

DIVAMANAGER_DBSID
This parameter identifies the Oracle Database SID (*typically lib5*) to connect to from the Manager.

BACKUP_SERVICE_MANAGE_DATABASE_BACKUPS
This parameter enables or disables backup of the DIVA Core Oracle Database. The default value is Y (*indicating yes, or enabled*).

BACKUP_SERVICE_MANAGE_METADATA_BACKUPS
This parameter enables or disables backup of the DIVA Core Metadata Database. The default value is N (*indicating no, or disabled*).

SCRIPT_FILES_DIRECTORY
This parameter identifies the DIVA Core Oracle Database Backup script location. By default, the scripts are copied to the %DIVA_HOME%\Program\DBBackup\rman\bin folder during the DIVA Core installation process. This parameter accepts both relative and absolute paths. If you use a relative path, you must assume the current directory is the %DIVA_HOME%\Program\DBBackup\bin folder. The default value is ..\rman\bin.

CYGWIN_BIN_DIRECTORY
This parameter identifies the location of the CYGWIN installation. The default is C:\cygwin\bin.

DB_BACKUP_LOCATION
This parameter identifies the location of the Oracle Database backup files. The default location is H:/oraback/lib5.

DB_BACKUP_REMOTE_DESTINATIONS
This parameter identifies the location of the Oracle Database remote backup destinations. All remote destinations must be an RSYNC service module name, following by a folder name. The backups must not be copied to the root of the RSYNC module. Multiple destinations are allowed and must be delimited by commas.

The default value is rsync://manager2/oraback/mgr1,rsync://actor3/oraback/mgr1.

The syntax for this setting is rsync://IP_Address/Module_Name/Folder_Name. For example, rsync://172.16.3.45/ORACLE_BACKUP/lib5.

FULL_BACKUP_START_HOUR_24
This parameter identifies the hour of day to perform a full database backup when the service is initially started. If the service is started later than the configured value, the full backup will occur at this hour on the following day. The default value is midnight; 0 hours.

FULL_BACKUP_START_MINUTE
This parameter identifies the number of minutes after the FULL_BACKUP_START_HOUR_24 hour to start the full backup. The default value is 0 minutes.

FULL_BACKUP_FREQUENCY_HOURS
This parameter identifies the frequency to execute a full backup of the database. The default value is every 24 hours.

INCREMENTAL_FREQUENCY_MINUTES
This parameter identifies the frequency to execute an incremental backup of the database. The default value is every 15 minutes.

The Backup Service will automatically determine if a full backup is required.

If the FBM_FREQUENCY_MINUTES parameter is not set, then this value is also used to notify the Manager how often to expect a message from the DIVA Core Backup Service. If a message is not received by the Manager within the incremental minutes, all connected Control GUIs are notified that the DIVA Core Backup Service may not be running. This event is then recorded in the event log. If the FBM_FREQUENCY_MINUTES is set, the Backup Service uses the lowest parameter value to notify the Manager how often to expect a message from the DIVA Core Backup Service.

By default, the Manager expects a message from the Backup Service within 15 minutes after the start of the Manager service. After the Backup Service is started and connected to the Manager, the Manager expects a message within every INCREMENTAL_FREQUENCY_MINUTES, or FBM_FREQUENCY_MINUTES value identified in the Backup Service configuration file.

FBM_BACKUP_REMOTE_DESTINATIONS
This parameter identifies the location of Metadata Database remote backup destinations. All remote destinations must be an RSYNC service module name, followed by a folder name. The backups must not be copied to the root of the RSYNC module. Multiple destinations are allowed, and must be delimited by commas.

The default value is rsync://manager2/oraback/mgr1,rsync://actor3/oraback/mgr1.

The syntax for this setting is rsync://IP_Address/Module_Name/Folder_Name. For example, rsync://172.16.3.45/ META_BACKUP/FBM.

FBM_FREQUENCY_MINUTES
This parameter identifies the frequency to execute a Metadata Database backup to all remote metadata backup destinations. The default value is every 15 minutes.

If the INCREMENTAL_FREQUENCY_MINUTES parameter is set, the Backup Service uses the lowest parameter value to notify the Manager how often to expect a message from the Backup Service.

A Metadata Database backup is executed when the services start.

DB_FBM_RECOVERY_WINDOW_DAYS
This parameter identifies the recovery window period for the Oracle Database and Metadata Database. This value indicates how many days of backups must be retained. Obsolete backup copies are then deleted. The default is 10 days.

The DIVA Core Backup Service sets this value using the RMANRecoveryWindow.bat file included in the DIVA Core Backup Service bin folder.

If this batch file is missing the DIVA Core Backup Service will not start.

CLEANUP_START_HOUR_24
This parameter identifies the hour of the day for initial start of the Backup Service clean up process to delete the obsolete backup copies. The default value is 2 (*representing 2:00 AM*).

CLEANUP_START_MINUTE
This parameter identifies the number of minutes after CLEANUP_START_HOUR_24 to start the clean up process. The default value is 0 (*representing the top of the hour*).

CLEANUP_FREQUENCY_HOURS
This parameter identifies the frequency to run the clean up process. The default value is every 24 hours.

See Monitoring the DIVA Core Backup Service for additional monitoring and notification options and configuration.

Installing and Starting the DIVA Core Backup Service

After verification of the DIVA Core Backup configuration file parameters, you must install and start the DIVA Core Backup Service using the following procedure:

1. Confirm, that all of the prerequisites are in place. *See DIVA Core Backup Service Prerequisites for details.*
2. Open a Windows command line.
3. Change to the %DIVA_HOME%\Program\DBBackup\bin folder.
4. The dbbackup.bat command-line syntax is dbbackup {command} [options].

The following list describes the dbbackup.bat commands:

install (*or -i*)
This command installs the DIVA Core Backup Service as a Windows service. You must install the Backup Service on the same server where the Manager and Oracle Database are installed.

uninstall (*or -u*)
This command uninstalls the DIVA Core Backup Service Windows service.

start
This command starts the DIVA Core Backup Service.

stop
This command stops the DIVA Core Backup Service.

restart
This command stops, and then subsequently restarts the DIVA Core Backup Service.

reconcile
This command lists the complex objects that are missing the Metadata Database files.

status
This command returns the current release level of the DIVA Core Backup Service, the IP address and port that it is installed on, and the state of the service. Current states are *Running* and *Not Running*.

If the state is **Not Running** after an attempt to start has failed, you must review the logs to determine why the service could not start.

The following are two example outputs using the status command:

```
Service (on 127.0.0.1:9300) is running.
Service (on 127.0.0.1:9300) is not running.
```

version (*or -v*)
This command displays the Backup Service release information and then exits.

help (*or -h*)
This command displays dbbackup command help information and then exits.

There is only one dbbackup command-line option as follows:

-conf (*or -f*)
This option identifies a specific configuration file to load the settings from. The default is %DIVA_HOME%\Program\conf\db_backup\backup.conf.

Installing and Configuring the Windows RSYNC Service and Module

The DIVA Core Backup Service incrementally replicates Oracle Database backup files and Metadata files to remote backup servers. After you install CYGWIN, you must install the RSYNC service and RSYNC modules. The RSYNC modules provide a logical name for the backup location path. You must configure the DIVA Core Manager server, DIVA Core Backup Manager server, DIVA Core Database server, and all remote backup systems using the following procedure:

Note: The DIVA Core Prerequisite Package installs CYGWIN and performs the RSYNC Configuration. The following steps only need to be performed when the DIVA Core Prerequisite Package is not used for installing CYGWIN.

1. Open a command-line window and execute the following command:

   ```
   %CYGWIN_HOME%\bin\cygrunsrv -I rsyncd -d "RSYNC Daemon" --path /usr/bin/rsync --args
   '--config=/etc/rsyncd.conf --no-detach --daemon --quiet' -e CYGWIN='binmode tty nontsec'
   ```

2. Open the %CYGWIN_HOME%\etc\rsyncd.conf configuration file and add a new module using the following syntax. Telestream recommends configuring RSYNC modules to point to the same directory on the Main Backup server, and all Remote Backup servers.

   Note: The square brackets are required for the [Module_Name] statement. Therefore, in the example, [ORACLE_BACKUP] and [METADATA_BACKUP] must include the brackets.

   ```
   [Module_Name]
   path = {cygwin_style_path}
   comment = {Description}
   ```

   Example:

   ```
   [ORACLE_BACKUP]
   path = /cygdrive/h/oraback
   comment = Oracle backups

   [METADATA_BACKUP]
   path = /cygdrive/h/metaback
   comment = Metadata Database backups
   ```

3. You can now start the RSYNC service from the Windows Service Manager, or execute %CYGWIN_HOME%\bin\cygrunsrv -S rsyncd to start it from the command line.

Installing and Configuring the Linux RSYNC Service and Module

RSYNC for Linux is added as part of the divaservice. The following is the divaservice information displayed when you execute the ./divaservice command without any options:

```
[diva@linux008 Program]$ ./divaservice

runuser: user oracle does not exist
Warning: Unable to get Oracle SID
```

```
Usage ./divaservice configure <SERVICE>
Usage ./divaservice install <SERVICE> <configuration file as absolute path>
Usage ./divaservice start-all | stop-all | restart-all
Usage ./divaservice start | stop | restart | uninstall | status <SERVICE_NAME>
Usage ./divaservice list
Usage ./divaservice profile

SERVICE: manager actor robotmanager migrate dfm dbbackup lynxlocaldelete spm rsyncDaemon
```

Example:

First, you must execute sh divaservice install rsyncDaemon /home/diva/DIVA/7_4_0_35/Program/conf/rsync/rsync.conf to install the service.

After the service is installed, you must execute sh divaservice start rsyncDaemon to start the service.

Additional Configuration

This section describes additional configuration of the DIVA Core Backup Service, and includes the following information:

- Configuring the Metadata Database
- Sizing the Metadata Database
- Database Backup Recovery Window
- Backup Interval Overrun
- DIVA Core Backup Service Status Command
- Failure Scenarios and Recovery Procedures

Configuring the Metadata Database

You must set the following two parameters on the **Manager Setting** tab of the Configuration Utility to enable complex object workflows and Metadata Database backups:

Enable Metadata Database
Select this check box to enable use of the Metadata Database.

Metadata Database Location
Enter an empty directory path that exists in the file system in the ***Metadata Database Location*** field.

Note: Changes made to these parameters require you to restart the Manager and Backup Service. When it is necessary to change the Metadata location, you must confirm that you have copied all of the Metadata files from the old location to the new location.

Telestream highly recommends that you store the Metadata Database files on a RAID disk array. The Metadata Database should not be on a standard disk due to decreased performance and the real-time backup functionality that a RAID array affords the system.

Metadata Database files stored on a standard disk are vulnerable to data loss if a single disk failure occurs until the information is replicated with the DIVA Core Backup Service. Storing the Metadata Database files on a RAID array isolates the data from these types of failures.

Sizing the Metadata Database

You can use the following formula as a rough guide to determine the minimum disk space required to support the Metadata Database:

```
(100+avg_path_file_name_size)*1.15*avg_number_component_files*number_objects
```

When planning, enough Metadata Database disk space should be allocated to ensure expected, or unexpected, growth of your environment. *You must allocated the same disk space for the Metadata Database on all of the remote backup systems*.

Example:

avg_path_file_name_size = 60
this/nested/subdir01/As_The_World_Turns_24fps_scenes1-10.avi

avg_number_component_files = 200,000
This is the average number of files and folders within the complex object.

num_objs = 50,000
This si the number of complex objects to be archived.

In this example, the recommended *minimum* disk space allotment would be for a Metadata Database size of approximately 1.67 TB.

Database Backup Recovery Window

The *Recovery Window* defines how much history (*in days*) of backups the DIVA Core Backup Service must retain, and delete obsolete backups that are outside of the Recovery Window range. Preserving considerable days of backups is very important because it enables the flexibility to roll back the system to any earlier state if a situation arises.

The Recovery Window value is configured using the DB_FBM_RECOVERY_WINDOW_DAYS parameter in the configuration file. The default value is 10 days.

When a complex object is deleted, the Manager only deletes the entries in the Oracle Database, and retains the complex object's Metadata file in the Metadata Database until the end of the Recovery Window period.

The following example describes the typical sequence of events when a complex object is deleted. For this example, the current Recovery Window is 10 days and the Backup Service clean-up is scheduled to run every day at 2:00 AM. Therefore, the Recovery Windows parameters are configured as follows:

```
DB_FBM_RECOVERY_WINDOW_DAYS = 10
CLEANUP_START_HOUR_24 = 2
CLEANUP_START_MINUTE = 0
CLEANUP_FREQUENCY_HOURS = 24
```

1. *ComplexObject-A* is deleted on September 10, 2016 at 10:00 AM. Only the entries in the Oracle Database are deleted, and the complex object's Metadata file is retained on the ***Metadata Database Location*** identified in the Configuration Utility.
2. The Backup Service tracks the time and date of deleted complex objects until the end of the Recovery Window period.
3. While running the clean-up task at 2:00 AM on September 21, 2016, the DIVA Core Backup Service detects that the 10 day recovery period has expired.

   Because the deletion of *ComplexObject-A* occurred 11 days ago (*on September 10, 2016*), which is outside the Recovery Window period, the Database Backup Cleanup process deletes the corresponding Metadata file from the Metadata Database.

4. The DIVA Core Backup Service retries any failed Metadata file deletions again during the next execution (*on September 22, 2016 at 2:00 AM*).

Database Backup Cleanup

It is impossible to preserve all of the backups. Therefore, any backups outside of the Recovery Window period must be deleted to clean up disk space. The DIVA Core Backup Service checks for obsolete backups every 24 hours (*by default*) that were created beyond the Recovery Window and deletes them. The cleaning of obsolete backups works differently for the Oracle Database and Metadata Database.

Backup Interval Overrun

A *Backup Interval Overrun* occurs when a specific backup is taking a longer time to complete beyond the next scheduled iteration.

The following example is called a *Backup Interval Overrun* because the Backup Service must run the next incremental backup by 12:15 PM, but it cannot because the backup process started at 12:00 PM is still running.

1. The Oracle Incremental Backup is schedule to run every 15 minutes:

   ```
   INCREMENTAL_FREQUENCY_MINUTES = 15
   ```

2. The incremental backup starts at 12:00 PM and runs at the value set for the INCREMENTAL_FREQUENCY_MINUTES parameter; in this case every 15 minutes.
3. At 12:15 PM the incremental backup is incomplete and still running, causing a *Backup Interval Overrun*.

The DIVA Core Backup Service sends a *Backup Timeout Warning* to the Manager when a Backup Interval Overrun occurs. The Manager broadcasts this warning to all connected Control GUIs, and records the warning in the event log. If a Backup Timeout occurs three consecutive times, the timeout warning messages are elevated to an error message.

Important: You must take immediate and necessary action to modify the backup's frequency by updating the configuration file to avoid future Backup Interval Overrun occurrences

Note: Updating the configuration file requires a Backup Service restart. Execute dbbackup restart to perform a restart, or dbbackup restart -conf {config_file_name} if you must specify a specific configuration file.

DIVA Core Backup Service Status Command

The Backup Service status command delivers comprehensive service status information and provides the information outlined in the following sections. The command line syntax is dbbackup status.

Backup Service Running Normally

When the Backup Service is running, the following information is displayed when the status command is executed:

- Running release of the service
- IP address and port the service is running on

- System statistics
- Operating system information
- Memory information
- Disk array information
- Database backup statistics including:
  - Last executed backup command and the current status
  - Number of Metadata Database files backed up
  - A list of the last 25 Metadata files backed up including the object name and creation date

The information output to the console is also saved in the logs directory in a text file named dbbackup.status. This file, and the log files, must be included when submitting issues to Telestream Support.

Backup Service Not Currently Running

When the Backup Service is not currently running, the following information is displayed when the status command is executed:

- Running release of the service
- IP address and port the service runs on
- An extract from the DIVA Core Backup Service log files from the last error, or irrecoverable error, reported

Backup Service Failed to Start

If the Backup Service fails to start, execute dbbackup status to find out why the service failed to start. After you identify the cause of the failure, correct the issue, and then try to start the service again. *If you require assistance contact Telestream Support*.

Failure Scenarios and Recovery Procedures

There are two types of failure scenarios; non-failover, and failover.

Non-failover Scenarios

If the Main DIVA Core Manager computer is still fully operational, and there has been no RAID Disk failure, you can restore and recover the DIVA Core system and its database from failure without moving the DIVA Core Manager or database to a Backup DIVA Core Manager computer.

The following are non-failover scenarios and recovery actions (*in sequence*) to correct them. *Contact Telestream Support if you require assistance or need to restore from a backup*.

Manager Failure

- Restart the Manager
- Apply a cumulative path (*if available*) and restart the Manager
- Upgrade your DIVA Core installation

Oracle Database Instance Failure

- Restart the Oracle instance
- Reinstall Oracle and restore the database from a backup

Oracle Database Data File Corruption

Restore the data file from an Oracle Secure Backup.

Oracle Database Parameter File or Control File Corruption

Restore the parameter file, or control file, from an Oracle Secure Backup.

Oracle Online Redo Logs Corruption

Restore the database using an Oracle Secure Backup.

Oracle Archive Redo Logs Corruption

Shut down the database and perform a full backup.

Replication (*RSYNC*) of RMAN Backup Files Failure

The DIVA Core Backup Service sends a failure notification to Manager. The Manager generates error events, broadcasts messages to all connected Control GUIs, and records it in the event log. Each connected Control GUI displays a dialog box notification indicating the need for user action. The possible causes are network issues, the Remote Backup System is unavailable, or the RSYNC service is not running on the Remote Backup System.

Replication (*RSYNC*) of Metadata Database Files Failure

The DIVA Core Backup Service sends a failure notification to Manager. The Manager generates error events, broadcasts messages to all connected Control GUIs, and records them in the event log. Each connected Control GUI displays a dialog box notification indicating the need for user action. The possible causes are network issues, the Remote Backup System is unavailable, or the RSYNC service is not running on the Remote Backup System.

Failover Scenarios

If the main DIVA Core Manager computer fails, is not operational, or a RAID disk fails, you must restore and recover the DIVA Core Manager and database on the Backup DIVA Core Manager computer to restore DIVA Core back to an operational state.

The following are failover scenarios and recovery actions (*in sequence*) to correct them. The recovery actions are the same for all of the listed scenarios.

Contact Telestream Support if you require assistance or need to restore from a backup.

The following are possible failures that require failover recovery actions:

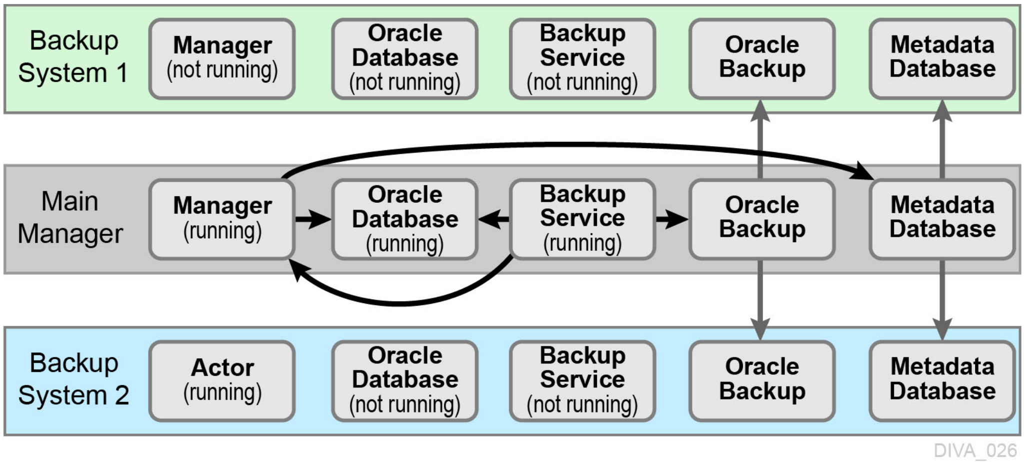
- Main DIVA Core Manager Computer Failure
- RAID Disk Failure where Oracle Data Files are Stored
- RAID Disk Failure where Oracle RMAN Backups are Stored
- RAID Disk Failure where Metadata Database Files are Stored

You use the following recovery sequence to complete the failover if any of the previous failures occur:

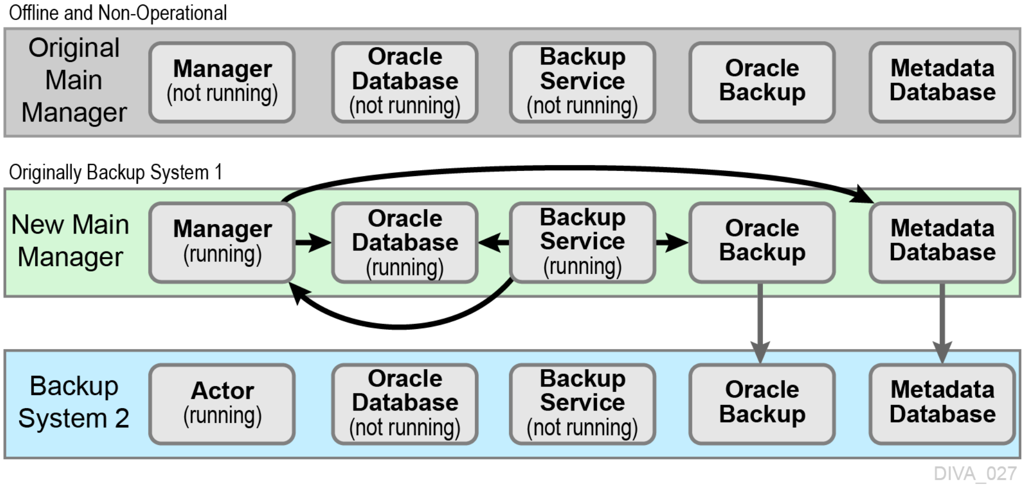
- Failover to the Backup DIVA Core Manager computer.
- Restore and recover the Oracle Database from an Oracle Secure Backup.
- Execute `dbbackup reconcile` to discover if any complex objects are missing Metadata files.
- Start the DIVA Core Manager.

Failover Procedures

You use the following procedure to recover the DIVA Core system if a failure occurs. The first figure is a typical DIVA Core System configuration showing the connections between the different modules, the second displays a failover case, and the third depicts a recovered, operational system. The *Main Manager* and *Backup System 1* are configured identically. However, the Backup Service, Manager, and Oracle Database are not running until they are started (*see the third figure*). The Backup Service creates the backups on the Main Manager computer and then pushes copies of them to the *Backup System 1*, *Backup System 2*, and *Backup System N*. The *N* represents additional system numbering if applicable, for example *Backup System 3*, *Backup System 4*, and so on.



For this example, assume the Main Manager computer failed and is offline. The following procedure is the easiest, and fastest, way to get the system back online. You are effectively switching the *Original Backup Manager* to be the *New Main Manager* and the *Original Main Manager* will be the *New Backup Manager* (*they are trading places*), resulting in the least amount of time the system is offline.



1. Restore the Oracle Database on the *New Main Manager* from the latest Oracle Database backup. Execute the restore.bat script located in the %DIVA_HOME%\Program\DBBackup\rman\bin folder. The syntax for the command is as follows:

   ```
   restore {"default_dir"} {sid} {"source_dir"} [-syspwd=system_password] [-nocomnp]
   ```

   Note: You must use double quotation marks to enclose the directory paths.

   The commands are defined as follows:

default_dir
This parameter is the default directory where the backup files are normally stored on local server.

sid
This parameter is the database instance ID.

source_dir
This parameter is the directory containing the backup files to use as a source for the restore. These files can be backup files coming from another server, or you can use the same directory as default_dir to restore from the local backup. When the two directories are different, the contents of the default_dir are erased and replaced by a copy of the files from the source_dir, and then the restore will take place.

-syspwd
This parameter is the database system user password. When not specified, the sid is used instead. *Current RMAN releases seem to ignore this value*.

-nocomp
This parameter tells the system to not recompress backup files after a restore.

Example:

To perform a local restore you would use the command restore "H:\oraback\lib5" LIB5 "H:\oraback\lib5".

To perform a failover restore from *Manager1* to *Manager2*, you would execute the command restore "H:\oraback\lib5" LIB5 "H:\oraback\mgr1\lib5" on *Manager2*.

2. On the *New Main Manager*, adjust the Manager configuration file and Backup Service configuration file to point to the Oracle Database that has just been restored (*see the previous step*).

   Update the DB_BACKUP_REMOTE_DESTINATIONS and FBM_BACKUP_REMOTE_DESTINATIONS parameters in the Backup Service configuration file, adding the *Backup System 2* as a Remote Backup system on the *New Main Manager* system. You use the following statements for each of your *Backup System* computers; *do not include the system that is now offline*:

   ```
   DB_BACKUP_REMOTE_DESTINATIONS=rsync://Backup_System_N_IP_
   Address/ModuleName/OracleBackupFolderName

   FBM_BACKUP_REMOTE_DESTINATIONS=rsync://Backup_System_N_IP_Address/ModuleName/MetaFolderName
   ```

3. Update the ***Metadata Database Location*** to the location where the Metadata Database files were backed up on *New Main Manager* system (*the Original Backup System 1*). You update the parameter under the *Manager Setting* panel in the Control GUI on the *New Main Manager* computer.

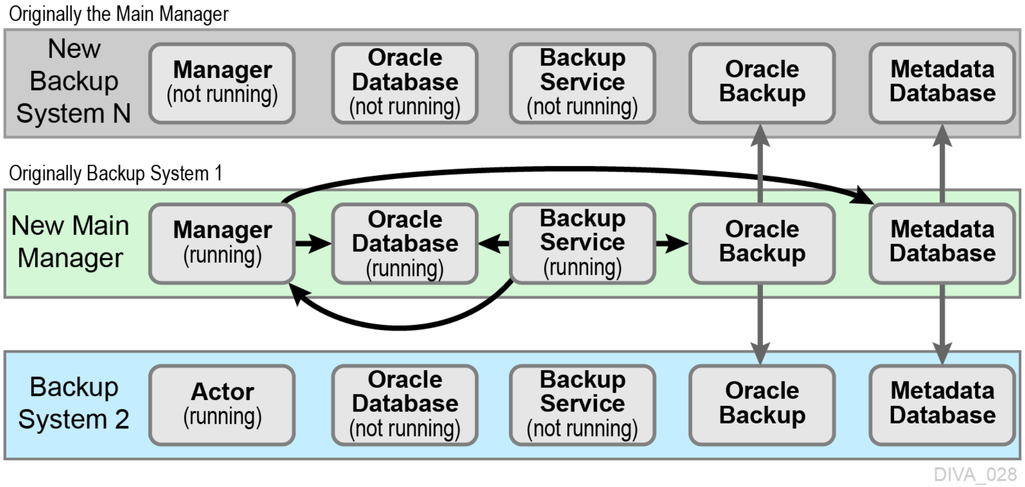
4. Run the Backup Service dbbackup reconcile command on the *New Main Manager* system. This command lists all of the complex objects that are missing the Metadata file in the Metadata Database.

   If a complex object is missing the Metadata file, it must be restored from the *Original Main Manager*, or *Backup System 2*. Complex objects are unusable without the associated Metadata file.

5. Start the Manager and Backup Service on the *New Main Manager*.

   After the *Original Main Manager* system is restored, recovered from its failure, and is operational, it is converted to the *New Backup System N* with no downtime.

6. Update the DB_BACKUP_REMOTE_DESTINATIONS and FBM_BACKUP_REMOTE_DESTINATIONS parameters in the Backup Service configuration file on the *New Main Manager* system by adding the *New Backup System N* (*the Original Main Manager*) as the additional remote backup location.
7. Restart the Backup Service on the *New Main Manager* for your configuration changes to take effect.
8. Copy the existing Oracle Database backups and Metadata files from the *Backup System 2* (*or New Main Manager*) to the *New Backup System N* in the background.



Monitoring the DIVA Core Backup Service

The DIVA Core Backup Service notifies the Manager about all backup errors and warnings. The Manager broadcasts the backup errors and warnings to all connected DIVA Core Control GUIs. The Control GUIs display a dialog box indicating the specific error or warning, and records them in the event log.

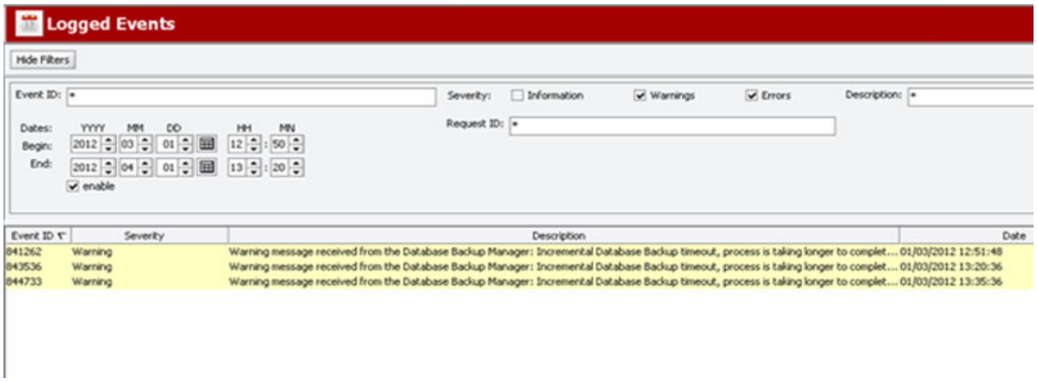
You use the list menu to the right of the Suppress Alerts label to snooze alerts. The list menu enables you to snooze the error or warning as follows: **Never** (*never allow this message type to be snoozed*), **One Hour**, **Three Hours**, and **Eight Hours**. The system snoozes the specific message type displayed in the dialog box and suppresses future messages for the *same* error or warning. *Snoozing a message dialog box has no effect on the currently displayed error or warning; it only affects future messages about the same error or warning that has been snoozed*.

When you start the Control GUI, the system queries the logged events to determine if there are any Backup Service errors within the last 24 hours. When an error is detected, the *Error Icon* on the bottom right of the Control GUI is enabled and red in color. When you click the icon, it displays all errors generated in the last 24 hours in the Manager *Events* panel. The last error in the logged events will be displayed in a dialog box.

When an error notification is received by the Control GUI, the *Error Icon* will flash 10 times, indicating arrival of a new error message. The icon will flash continually if the error received is a Backup Service error. Clicking the *Error Icon* opens the Events in the *Manager* panel to display only the Backup Service errors received within the last 30 minutes, and then resets the *Error Icon*. The Status Bar at the bottom of the Control GUI also displays the incoming error, warning and informational messages.

All messages generated by the Backup Service are also written to the Database Event Log and marked as *Backup Service Messages*. If no Control GUI is connected, you can review all of the backup errors and warnings by navigating to the *Logged Events* panel under the **Analytics** tab in the Control GUI.

Events in the *Logged Events* panel may be filtered using the filter check boxes and fields to reduce the number of entries being viewed simultaneously. The following figure shows that the screen has been filtered to show only *Warnings* and *Errors* because their associated check boxes are selected in the filter area. It is readily apparent there are three warning events that have been logged about the Database Backup Manager timing out during an incremental backup attempt. If the timeout occurs again, the warning is elevated to an error (*after three warnings*) and displayed in red (*rather than yellow*).



Event ID: *

Severity: □ Information ☑ Warnings ☑ Errors

Description: *

Request ID: *

Dates:	YYYY	MM	DD	HH	MN
Begin:	2012	03	01	12	50
End:	2012	04	01	13	20

☑ enable

Event ID	Severity	Description	Date
841262	Warning	Warning message received from the Database Backup Manager: Incremental Database Backup timeout, process is taking longer to complet....	01/03/2012 12:51:48
843536	Warning	Warning message received from the Database Backup Manager: Incremental Database Backup timeout, process is taking longer to complet....	01/03/2012 13:20:36
844733	Warning	Warning message received from the Database Backup Manager: Incremental Database Backup timeout, process is taking longer to complet....	01/03/2012 13:35:36

Error messages are prefixed with the process that generated the error or warning, and where applicable, post *fixed* with the start of the process and elapsed time. The elapsed time is the time the process ran before generating the error.

The following table describes the different warning and error notifications displayed on the Control GUIs.

Message Type	Code	User Message	Posted to Manager
SUCCESS	0	Completed successfully	Yes, informational
RUN	1	Running	No, internal only
ERROR	2	Failure: Refer to the Backup Service logs for more details.	Yes, error
TIMEOUT	3	Timeout: The process is taking longer to complete than the configured intervals. The Backup Service continues to display timeout messages as a warning. If the timeout occurs three consecutive times, the message will be elevated to an error message and displayed.	Yes, warning
STARTUP_FAILURE	4	DIVA Core Backup Service failed to start. Refer to the Backup Service logs for more details.	Yes, error
INITIALIZE	5	Scheduling Backups	No, internal only
TIMEOUTERROR	6	Timeout: The process is taking longer to complete than the configured interval.	Yes, error
CONFIGERROR	1000	Invalid Configuration Error. Refer to the Backup Service logs for more details.	Yes, error
METADATALOCATIONERROR	6000	The Metadata Database Location does not exist. Refer to the Backup Service logs for more details.	Yes, error
CLEANUPFBMFILEERROR	7000	The Metadata Database file deletion failed. Refer to the Backup Service logs for more details.	Yes, error
CLEANUPFBMFILEWARNING	7001	Failed deleting the Metadata Database.	Yes, error

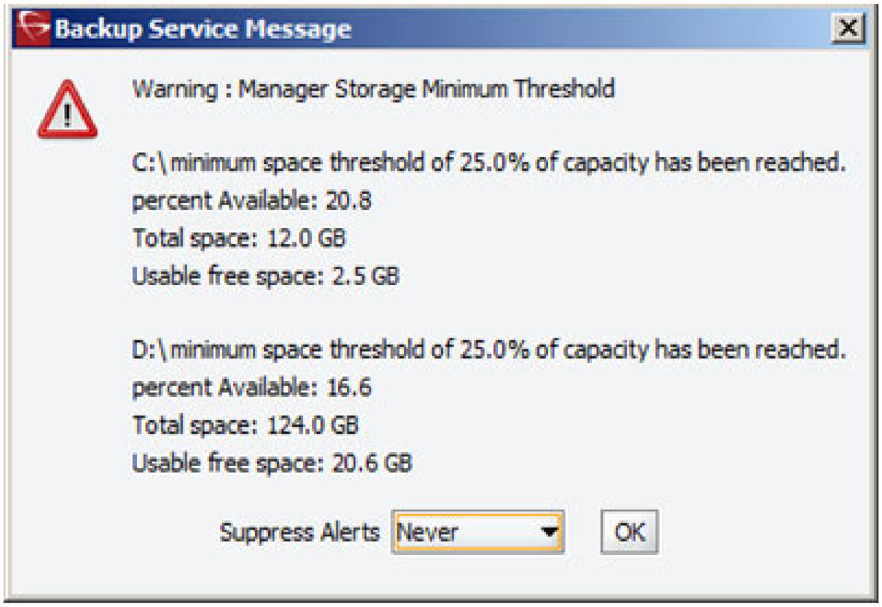
Message Type	Code	User Message	Posted to Manager
RSYNCERROR	8000	An error occurred while copying backups to remote backup destinations. Refer to the Backup Service logs for more details.	Yes, error
RSYNCIOERROR	8002	An I/O error occurred while copying backups to remote backup destinations. Refer to the Backup Service logs for more details.	Yes, error
RSUNCTIMEOUTWARNING	8003	A timeout occurred while copying backups to remote backup destinations. Refer to the Backup Service logs for more details.	Yes, warning
RSYNCTIMEOUTERROR	8005	A timeout occurred while copying backups to remote backup destinations. Refer to the Backup Service logs for more details.	Yes, error
DBCONNECTERROR	9000	Database connection error. Refer to the Backup Service logs for more details.	Yes, error
SQLERROR	9001	Database SQL error. Refer to the Backup Service logs for more details.	Yes, error
DBROLLBACKERROR	9002	Database Rollback error. Refer to the Backup Service logs for more details.	Yes, error

Monitoring Minimum Disk Space

The DISK_MIN_SPACE_THRESHOLD_PERCENT is a notification threshold percentage of the available space for each drive accessible by the Manager. The default value is 5 percent. For example, DISK_MIN_SPACE_THRESHHOLD_PERCENT=25 sets the notification threshold to 25 percent. This function does not monitor removable media and drives.

When the configured threshold of available space on the media is reached, warning notifications are sent out. After the available space reaches 80 percent of the designated percentage (*in the dbbackup.conf file*), an error message is sent out.

When the configured percentage is reached, a dialog box will be displayed as shown in the following figure.



Warning : Manager Storage Minimum Threshold

C:\ minimum space threshold of 25.0% of capacity has been reached.
percent Available: 20.8
Total space: 12.0 GB
Usable free space: 2.5 GB

D:\ minimum space threshold of 25.0% of capacity has been reached.
percent Available: 16.6
Total space: 124.0 GB
Usable free space: 20.6 GB

Suppress Alerts: Never

The ***Suppress Alerts*** list at the bottom of the dialog box functions identically to the other warning and error dialog boxes. In the previous figure a warning was issued to notify the operator that the DISK_MIN_SPACE_THRESHHOLD_PERCENT was reached.

Snoozing this alert causes no additional disk space warnings or errors to be displayed. Clicking **OK** without setting a suppression level enables future alerts for this particular warning to be displayed.

In the previous figure, when 80 percent of the threshold percentage is reached (*2.4 GB on C drive and 24.8 GB on D drive*), this dialog turns into an error rather than a warning.

When the dbbackup status command is executed, additional information is displayed including available space, threshold warnings and errors, and additional information about recent backup attempts.

The following is the additional information displayed after executing the dbbackup command:

```
Last process: METADATA Database Replication Start time:Tue Sep 06 13:26:30 EDT 2016
Last status: Completed Successfully.
Last Error:

System Statistics

OS: Windows 2003
Version: 5.2
: x86
Available processors (cores): 4

Total Free memory: 52 MB
Total used memory: 9 MB

Total available memory: 61 MB

Warning:  D:\ minimum space threshold of 20.0% of capacity has been reached.

percent Available: 16.605641010200685
Total space: 124.037 GB
Free space: 20 GB
Usable space: 20.597 GB

Last Metadata Database Actions
No records found
No records pending deletion

Number of Database backup's performed in the last 24 hours is  89

Type          Status      Start              End                Duration
ARCHIVELOG   FAILED    2016-09-05 13:37:52.0  2016-09-05 13:38:00.0  0.13
ARCHIVELOG   FAILED    2016-09-05 13:52:50.0  2016-09-05 13:53:00.0  0.16
ARCHIVELOG   FAILED    2016-09-05 14:07:52.0  2016-09-05 14:08:00.0  0.13
DB FULL     COMPLETED  2016-09-05 19:38:48.0  2016-09-05 19:45:24.0  6.6
ARCHIVELOG   COMPLETED  2016-09-05 19:47:34.0  2016-09-05 19:47:41.0  0.11
ARCHIVELOG   COMPLETED  2016-09-05 20:02:43.0  2016-09-05 20:02:53.0  0.16
ARCHIVELOG   COMPLETED  2016-09-05 23:23:06.0  2016-09-05 23:23:18.0  0.2
```

Email Notifications

The DIVA Core Backup Service incorporates the ability to send out emails for issues arising from the process of backing up the Oracle Database and Metadata Database files. In order to take advantage of this feature, DIVA Core must be configured to connect to an SMTP mail provider. The email notifications are configured through the DIVA Core Configuration Utility under the **Manager Setting** tab.

Use the following procedure to enable email notifications:

1. Open the Configuration Utility and connect to the database.
2. Click the **Manager Setting** tab.
3. Set the values for the following email notification parameters as required:

Caution: If the following parameters are misconfigured, notifications will go out to all connected Control GUIs and entries into the Manager Event Log will be made. However, email notification will not be sent.

Enable E-Mail Notification

If you select the check box (*enabled*), the Manager attempts to send out email using the configured values.

(SMTP) Outgoing Mail Host

Enter the URL of the email provider for outgoing mail in the ***(SMTP) Outgoing Mail Host*** field. This is provided by your Email Administrator.

(SMTP) Outgoing Mail Port

The port value is port 25 by default. However, many email providers are using a different port for security reasons. The correct port number is provided by your Email Administrator. Enter the correct port number in the ***(SMTP) Outgoing Mail Port*** field.

E-Mail Subject

Enter the value to be used in the ***E-Mail Subject*** field if an email subject is not provided when an error is generated.

(SMTP) Outgoing Mail Required Authentication

Many email providers require you to log in to the email server to allow sending emails. You must select the ***(SMTP) Outgoing Mail Required Authentication*** check box, and provide a valid account name and password (*using the following two fields*) if required to log in to the email server.

Account Name

Enter the full senders email address in the ***Account Name*** field if the ***(SMTP) Outgoing Mail Required Authentication*** check box is selected.

Account Password

You must enter the password associated with the senders email address in the ***Account Password*** field if you have entered an email address in the ***Account Name*** field.

DIVA Core System Administrator's E-mail Address

Enter the full email address for the DIVA Core System Administrator in the ***DIVA Core System Administrator's E-mail Address*** field so they receive a copy of any email notifications.

Notification E-Mail Recipients

You must enter the full email addresses for anyone who should receive the email notifications in the ***Notification E-Mail Recipients*** field. This should be a comma-delimited list with no spaces.

After you have configured the values, if the Manager is already running you must notify the Manager of any changes. When the Manager starts, or when it receives notifications from the Configuration Utility, reads the configured values and attempts to send out a test email. If the test is successful, all recipients on the ***Notification E-Mail Recipients*** list will receive a *Test Successful* email notification. Otherwise, they will receive an email notifying them of any error that occurred.

Events are logged in the *Logged Events* panel of all connected Control GUIs. A dialog box is displayed notifying you of the email failure error if you are logged in to the Control GUI as an *Administrator*.

Troubleshooting

This section describes basic troubleshooting methods and includes the following information:

- Metadata Database Failure Scenarios
- DIVA Core Manager will not start
- DIVA Core Backup Service will not start

Metadata Database Failure Scenarios

This section describes possible Metadata Database failures and resolutions.

The typical DIVA Core Metadata Database backup configuration backs up the database and transfers the backup files to remote systems (*as defined in the configuration*) every 15 minutes. Telestream recommends having at least two remote backup systems for redundancy.

Identifying Failure Scenarios, Causes, and Resolutions

The following are examples of possible failure scenarios. Each scenario includes the method of detection, the cause of the failure, a description of the failure, and recovery procedures. *Contact Telestream Support if you require additional assistance to resolve any of these issues*.

Scenario 1: Metadata Database Storage Disk Failure

You can identify a disk failure on the Main Manager because no more complex objects can be archived into the DIVA Core system. Only Delete requests are possible on existing complex objects. DIVA Core is still operational for archiving non-complex objects.

New Metadata files created for complex objects archived since the last successful backup, up until the disk failure, are not available immediately. However, they can be recovered from the AXF file.

You can identify a disk failure on one of the backup systems because the Metadata Database files created by a new Archive request since the disk failure are backed up only to one backup system, instead of all identified backup systems.

The method of detection for this failure is that a complex object request fails with the error Internal error: metadata database error. A *Metadata Database Backup Failure* notification is displayed on the Control GUI, and the backup failure events are logged in the Manager Event Log.

The possible causes of this failure include the following:

- RAID controller failures
- Power surges
- External process errors
- Disk volume reconstruction error if the RAID was previously rebuilt

Even though Telestream recommends storing the Metadata Database on a RAID disk, disk failure scenarios cannot be totally eradicated, and the unlikely chance of Disk Failure still exist.

Use the following procedure to attempt recovery from disk failure on the Main Manager:

1. Stop the Manager and Backup Service.

2. Replace the failed disk.
3. Navigate to the **Manager Setting** tab in the Configuration Utility and confirm that the ***Metadata Database Location*** setting is pointing to the replaced disk.
4. Start the Manager and Backup Service.
5. Copy all of the Metadata files from a backup system to the ***Metadata Database Location*** on the replaced disk.
6. Execute the `dbbackup reconcile` command to confirm no complex objects are lost.
7. The Metadata files of complex objects archived since the last successful backup, and before the disk failure, are not immediately available. However, they are recoverable from the AXF file. Recovery from AXF files is not supported in this DIVA Core release; contact Telestream Support for assistance.

Use the following procedure to attempt recovery from disk failure on one of the backup systems. The system can be operational if the backups made to other backup systems were successful.

1. Replace the failed disk.
2. Copy all Metadata files from the second *Backup System* and *Main Manager System* to the folder identified in the ***Metadata Database Location*** on the replaced disk.

Scenario 2: Metadata Database File Corruption

No operations or requests are possible on complex objects whose Metadata files are corrupted, except Delete Object requests, until it is restored. A Metadata file modified by any external source (*other than DIVA Core*) after it is backed up will not affect its backup copies in the backup systems.

You can identify when a Metadata Database file becomes corrupted because complex object requests fail with the following error:

```
Internal error: metadata database error:
Message: Metadata file read error.
```

The possible causes of this failure include the following:

- External process errors
- The file is modified manually by mistake

Use the following procedure to attempt recovery from a corrupt Metadata Database file. If the corruption occurred after the Metadata file is backed up, the Metadata file can be restored from one of the backups servers.

1. Execute the `FindMetadataFile.bat` utility located in the `%DIVA_HOME%/programs/utilities/bin` folder on the *Main Manager System*.

   This utility prints out the location of the Metadata file with its file name inside the specified ***Metadata Database Location***, and accepts the database connection parameters and the complex object name and category as parameters.

2. Locate the file with the file name and path printed from the utility in the Metadata Database backup location on one of the backup servers.
3. Replace the Metadata file on the *Main Manager System* in the configured ***Metadata Database Location*** with the copy from the backup server.

If the corruption occurred before the Metadata file was backed up, the Metadata file is not immediately available. However, it is recoverable from the AXF file. Recovery from AXF files is not supported in this DIVA Core release; contact Telestream Support for assistance.

Scenario 3: Lost or Manually Deleted Metadata Database File

Metadata deleted by any external source other than DIVA Core after it is successfully backed up does not affect its backup copies on the backup systems.

You cannot perform any operations or requests on complex objects whose Metadata file is corrupt, except Delete Object, until the Metadata file is restored.

You can identify when a Metadata Database file is lost or deleted because complex object requests fail with the following error message:

```
Internal error: metadata database error:
Message: get: Error opening metadata for objectname/category, db error=Error file not found.
```

The possible causes of this failure include the following:

- External process errors
- The file was manually deleted by mistake

If the file is lost after the Metadata File is backed up, the Metadata File can be restored from one of the Backup Servers. Use the following process to attempt recovery from a lost or deleted Metadata Database file:

1. Execute the FindMetadataFile.bat utility located in the %DIVA_HOME%/programs/utilities/bin folder on the *Main Manager* system.

   This utility prints out the location of the Metadata file with its file name inside the specified ***Metadata Database Location***, and accepts the database connection parameters and the complex object name and category as parameters.

2. Locate the file with the file name and path printed from the utility in the Metadata Database backup location on one of the backup servers.

3. Replace the Metadata file on the *Main Manager System* in the configured ***Metadata Database Location*** with the copy from the backup server.

If the file was lost before the Metadata file was backed up, the Metadata file is not immediately available. However, it is recoverable from the AXF file. Recovery from AXF files is not supported in this DIVA Core release; contact Telestream Support for assistance.

Scenario 4: Failure to Backup Metadata Database to All Backup Systems

Failure to back up the Metadata Database to all backup systems results in all complex objects archived after this failure not being backed up. You must resolve this failure as soon as possible because the DIVA Core system is at risk of data loss.

You can identify this error when a *Metadata Database Backup Failure* notification is displayed on the Control GUI. The backup failure events are also logged in the Manager Event Log.

The possible causes of this error are as follows:

- Network errors
- The backup systems are offline
- The RSYNC daemon is offline
- The Backup Service has failed

Use the following referenced resolutions to attempt correction of this issue:

Network Errors

Resolve the network error.

Backup System Offline

Start, or restart, the Backup System.

RSYNC Daemon Offline

Start, or restart, the RSYNC daemon.

Backup Service Failure

Restart the Backup Service and collect the logs for investigation.

After the problem is resolved, all of the Backup Systems sync automatically, and the missing Metadata files are backed up during the process. *There is no data recovery required for this scenario*.

Scenario 5: Failure of the Metadata Database Backup to One Backup System

In this scenario, the Metadata Database fails to back up to (*only*) one of the Backup Systems. However, the back ups to other Backup Systems continue successfully.

You can identify this error when a *Metadata Database Backup Failure* notification is displayed on the Control GUI. The backup failure events are also logged in the Manager Event Log.

The possible causes of this error are as follows:

- Network errors
- The Backup System where the error occurred is offline

Use the following referenced resolutions to attempt correction of this issue:

Network Errors

Resolve the network error.

Backup System Offline

Start, or restart, the Backup System.

After the problem is resolved, all of the Backup Systems sync automatically, and the missing Metadata files are backed up during the process. *There is no data recovery required for this scenario*.

DIVA Core Manager will not start

When the Manager starts it checks the following parameters. The Manager will not start if any combination of these parameters is incorrect. Confirm the ***Enable Metadata Database*** parameter is configured correctly, and the ***Metadata Database Path*** is a valid path that is not empty.

DIVA Core Backup Service will not start

The DIVA Core Backup Service is designed to terminate execution immediately after attempting to start if it is configured incorrectly. This behavior can be caused by any of the following reasons:

- The configuration file is missing.
- The database connection information is incorrect, or the database is not running.
- The BACKUP_SERVICE_MANAGE_METADATA_BACKUPS parameter is set to Y (*Yes, or enabled*) in the Configuration file, but not enabled under the *Manager Settings* panel in the Configuration Utility.

- The BACKUP_SERVICE_MANAGE_METADATA_BACKUPS parameter is set to Y (*Yes, or enabled*) in the Configuration file, but the ***Metadata Database Location*** is not set, or set to an invalid directory under the *Manager Settings* panel in the Configuration Utility.
- The BACKUP_SERVICE_MANAGE_METADATA_BACKUPS parameter is set to Y (*Yes, or enabled*) in the Configuration file, and the ***Metadata Database Backup*** is enabled under the *Manager Settings* panel in the Configuration Utility, but the ***Metadata Database Location*** is not set, or set to an invalid directory.
- BACKUP_SERVICE_MANAGE_DATABASE_BACKUPS and BACKUP_SERVICE_MANAGE_METADATA_BACKUPS parameters are set to N (*No, or disabled*) in the Configuration file.
- RMANRecoverWindow.bat is not in the bin folder for the Backup Service.

4

Cluster Manager Installation

This chapter provides general guidelines for the installation of MSCS (*Microsoft Cluster Server*) software and Oracle Fail Safe software combined with DIVA Core software, to achieve high availability for DIVA Core components by building a two node cluster.

This guide describes only MSCS and Oracle Fail Safe installation steps required for DIVA Core cluster installation.

The Active Directory installation and management is not documented, although it is mandatory for the two DIVA Core Cluster Node servers to be part of a Windows domain.

Note: DIVA Core supports the Oracle Linux 7 x86_64 and later environment. However, the Cluster Manager support is only applicable to Windows-based systems.

Overview

This section describes an overview of the MSCS (*Microsoft Cluster Server*), Oracle Fail Safe, DIVA Core integration, and tested releases.

Related Documentation

For more information, see the DIVA Core documentation set for this release located at https://portal.goecodigital.com, and the following recommended Microsoft and Oracle documentation set:

- Oracle Fail Safe Installation Guide

  https://docs.oracle.com/cd/E59133_01/doc.411/e57046/title.htm

- Enable Support for Clustered Windows Servers using clustered RAID controllers

  https://support.microsoft.com/en-us/kb/2839292

- What's New in Failover Clustering in Windows Server 2012

  http://technet.microsoft.com/en-us/library/hh831414.aspx

- What's New in Failover Clustering in Windows Server 2012 R2

  http://technet.microsoft.com/en-us/library/dn265972.aspx

- Configure and Manage the Quorum in a Windows Server 2012 Failover Cluster

  http://technet.microsoft.com/en-us/library/jj612870.aspx

- NIC Teaming Overview

  http://technet.microsoft.com/en-us/library/hh831648.aspx

- Deploy a Guest Cluster using a Shared Virtual Disk

  http://technet.microsoft.com/en-us/library/dn265980.aspx
- Failover Clusters Cmdlets in Windows PowerShell

  http://technet.microsoft.com/en-us/library/hh847239.aspx
- Microsoft Best Practice for Configuring and Operating Server Clusters

  http://technet.microsoft.com/en-us/library/cc785714%28v=ws.10%29.aspx
- Microsoft Best Practice for Cluster-Aware Updating

  http://technet.microsoft.com/library/jj134234#BKMK_FW
- Microsoft Windows Firewall with Advanced Security

  http://technet.microsoft.com/en-us/library/hh831365.aspx
- Microsoft Cluster-Aware Updating

  http://technet.microsoft.com/en-us/library/hh831694.aspx
- Microsoft Cluster-Aware Updating Best Practice

  http://technet.microsoft.com/library/jj134234#BKMK_FW

Prerequisites

The prerequisites for installation must be met before the arrival of the Telestream Installation and Delivery Team at your location.

You are responsible for installing the Microsoft Cluster in your environment and providing a dedicated domain user with specific permissions. *See* Domain Account Requirements *for the required user permissions*.

During installation, you must make four shared partitions available so Telestream personnel can configure DIVA Core in your environment. The drive letters D:, E:, F:, and H: must be used for the shared partitions.

When the Telestream team arrives they will install and configure the Oracle Fail Safe and DIVA Core software for you.

Oracle Fail Safe Integration with Windows

Oracle Fail Safe enables configuring and managing the Oracle Database and other Oracle and third-party applications for high availability on Windows clusters. An instance runs on only one node at a time.

A cluster is a group of independent computing systems that operate as a single virtual system. This type of configuration eliminates individual host systems as single points of failure. Oracle Fail Safe works with Microsoft Cluster Server to ensure that if a failure occurs on one cluster system, workloads running on that system fail over to a surviving system. Oracle Database combined with Oracle Fail Safe on a Windows cluster protects the system from both hardware and software failures.

When properly configured, Oracle Fail Safe ensures a surviving system becomes operational in less than one minute, even for heavily-used databases.

Real Application Clusters Integration with Windows

Real Application Clusters integrate with Microsoft Cluster Server clusters deployed on all Windows operating systems supporting clustering. This enhances high availability by offering:

- Optional automatic restarts of a failed instance or listener in a cluster.
- Detection and resolution of instance cluster hangs.
- Elimination of connect time failover TCP/IP timeout delays for new connection requests.
- Use of user written scripts after database state changes (*from online to offline or vice versa*).

DIVA Core Cluster Solution

DIVA Core Cluster uses Oracle Fail Safe. An external disk hosts the Oracle data file and backups. The disk serves the nodes through a SAS (*Serial Attached SCSI*) connection. Two Windows 2012 R2 Standard nodes connect to the disk and host Oracle Fail Safe and DIVA Core software.

All software components on each node must have the same release. Release discrepancies may cause cluster failure. For example, if Node-1 has DIVA Core 8.0 installed, Node-2 must also have DIVA Core 8.0 installed, not a different release.

The following software releases are currently supported:

DIVA Core
Release 7.2 or later

Oracle Fail Safe
Release 4.1 or later

Microsoft Cluster Server
Release 2012 R2 Standard

Installation Requirements

In this section, you will identify and confirm that your systems have the proper installation requirements, and set permissions for the domain user and cluster.

Hardware Requirements

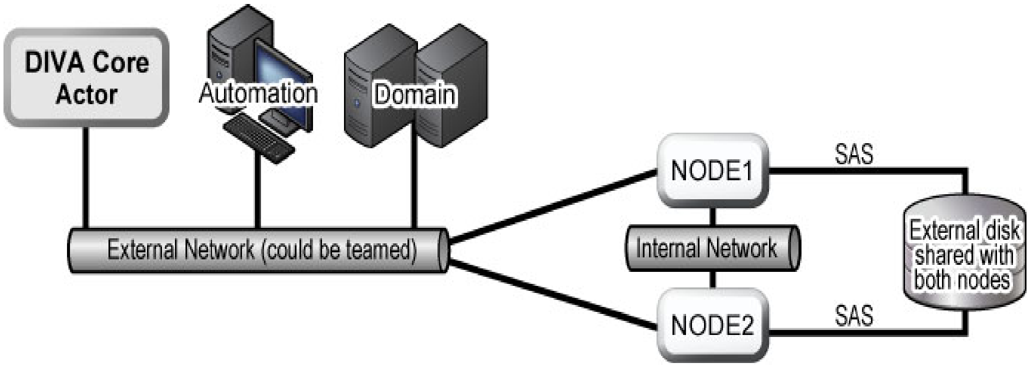
- Server requirements for DIVA Core Clustered Managers (*two identical servers*):
  - Rack-mount chassis
  - One CPU Xeon E5-2420 (*six cores - 1.9GHz*) minimum
    - Embedded Oracle license is restricted to one CPU (*processor card*).
  - 16 GB RAM
  - Two 300GB HDD (*Hard Disk Drive*) 10,000 RPM (*configured in RAID 1*) system disks
    - If you use DIVA Core to archive complex objects (*for example, DPX*), the best course of action is to request specific recommendations based on the estimated traffic (*in terms of size and number of objects to be archived per day*). In general, Telestream recommends using a minimum of two 900GB HDD with 10,000 RPM if complex objects need to be archived.
    - This recommendation is also valid for the backup DIVA Core Manager or an DIVA Core Actor if an Actor server is used for the backup Manager.
    - For more information and assistance on setting up your RAID refer to Microsoft's *Enable Support for Clustered Windows Servers using Clustered RAID Controllers*: https://support.microsoft.com/en-us/kb/2839292.

- Redundant power supply and fans
- Two on-board Gigabit Ethernet interfaces (*copper RJ45 interfaces*)
- One SAS or Fiber Channel HBA (*Host Bus Adapter*) for the shared disk bay connection.
  - A shared disk bay with dual RAID controller (*SAS or Fiber Channel interface*) and seven 300 GB SAS disks connected to both servers for the Oracle database.
- One Fiber Channel HBA for the tape library control. The Fiber Channel HBA is not required in the following cases:
  - With SONY Petasite libraries (*controlled through the PCS software and a network API*).
  - With StorageTek libraries if the ACSLS software with network ACSAPI interface is used in the configuration.

Important: If ACSLS virtual libraries are used, an HBA will be required (*consult with Telestream for more information*).

  - If the library control is based on SCSI LVD interface but some legacy libraries still use SCSI HVD interfaces which are no longer supported, contact Telestream in case the library control is based on a SCSI physical interface rather than Fiber Channel.
- Windows 2008 R2 SP1, Enterprise Edition 64-bit server or Windows 2012 R2 Standard.

- Shared disk array requirements are:
  - One direct-attached shared disk array with dual controllers, dual power and dual fans.
  - Six 146 GB disk drives (*6 Gb/sec 10,000*) RAID 5 virtual disks
  - Two spare physical disks
- Two HBAs for direct attachment of servers to the shared storage


DIVA Core Actor
Automation
Domain
External Network (could be teamed)
NODE1
Internal Network
NODE2
SAS
SAS
External disk shared with both nodes

Software Requirements

The following software is required for successful MSCS installation, configuration, and operation:

- Windows 2008 R2 SP1, Enterprise Edition 64-bit server or Windows 2012 R2 Standard
- DIVA Core Database installation package
- Oracle Fail Safe 4.1 installation package

- Shared disk array drivers and management software
- All servers must be fully patched with important updates, recommended updates, and Microsoft updates - **they must all be the same patch level**.
  - All Microsoft patches as of January 7, 2015 have been tested and verified.

Network Requirements

The following connectivity and parameters are required for successful MSCS installation, configuration, and operation:

- For cluster management, one IP address and host name (*DIVA-CL-MSCS*) from the public network with corresponding DNS (Domain Name Service) and Active Directory entries on the DNS and domain controllers.
- For the Oracle Cluster Group, one IP address and host name (*DIVA-CL-ORC*) from the public network with corresponding DNS and Active directory entries on the DNS and domain controllers.
- For the cluster node's public network, two IP addresses - one per node (*internal access only*).
- For the cluster node's private network, two IP addresses - one per node.
  - The private network is reserved for cluster communications and is commonly referred to as the *heartbeat* network.
- When configuring the network interfaces:
  - Do not specify a default gateway or DNS servers.
  - On the **DNS Settings** tab, unselect the **Register this connection's address in the DNS** check box.
  - On the **WINS Settings** tab, unselect the **Enable LMHosts Lookup** check box.
  - On the **WINS Settings** tab, select the **Disable NetBIOS over TCP/IP** check box.
  - Label the network interfaces as *Public* and *Private* respectively.
- The two server nodes must be members of a Windows domain.
- If NIC Teaming is in use, it must be configured before you create the cluster.

Example IP Addresses and Host Names

The following are examples of valid IP addresses and associated host name combinations:

172.20.128.129	DIVA-CL-MSCS
172.20.128.130	DIVA-CL-ORC
172.20.128.125	RD-MC1 (*Public*)
10.10.10.125	RD-MC1 (*Private*)
172.20.128.127	RD-MC2 (*Public*)
10.10.10.127	RD-MC2 (*Private*)

Domain Account Requirements

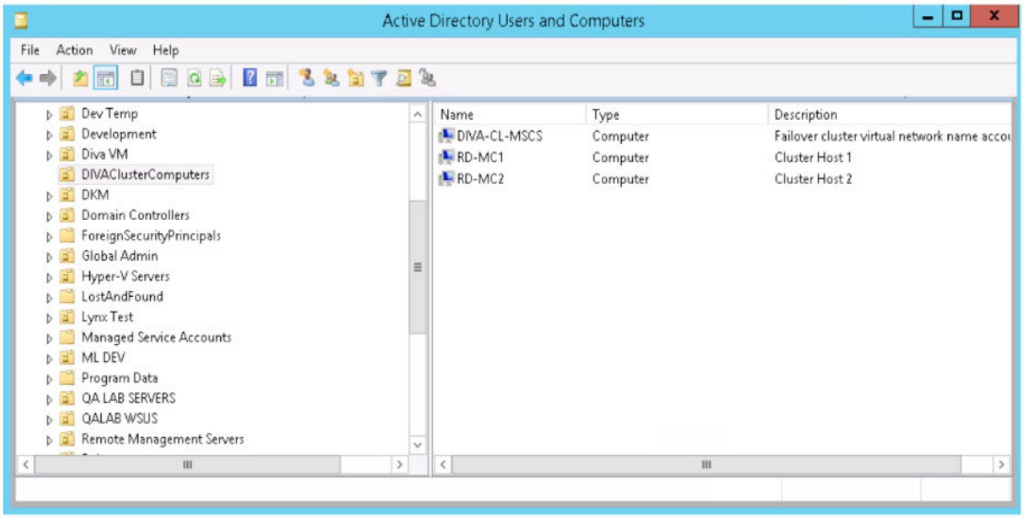
You must have a dedicated domain account to install and manage the DIVA Core Cluster Manager. You must set the following local permissions on each domain account cluster node:

- Local Administrator

- Logon as batch job
  - Should be included with Local Administrator permissions.
- Logon as service mode
  - Should be included with Local Administrator permissions.

For example purposes, this book uses a domain account named *DIVAClusterAdmin* that is a member of the *Domain Users* group.

For organizational purposes, Telestream recommends using a *DIVAClusterComputers* Active Directory OU (Organizational Unit). You use the *Active Directory Users and Computers* screen for managing the OU. *Active Directory Users and Computers* is an MMC snap-in that is a standard part of Microsoft Windows Server operating systems.



- Dev Temp
- Development
- Diva VM
- DIVAClusterComputers
- DKM
- Domain Controllers
- ForeignSecurityPrincipals
- Global Admin
- Hyper-V Servers
- LostAndFound
- Lynx Test
- Managed Service Accounts
- ML DEV
- Program Data
- QA LAB SERVERS
- QALAB WSUS
- Remote Management Servers

Name	Type	Description
DIVA-CL-MSCS	Computer	Failover cluster virtual network name accou
RD-MC1	Computer	Cluster Host 1
RD-MC2	Computer	Cluster Host 2

Granting Domain User Permissions to Create the Cluster

To successfully create a Cluster, you must ensure the Domain User has permission to **Create Computer Objects** in the Cluster Container and **All Descendant Objects**. Alternately, the domain administrator can pre-create a computer object for each node and Cluster Name Objects.

If the domain administrator created an existing computer object, ensure that it is in a disabled state. You must also ensure that the user creating the Cluster has Full Control permission to that computer object using the Active Directory Users and Computers tool before creating the cluster. After you create the Cluster, repeat the steps below to give the Cluster Name Object the same Full Control permissions as the domain user.

To find out more about Cluster Permissions visit:

- https://technet.microsoft.com/en-us/library/cc731002(v=ws.10).aspx
- https://technet.microsoft.com/en-us/library/dn466519.aspx#BKMK_CreateVCOs

Use the following procedure to add Full Control permissions to the OU for the domain user:

1. Open the Active Directory Users and Computers snap-in from the Windows Server Management console.
2. Right-click the **DIVAClusterComputers** computer object and click **Properties** on the context menu to display the Properties dialog box.
3. Click the **Security** tab, and then select the Domain User (*DIVAClusterAdmin in the examples*) in the Group or user names area at the top of the screen.

4. Click the **Advanced** button on the bottom right side of the screen to open the Advanced Security Settings screen.
5. On the **Permissions** tab, locate the domain user and click the listing one time to highlight the domain user.
6. Click **Edit** just under the Permission entries area to open the Permission Entry screen.
7. On the top of the screen, verify that the **Type** option is set to **Allow**, and the **Applies to** option is set to ***This object and all descendent objects***.
8. Select all of the check boxes in the Permissions area.
9. Click **OK** on the bottom of the screen to apply the permissions.

Microsoft Cluster Configuration

This section describes the steps to configure the Microsoft Cluster for use with DIVA Core.

Configuring the External Disk

The following subsections are generic in nature. Due to differences in manufacturer disk and array management software, your installation process and configuration may differ slightly from the instructions presented here - however, the overall concept and configuration will be the same.

First you will install the disk management software.

Installing the Disk Management Software

Perform the following steps on *each cluster node server*:

1. Log on as a local administrator.
2. Insert the manufacturer's installation DVD. If the installer does not start automatically, locate and double-click the setup.exe file (*or whichever file is used*) to launch the installer.
3. Proceed through the storage software installation wizard; accept the license agreement and click **Next**.
4. If prompted for features you want to install, select the *full feature set* and click **Next**. This is typically the recommended choice by manufacturers. Be sure to install the following if offered:
   - Management Consoles
   - Host Software
   - Volume Shadow-Copy Services
   - Virtual Disk Services
   - Event Monitoring Service (*starts automatically on one host only*)
5. Select the installation location and click **Next**. Telestream recommends leaving the default installation path unless there is a compelling reason to change it.
6. When the installation process is complete, exit the installation program and restart the computer.
7. Log into the computer as a local administrator.
8. Open the Windows Management Console. and select the **Device Manager** menu item on the left side of the screen.

9. Confirm that the **MPIO (Multipath I/O)** driver was installed. This is required during the cluster building operation and should have been installed with the cluster feature.
10. Expand the **Disk Management** section of the Device Manager and confirm that multipath disk devices are present for each of your drives.

Next you will configure the storage you just added to the system.

Configuring Storage

Perform the following procedure on a *single cluster node server only*:

1. Log on to one of the node servers as a local administrator.
2. Launch the Disk Storage Manager that was installed with your storage software.
3. If the storage manager software has an option to automatically detect arrays, Telestream recommends using this method. Select the automatic detection method option (*if available*) and click **OK**.
    - If automatic detection is not available, or if the array is not detected, add the array manually.
    - You will need the **IP address**, **DNS Name**, or **Network Name** if the array is outside the local subnetwork.
4. Once the array is discovered (*or manually added*), right-click the array name and click **Manage Storage Array**.
5. Locate the Host Mappings configuration area in your storage manager software and click **Define Host**. This is where you will add Cluster Hosts and Host Groups.
6. Now you need to define the Cluster Hosts. Most storage manager software will use a wizard style interface to perform this task.
    1. Enter the **Host Name** (*in this case rd-mc1*).
    2. Tell the wizard if you plan to use storage partitions on the array (*you should answer* ***no*** *to this question*).
    3. Click **Next**.
    4. Assign the **Host Port Identifier** by selecting (*or creating*) an identifier, giving it an alias (*or user label*), and then adding it to the list to be associated with the host (*in this case rd-mc1*).

        If you need to identify the **HBA Port Address**, open a Windows PowerShell as an administrator and execute the command: `Get-InitiatorPort`.
    5. Click **Add** to complete the association and then click **Next**.
7. Now you identify the host's operating system (*in this case* ***Windows***).
8. Click **Next**.
9. This completes the configuration - click **Finish**.

    Some manager software will allow you to save the host definition as a script. Saving the definition as a script enables using the script as a template for adding additional hosts (*if or when necessary*).
10. If you are asked to add another host, click **Yes** and repeat the steps above to add the second **Host Cluster** (*in this case rd-mc2*).

When all Host Clusters are identified and configured, use the following procedure to add the Host Group:

1. Locate the ***Host Mappings*** configuration area in your storage manager software and click **Define Host Group**. This is where you just defined the Cluster Hosts and now you will define the Host Groups.
2. Enter the new **Host Group Name** (*DIVA*).
3. Add the **Cluster Hosts** to the new group.
4. Click **OK**.

Next you will add a Disk Group using the following procedure:

1. Locate the Storage Configuration area in your storage manager software.
2. Select the ***Total Unconfigured Capacity*** object from the **Computer Objects** list.
3. Select **Disk Group** and then click **Create**.
4. A message will indicate the total unconfigured capacity - click **Next**.
5. Enter the **Disk Group Name** (*DIVA-CL-DISK-GRP*).
6. You must add the physical disks to the Disk Group. Select the automatic detection method option (*if available*) and click **OK**.
   - Telestream recommends using the storage manager software's *Automatically detect physical disks* option if available.
   - If automatic detection is not available, or if the disks are not detected, you must add the disks manually.
   - Automatic detection typically adds all available disk space to the group. If you do not need all of the storage space available for the Oracle Database, you can use the manual method to assign only the amount of space necessary.
7. Click **Next**.
8. Select ***RAID 5*** when presented with the RAID Level and Capacity screen.
9. Select the number of physical disks to be part of the Disk Group.
   - Leave some unused space to be used as spare disks.
   - Typically four disks are selected for the group - this leaves two disks as spares.
10. Click **Finish**.

Next you will create virtual disks. In most disk management software once you complete Step 10, you will be asked to create a virtual disk.

1. If presented with the option to create a virtual disk, click **Yes.** If the option is not given to you, locate where to create a virtual disk in your particular management software and follow the steps below.
2. Assign 30 GB of the free capacity, name the virtual disk U02, and choose ***Host Group DIVA*** (*under **Map to Host***), and then click **Next**.

   Five partitions are required for the Oracle Database, Logs, MetaDB (*if used*), Backup, and Cluster Quorum as follows:

   U02, 30 GB, E:\
   For the Oracle Database - 8KB allocation size recommended.

   U03, 5 GB (*exactly*), F:\
   For the Oracle Archive Logs - 4KB allocation size recommended.

MetaDB, Calculated based on complex object size, G:\
For the Metadata Database for Complex Objects. The size is based on the size of complex objects - this is typically larger than several terabytes and 150 GB minimum.

U04, 100 GB, H:\
For the Oracle Database backup location - 64KB allocation size recommended.

Quorum, 100 MB, Q:\
For the Cluster Quorum Witness

3. If you are prompted with an option to create another virtual disk, click **Yes**. If not prompted, then repeat Step 1 and Step 2 until all required partitions are created (*U02, U03, MetaDB, U04, and Quorum*).
4. In your management software, confirm that all partitions have been added to the Host Group and the database.

You will now configure Windows to use the Virtual disks you just created.

Configuring Windows for Virtual Disk Use

Now that you have created the virtual disks you must configure Windows to use them through the Windows Disk Management Console. You can also check for the virtual volumes you created using the Windows Computer Management utility. Use the following procedure to configure the disks for use in Windows:

1. Log into the host computer where you created the virtual disks as a local administrator (*if not still logged in*).
2. Click **Start** and enter diskmgmt.msc in the search area and press **Enter** to start the Disk Management Console.
3. Confirm that all five disks are present in the console. The physical disks will currently show being *Unknown* and *Offline*, but they should all be listed.
4. While leaving the Disk Management Console open, open the Windows Computer Management utility and check that the virtual volumes you created are listed.

   If they are not listed return to the previous section and review your creation of the virtual disks for errors and make any necessary corrections. *Contact Telestream Support if you require additional assistance*.
5. Once you confirm the presence of the virtual disks, close the Windows Computer Management utility and return to the Disk Management Console.
6. For each Cluster Disk listed in the Disk Management Console that displays an *Unknown* and *Offline* status, right-click in the disk name area (*on the left side of the screen*) and select **Online** from the resulting menu.

   This will bring the disk to an *Online* state. The disk will still show as *Unknown*, but it will now display *Not Initialized* instead of *Offline*.
7. Right-click one of the (*now*) *Online* disk names (*on the left side of the screen*) and click **Initialize Disk** from the resulting context menu.
8. Select each of the disks you just created from the list in the dialog box that is displayed.
9. Click the **MBR (Master Boot Record)** option for disks up to 2 TB. Click the **GPT** option if the disk is larger than 2 TB.
10. Click **OK** to initialize the selected disks.

Now that all disks are initialized, you must create volumes from the unallocated space.

1. Select the new U02 disk and right-click the striped area showing the partition size and *Unallocated*.
2. Select **New Simple Volume** from the resulting menu.
3. When the *New Simple Volume Wizard* opens, click **Next**.
4. On the second page of the wizard leave the default size and click **Next**.
5. On the third page assign an unused drive letter to the volume and click **Next**.
6. On the fourth page select the ***Format this volume with the following settings*** option.
    - Select ***NTFS*** for the **File system**.
    - Use the (*pre-filled*) **Recommended allocation unit size** for MetaDB, U04, and Quorum partitions. For U02 and U03, you will need to change the allocation unit size to 64 K otherwise database performance may be impacted.
    - Enter the **Volume label** (*for the first disk U02, the second disk U03, and so on*).
    - Select the **Perform a quick format** check box.
7. Click **Next** to format the partition with the selected settings.
8. Click **Finish** when the final page appears.
9. Repeat all of these steps for each partition using the appropriate volume label for each partition.

The disk partitions should now be mapped as follows:

Partition and Volume Label: U02, Drive Letter: E:\, Minimum Size: 30 GB
For the database file.

Partition and Volume Label: U03, Drive Letter: F:\, Exact Size: 5 GB
For the archive log.

Partition and Volume Label: MetaDB, Drive Letter: G:\
For complex objects - the size is calculated based on the size of complex objects - this is typically several terabytes, and 150 GB minimum.

Partition and Volume Label: U04, Drive Letter: H:\, Minimum Size: 100 GB
For the database backups

Partition and Volume Label: Quorum, Drive Letter: Q:\, Minimum Size: 100 MB
For the Quorum Witness

Next you will configure the second node:

1. Log on to the second node as a local administrator.
2. Click **Start** and enter diskmgmt.msc in the search area, and then press **Enter** to start the Disk Management Console.
3. Check that the virtual disks are present as you did for the first node.
4. Check the drive letters of the disks and change them to match the first node's drive letters if necessary.
5. Open Windows Explorer and confirm that the drives have been created. Update the drive letters according to the previous partition mappings if necessary (*on both nodes*).

Next you will configure the operating system.

Configuring the Operating System

Now that all disks have been created and configured, you need to configure the operating system on both Cluster Node Servers. First, you will join both server nodes to a single, common domain.

Joining the Two Server Nodes to a Common Domain

The steps below must be completed on *both Cluster Node Servers*. Use the following procedure to join the two nodes on to a common domain:

1. Log on to the first node as a local administrator.
2. Click **Start**, enter sysdm.cpl in the search area, and press **Enter**. This opens the System Properties dialog box.
3. On the System Properties screen, click the **Computer Name** tab and click **Change**.
4. On the Computer Name/Domain Changes screen, check the **Computer Name** and correct if necessary.

   Tip: Telestream recommends using a permanent computer name that is less likely to require changing later. The computer names can be changed in the future if absolutely necessary, however it is not recommended and may adversely affect the database and cluster.

   Note: Do not use a server name starting with a dash, number, or any wildcard characters.

5. On the Computer Name/Domain Changes screen, click the **Domain** option and enter a valid domain name in the **Domain** field.
6. Click **OK**.
7. When prompted use a dedicated user for confirmation, click **OK** and restart the computer.
8. Repeat all of these steps for the second node.

Next you will add the DIVAClusterAdmin domain account to the local administrator's group.

Adding the DIVAClusterAdmin Domain Account to the Local Administrator's Group

The steps below must be completed on *both Cluster Node Servers*. Use the following procedure to add the DIVAClusterAdmin to the local administrator group:

1. Log on to the first node server as a local administrator.
2. Click **Start**, enter lusrmgr.msc in the search area, and press **Enter**. This opens the User Management Console.
3. Click **Groups** from the left navigation tree.
4. Select the **Local Administrator** group and open the Properties dialog box.
5. Near the bottom on the left side of the screen click **Add**.
6. Add the **Cluster Domain** (*for example: QALAB*) and the ***DIVAClusterAdmin*** account to the **Local Administrator** group in the form cluster_domain\cluster_domain_account.

For example: QALAB\DIVAClusterAdmin

7. Click **OK**.

8. Repeat all of these steps for the second node.

Now that the Cluster Administrator has been added to both nodes you must configure the MSCS Cluster.

Configuring the Microsoft Cluster Server Cluster

The following procedures for configuring the MSCS cluster must be completed on both node servers.

Installing the Windows 2012 R2 Standard Server Clustering Feature

Use the following procedure to install the clustering feature on each node:

1. Log on to the first node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Open the Server Manager Console and using the menu on the top right side of the screen, navigate to **Manage**, and then **Add Roles and Feature Wizard**.
3. When the Add Roles and Features Wizard opens click **Next**.
4. Select the **Role-based or feature-based installation** option.
5. Click **Next**.
6. Click **Select a server from the server pool** option.
7. In the Server Pool listing area, select the server to use and click **Next** to connect to the local server.
8. Do not select anything on the Server Roles screen - just click **Next**.

   This screen is only for installing Server Roles.
9. On the Features screen select the **Failover Cluster** check box.
10. Click **Next**. A dialog box will open asking to add the required features for failover clustering.
11. In the dialog box, select the **Include management tools (if applicable)** check box if not already selected.
12. Click **Add Features**.
13. You will be returned to the Features screen. Click **Next**.
14. On the Confirmation screen check that the options you selected in the steps above are present.
15. Unselect the **Restart the destination server automatically if required** check box if it is selected.
16. Click **Install**.
17. When the installation is complete, click **Close**.
18. Repeat all of these steps for the second node.

Next you will enable the remote registry service on both node servers.

Enabling the Remote Registry Service

Use the following procedure to enable the remote registry service on each node:

1. Log on to the first node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).

2. Click **Start**, enter services.msc in the search area, and press **Enter**. This opens the Windows Computer Management utility on the **Services** tab.
3. Double-click the **Remote Registry Service** to open the Properties dialog box.
4. Select **Enable** to enable the service.
5. Select **Automatic** to start the service automatically in the future.
6. Click **Start** to start the service now.
7. Click **OK**.
8. Repeat all of these steps for the second node.

Next you will register the host names with the DNS Manager.

Registering the Required Host Names to the DNS Manager

You, or your DNS Administrator, must add the entries for the **Cluster Hostname** and the **DIVA Group Name** to the DNS as follows (*respectively*):

- DIVA-CL-MSCS
- DIVA-CL-ORC

Telestream recommends also adding each Cluster Host Server public IP address. Use the following procedure to register the host names and IP addresses in the DNS Manager:

1. Open the Server Manager.
2. Select **Tools**, then **DNS** from the menu on the top right side of the screen.
3. Right-click the **DNS Zone** and select **New Host** from the resulting menu.
4. Add the host name (*DIVA-CL-MSCS*) and IP address in the appropriate fields.
5. Select the **Create associated pointer (PTR) record** check box (*if it is not already*).
6. Click **Add Host**.
7. Right-click the **DNS Zone** again and select **New Host** from the resulting menu.
8. Add the **DIVA Oracle Group Name** (*DIVA-CL-ORC*) and IP address in the appropriate fields.
9. Select the **Create associated pointer (PTR) record** check box (*if not already*).
10. Click **Add Host**.

The following steps must be completed on each node server.

1. Log on to the first node server as a local administrator.
2. Open the Windows Network and Sharing Center.
3. Click **Change Adapter Settings** in the left menu.
4. Locate the network adapter card for the *Private* network connection and right-click the icon.

   The private network is the cluster's heartbeat network only and should not be registered in the DNS.
5. Select **Properties** from the resulting menu.
6. Double-click **Internet Protocol Version 4 (TCP/IPv4)** in the protocols area.
7. In the displayed dialog box, click **Advanced** on the bottom right side of the screen.
8. Select the **DNS** tab on the Advanced TCP/IP dialog.

9. Unselect the **Register this connection's addresses in DNS** check box.

   The DIVA Core Prerequisites Package disables the DNS Client Service by default. To conform to Microsoft best practices, you must start the service and set it to automatically start in the future (*after the DIVA Core Prerequisite Package is installed*).

10. Click **Start**, enter services.msc in the search area, and press **Enter**. This opens the Windows Computer Management utility on the **Services** tab.
11. Double-click the **DNS Client** service to open the Properties dialog box.
12. Select **Enable** to enable the service.
13. Select **Automatic** to start the service automatically in the future.
14. Click **Start** to start the service now.
15. Click **OK**.
16. Repeat all of these steps for the second node.

Next you will create the Windows Server 2012 R2 Cluster.

Creating the Windows 2012 R2 Server Cluster

The following procedure should be completed on *one cluster node only*.

1. Log on to the first node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Select **Start**, **Administrative Tools**, and then **Failover Cluster Management Console**.
3. In the Management area (*in the middle of the screen*), click **Create a Cluster**. This will start the Create a Cluster Wizard.
4. When the wizard opens, click **Next**.
5. Enter the FQDN (*Fully Qualified Domain Name*) of the first Cluster Node Server in the **Enter server name** field and click **Add**.
6. Enter the FQDN of the second Cluster Node Server in the **Enter server name** field and click **Add**.
7. Click **Next**.
8. When the Validation Warning dialog box is displayed, leave the default (***Yes***) selected to run the validation tests and click **Next**.
9. When the first screen of the Validate Configuration Wizard is displayed click **Next**.

   Note: You must be a local administrator on each of the servers that you are validating.

10. On the Testing Options screen, select the **Run all tests (recommended)** option. This is the default selection.
11. Click **Next**.
12. On the Confirmation screen, click **Next**.
13. Monitor the validation tests and wait for them to complete. The Summary screen will be displayed when testing is done.
14. If warnings or exceptions are noted in the summary, click **View Report** to see the details.
15. Resolve any issues and rerun the Validate Configuration Wizard if configuration changes were made.

Note: Disable unused network adapter cards to prevent minor warnings. Some network adapter cards may have IP addresses on the same subnet. If they are not operational, this may not be an issue.

16. Continue rerunning the Validate Configuration Wizard and resolving any errors until the test all complete successfully.
17. When all tests complete successfully, select the **Create the cluster now using the validated nodes** check box, and then click **Finish** to create the Cluster.

    When the Validate Configuration Wizard closes, you will be returned to the Create Cluster Wizard to continue with the configuration.
18. Click **Next** to advance to the Access Point for Administering the Cluster screen.
19. Enter the cluster name (*DIVA-CL-MSCS*) in the **Cluster Name** field.
20. Enter the Cluster IP address in the **Address** field.
21. Click **Next**.
22. On the Confirmation screen, verify that all entered information is correct.
23. Select the **Add all eligible storage to the cluster** check box.
24. Click **Next** to create the cluster.
25. When the cluster creation is complete, verify that all configurations were successful by clicking **View Report**.
26. When you have confirmed that the configuration was successful, click **Finish**.

    Next you must configure the Cluster Quorum Storage.
27. In the Failover Cluster Management Console, expand the navigation tree on the left side of the screen so you can see the cluster.
28. Expand the **Storage** menu item and select **Disks**.
29. In the middle of the screen, you should be able to see drives E:, F:, G: and H:.
30. Select the main cluster item in the navigation tree on the left side of the screen.
31. On the right side of the screen (*under Actions*), click **More Actions**, and then **Configure Cluster Quorum Settings**. This will start the Cluster Quorum Wizard.
32. Select the **Select quorum witness** option.
33. Click **Next**.
34. In the displayed list of Cluster Disks, select the check box for the 100 MB dedicated Quorum Disk. You can identify the Quorum Disk either by the Location (*it will show Available Storage*), or by expanding the entry using the plus sign and confirming that it is a 100 MB disk.
35. Click **Next**.
36. Verify that all selections are correct on the Confirmation screen and click **Next**.
37. When the configuration is complete, click **View Report** and verify that all configurations were successful.
38. When you have confirmed that the configuration was successful, click **Finish**.

Next you will validate the node configurations.

Validating the Nodes Configuration for MSCS Clustering

The following steps are to be completed on *one cluster node only*.

1. Log on to the first node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Click **Start**, **Administrative Tools**, and then **Failover Cluster Management Console**.
3. Select the cluster name in the navigation tree on the left side of the screen.
4. Click **Validate Cluster** on the right side of the screen (*under Actions*).

   You run the Validate Configuration Wizard again to confirm that there are no errors in your configuration.
5. When the first screen of the Validate Configuration Wizard is displayed, click **Next**.
6. On the Testing Options screen, select the **Run all tests (recommended)** option. This is the default selection.
7. Click **Next**.
8. Click **Next** on the Confirmation screen.
9. Monitor the validation tests and wait for them to complete. The Summary screen will be displayed when testing is done.
10. If warnings or exceptions are noted in the summary, click **View Report** to see the details.
11. Resolve any errors and rerun the tests until all test complete successfully.
12. Click **Finish** to exit the wizard when all tests complete successfully.

Now that the cluster has been set up and configured you will test the configuration.

Testing the Configuration

Now that the installation and configuration is complete, you need to test everything to verify proper operation before going to live production. First you will do a manual failover test.

Performing a Manual Cluster Failover Test from the Failover Cluster Manager

Use the following procedure to test manual failover configuration and operation:

1. If the cluster that you want to configure is not displayed in the navigation tree on the left side of the Failover Cluster Manager, right-click Failover Cluster Manager, click **Manage a Cluster**, and then select or specify the desired cluster.
2. Expand the cluster in the navigation tree on the left side of the screen.
3. Expand **Roles** and click the role name to test for failover.
4. On the right side of the screen (*under Actions*) click **Move**, and then **Select Node**.

   The status is displayed under Results in the center of the screen as the service and application move.
5. You can repeat Step 4 to move the service or application to an additional node or back to the original node.

Next you will do a restart failover test on the active node.

Performing a Cluster Failover Test by Restarting the Active Cluster Node

Use the following procedure to perform a restart failover test on the active node:

1. Connect to the DIVA Core Control GUI using the virtual IP address (*DIVA-CL-ORC*) and confirm normal DIVA Core operation.
2. Disconnect the Public Network cable from the Active Cluster Node.
3. Confirm that the services move and start operation on the second Cluster Node.
4. Connect to the DIVA Core Control GUI using the virtual IP address (*DIVA-CL-ORC*) and confirm normal DIVA Core operation.
5. Reconnect the Public Network cable to the Active Cluster Node.

Next you will test moving a configured role to another Cluster Node.

Moving a Configured Role to Another Cluster Node

Use the following procedure to move a configured role to another Cluster Node:

1. Open the Failover Cluster Manager (*if not already open*).
2. Expand the cluster in the navigation tree on the left side of the screen.
3. Select **Roles**.
4. Right-click the role to failover in the Roles area in the center of the screen.
5. Click **Move**, and then **Select Node** from the resulting menu.
6. In the Move Cluster Role dialog box, select the Cluster Node where you want to move the role.
7. Click **OK**.

   The Role will now move to the selected Cluster Node.
8. Verify the Owner Node in the Roles area in the center of the screen - it should now be the selected node.

If all tests have completed successfully, you are ready to place the system into live production.

DIVA Core and Oracle Fail Safe Configuration

This section describes configuring DIVA Core and Oracle Fail Safe in the Microsoft Cluster environment.

Configuring DIVA Core

The procedures in this section will install and configure DIVA Core and the Oracle Database. These steps must be completed on both Cluster Node Servers.

Installing DIVA Core Prerequisites

Install the DIVA Core Prerequisites on both Cluster Node Servers using the following procedure:

1. Log on to the first node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Open the User Account Control Settings from the Windows Control Panel.

3. Set the notifications to **Never notify**. This will reduce the amount of administrator approval request messages during installation.
4. Open a Windows command prompt as an administrator (*use* ***Run as Administrator***).

Caution: In Step 5, confirm that there are no spaces in the directory path. If there are spaces in the directory path, the Cygwin installation will fail after restarting the computer.

5. If not already completed, copy the prerequisite directory, including all subdirectories and files, from the installation DIVA Core DVD to a temporary directory path (*with no spaces*).

   The directory typically used is C:\temp\Prerequisites_x.x.x where x.x.x is the DIVA Core release number.
6. Change to the temporary directory containing the DIVA Core prerequisites installation files.
7. Enter the command StartSetup.bat and press **Enter**.
8. When the name and password of the account to run the tasks are requested, enter the *DIVAClusterAdmin* account name and password and press **Enter**. The account name must be in the format *Domain\User* (*for example, QALAB\ClusterAdmin*).
9. Confirm that the prerequisites installation completes successfully. If any errors were identified, resolve the errors and repeat the previous steps again until the installation is successful.
10. Repeat all steps for the second node.

Next you will install the Oracle Database.

Installing the Oracle Database

There are specific tasks that must be completed on one or both Cluster Node Servers. The tasks need to be completed on either or both servers are identified within the procedure steps. Install the Oracle Database on *both Cluster Node Servers* using the following procedures:

1. Log on to both node servers as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Open a Windows command prompt as an administrator on both node servers (*use* ***Run as Administrator***).
3. Mount the Oracle ISO file on each node server.

Note: DIVA Core 8.0 in a Windows environment only supports DIVA Oracle database package OracleDivaDB_3-0-0_12_1_0_2_0_SE2_OEL7_ Windows_64-bit.zip.

4. Enter InstallEngine.cmd at the command prompt and press **Enter**. This will install the Oracle binary files in C:\app.

The following steps must be completed on *Node 1 (active node) only*:

1. Enter InstallDatabase-huge.cmd at the command prompt and press **Enter**.

Note: Oracle Fail Safe will be used to configure Oracle services on Node 2 later in the procedures.

2. Navigate to C:\app\oracle\product\11.2.0\dbhome_1\NETWORK\ADMIN\ and edit the listener.ora file.
3. Replace HOST with the Oracle Cluster Group IP address. This IP address is required during Oracle Fail Safe installation. In our examples 172.20.128.130 (*DIVA-CL_ORC*) are used.

The following steps must be completed on *Node 2 (standby or rebuilding node) only*:

1. Copy the C:\app\oracle\product\11.2.0\dbhome_1\database\initLIB5.ora file from Node 1 to Node 2.
2. Navigate to C:\app\oracle\product\11.2.0\dbhome_1\NETWORK\ADMIN\ and edit the listener.ora file.
3. Replace HOST with the Oracle Cluster Group IP address. This IP address is required during Oracle Fail Safe installation. In our examples 172.20.128.130 (*DIVA-CL_ORC*) are used.
4. Open the Computer Properties window.
5. Select **Advanced system settings** in the menu on the left side of the screen.
6. Select the **Advanced** tab.
7. Click **Environment Variables** on the bottom right side of the screen.
8. Click **New** under the System Variables area.
9. Repeat steps 4 through 8 (*inclusive*) to set each of the following environment variables:

   DIVA_ORACLE_HOME
   C:\app\oracle\product\11.2.0\dbhome_1

   ORACLE _BASE
   C:\app\oracle

   PATH
   %SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\;C:\app\oracle\product\11.2.0\client32\bin;C:\app\oracle\product\11.2.0\dbhome_1\bin;C:\Oracle\Ofs41_1\FailSafe\Server

   You also must include the full path to your disk manufacturer's Disk Management Console software binaries and shared files. For example (*assuming this is the basic path used for the manufacturer's software installation*):

   C:\Program Files\DISK_MFG\bin

   C:\Program Files\DISK_MFG\shared\bin

   Where DISK_MFG is the disk manufacturer's name.

The following procedure must be completed on *both node servers*:

1. Open the Computer Properties window.
2. Select **Advanced system settings** in the menu on the left side of the screen.
3. Select the **Advanced** tab.
4. Click **Environment Variables** on the bottom right side of the screen.
5. Click **New** under the System Variables area.
6. On the New System Variable dialog box, enter ORACLE_SID in the **Variable name** field, and LIB5 (*must be all uppercase*) in the **Variable value** field.

The following procedure must be completed on *Node 2 only*:

1. Open the Computer Properties window.

2. Select **Advanced system settings** in the menu on the left side of the screen.
3. Select the **Advanced** tab.
4. Click **Environment Variables** on the bottom right side of the screen.
5. Click **New** under the System Variables area.
6. On the New System Variable dialog box, enter ORACLE_BASE in the **Variable name** field, and C:\app\oracle in the **Variable value** field.
7. Repeat steps 4 and 5.
8. On the New System Variable dialog box, enter DIVA_ORACLE_HOME in the **Variable name** field.
9. On the New System Variable dialog box, enter C:\app\oracle\product\11.2.0\dbhome_1 in the **Variable value** field.
10. Repeat steps 4 and 5.
11. On the New System Variable dialog box, enter PATH in the **Variable name** field, and in the **Variable value** field enter the same path you entered for Node 1 (*they must match*).

Next you will install DIVA Core.

Installing DIVA Core

DIVA Core must be installed on *both Cluster Node Servers*. Use the following procedure to install DIVA Core:

1. Log on to both node servers as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Install DIVA Core using the installation program. Refer to the *DIVA Core Installation and Configuration Guide* and the *DIVA Core Operations Guide* for additional details if necessary.
3. Start the DIVA Core installation program.
4. When the Choose Components dialog box is displayed, confirm that all check boxes for all components are selected.
5. Click **Next**.
6. Choose the installation location - Telestream recommends the default location (*C:\DIVA*).
7. Click **Install**.
8. When installation is complete, click **Close**.

DIVA Core Guidelines

- The DIVA Core Schema must be created on a shared disk (*E: and F:*) from only one node.
- DIVA Core backup must be configured on a shared disk (*H:*).
- The DIVA Core license must be configured with the 172.20.128.130 (*DIVA-CL-ORC*) cluster IP address and applied to one node only.
- In the manager.conf file, the DIVAMANAGER_DBHOST parameter must be set to the DIVA Cluster Group's IP address (*172.20.128.130 - DIVA-CL-ORC*).
- The DIVA Core Actor service must use the domain user account (*qalab\DIVAClusterAdmin*).
- Your desired Manager Services must be installed now.

- All DIVA Core services must be installed with the same exact name and configuration on both cluster nodes.
- Install Oracle Secure Backup services.
- The SPMservice uses the Oracle client.
- The file tnsname.ora located in the C:\app\oracle\product\11.1.0\client32\network\admin directory must be updated to run the SPMservice on both nodes.

  The HOST parameter should be changed to the IP address of the cluster (*DIVA-CL-ORC*). For example, HOST = 172.20.138.130.
- The Node 2 environment variables previously configured are required, otherwise an DIVA Core SPM (*Storage Plan Manager*) installation error will occur.

Next you will install and configure Oracle Fail Safe.

Configuring Oracle Fail Safe

The procedures in this section will install and configure Oracle Fail Safe. When the installation is complete, you will verify that it was installed properly.

Installing Oracle Fail Safe

The steps in this section must be completed on *both Cluster Node Servers*.

Fail Safe requires Microsoft's .NET 3.5 SP1 to be installed on the computer before installing Fail Safe. The Fail Safe installation program will notify you if it cannot find .NET 3.5 SP1 on the computer.

Fail Safe also requires that the Cluster Object (*DIVA-CL-MSCS*) must have full control permissions on the Cluster OU before installation proceeds so the cluster can create a Cluster Group Object.

Oracle Fail Safe 4.1 References:

Oracle Fail Safe 4.1 Installation Guide
https://docs.oracle.com/cd/E27731_01/doc.41/e24700.pdf

Oracle 4.1 Fail Safe Tutorial
https://docs.oracle.com/cd/E27731_01/doc.41/e24702.pdf

Oracle Fail Safe 4.1 Concepts and Administrator Guide
https://docs.oracle.com/cd/E27731_01/doc.41/e24699.pdf

1. Log on to both node servers as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Install Microsoft .NET 3.5 SP1 on the computer if not already installed. You can install .NET from the Server Manager Console.
3. Use the following procedure to grant full control to the Cluster Object:
    1. Open the Active Directory Users and Computers snap-in from the Windows Server Management console.
    2. Right-click the **DIVAClusterComputers** computer object and select **Properties** to display the Properties dialog box.
    3. Select the **Security** tab, and then select the **Cluster Object** (*DIVA-CL-MSCS in the examples*) in the Group or user names area at the top of the screen.

    4. Click the **Advanced** button on the bottom right side of the screen to open the Advanced Security Settings screen.
    5. On the **Permissions** tab, locate the domain user and click the listing one time to highlight the domain user.
    6. Click **Edit** just under the Permission entries area to open the Permission Entry screen.
    7. On the top of the screen, verify that the **Type** option is set to ***Allow***, and the **Applies to** option is set to ***This object and all descendent objects***.
    8. Select all of the check boxes in the Permissions area.
    9. Click **OK** on the bottom of the screen to apply the permissions.

4. Extract the Oracle Fail Safe 4.1.0 installation package into a temporary directory.

   Oracle Fail Safe 4.1.0 has a known display issue with Windows 2012. Use the following example and website listed below to resolve the issue. MMC is still not 100% stable upon closing the program.

   A reference to this issue can be found here:
   http://www.oracle.com/technetwork/database/windows/sw-comp-41-1946549.html

   1. Create a plain text file named mmc.exe.config in the C:\Windows\SysWOW64 folder.
   2. Edit the file with a plain text editor (*for example, Notepad*) and enter the following text:

      ```
      <?xml version="1.0" encoding="utf-8" ?>
       <configuration>
        <appSettings>
          <add key="UseSetWindowPosForTopmostWindows" value="True" />
        </appSettings>
       </configuration>
      ```

   3. Save and close the file.

5. Execute the temp_folder\install\setup.exe file to begin installation.
6. On the first screen, click **Next**.
7. Select the **Typical (178MB)** installation.
8. Click **Next**.
9. Leave the **Path** as the pre-filled default and click **Next**.

   Note: The installation path must be the same on both nodes.

10. Enter the Domain Username (*qalab\DIVAClusterAdmin*) in the **Username** field.
11. Click **Next**.
12. Enter the Domain User's password in the **Enter Password** field, and then enter it again to confirm it in the **Confirm Password** field.
13. Click **Next**.
14. Review the Summary. If everything is correct click **Install**; otherwise click **Back** and resolve any issues.
15. When installation is complete, click **Exit**.
16. Restart the node.

17. Repeat all of these steps for the second node.

Next you will verify the Fail Safe installation.

Verifying the Oracle Fail Safe Installation

The steps in this section must be completed on *one Cluster Node Server only*. Use the following procedure to verify the Fail Safe installation:

1. Log on to the node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).

2. Launch the Oracle Fail Safe Manager.

3. Connect to the new cluster using the cluster alias (*DIVA-CL-MSCS*) as follows:

   1. Select the cluster alias in the navigation tree on the left side of the screen.

   Note: If the cluster is not shown in the navigation tree, you must add it before proceeding - select **Action**, and then **Add Cluster** from the menu.

   2. Select **Connect** from the **Actions** menu on the right side of the screen. This should automatically connect to the cluster.

4. Select the cluster alias in the navigation tree on the left side of the screen.

5. Click **Validate** from the **Actions** menu on the right side of the screen. The cluster validation will begin.

6. You must resolve any warnings or errors before proceeding.

7. When issues are resolved, run the validation again.

8. Repeat Step 4 through Step 7 until the validation completes successfully.

Next you will create a Cluster Group and Role dedicated to DIVA Core.

Creating a DIVA Core Dedicated Cluster Group and Role

The procedures in this section must be completed on *one Cluster Node Server only*. In the previous version of Oracle Fail Safe, this process was completed in the Fail Safe Manager. However, with Fail Safe version 4.1, this configuration is accomplished in the Windows Failover Cluster Manager. Use the following procedure to create the DIVA Core dedicated group and role:

1. Log on to the node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).

2. Click **Start**, **Administrative Tools**, and then **Failover Cluster Management**.

3. Expand the cluster in the navigation tree on the left side of the screen, and then click **Roles**.

4. Click **Configure Role** under Roles on the right side of the screen.

5. On the first screen, click **Next**.

6. On the Select Role screen, select ***Generic Service*** in the list located in the middle of the screen, and then click **Next**.

7. On the Select Service screen, select ***DIVA Core Manager*** in the list in the middle of the screen, and then click **Next**.

8. On the Client Access Point screen, enter the Oracle Cluster Group Name (*DIVA-CL-ORC*) in the **Name** field.

9. Enter the Oracle Cluster IP address in the **Address** field, and then click **Next**.

10. On the Select Storage screen, select the check boxes next to each of the cluster storage disks to select all cluster disks, and then click **Next**.
11. On the Replicate Registry Settings screen, click **Next**.
12. Verify the configuration options you selected on the Confirmation screen, and then click **Next**.
13. When the configuration process is complete, click **Finish**.

Once the Cluster Role and Group have been created, you may need to add other DIVA Core services (*for example, DIVA Core Backup*) and other disks that need to be part of the cluster. Use the following procedure to add additional resources to the cluster. For the purpose of this example the DIVA Core Backup Service will be added.

1. In the Failover Cluster Manager expand the cluster (*DIVA-CL-ORC*), and click **Roles** in the navigation tree on the left side of the screen.
2. The Cluster Name (*DIVA-CL-ORC*) will be visible on the right side of the screen with a menu underneath it.
3. Under the Cluster Name, click **Add Resource** and then **Generic Service**.

Note: If you are adding more storage, you will click **Add Storage** rather than **Add Resource**.

4. Select the ***DIVA Core Backup*** service (*or storage device*) from the list in the displayed dialog box, and then click **Next**.
5. Verify that the selected options are correct on the Confirmation screen, and then click **Next**.
6. Click **Finish** when the configuration is complete.

Next you will configure Oracle Fail Safe.

Configuring Oracle Fail Safe Parameters

The procedure in this section must be completed on *one Cluster Node Server only.* Oracle Fail Safe will automatically configure some parameters and others you must manually configure. Use the following procedure to manually configure the necessary parameters:

1. Open the Oracle Fail Safe Manager. The resources will be displayed including the LIB5 Database.
2. Expand the Cluster Object (*DIVA-CL-MSCS*) in the navigation tree on the left side of the screen.
3. Click the **Oracle Resources** menu item.
4. On the right side of the screen, click **Group Actions**, then **Add Resources** to open the Add Resource To Group wizard.
5. On the Group screen, select the group to add the resource to from the list, and then click **Next**.
6. On the Nodes screen, select the nodes from the list, and then click **Next**.
7. On the Virtual Host screen, select the host from the list, and then click **Next**.
8. On the Parameters screen, you will point to the initLIB5.ora file for automatic configuration of the Oracle System Parameters (*C:\app\oracle\product\11.2.0\dbhome_1\database\initLIB5.ora*).
9. Click **Next**.

10. Follow through the remaining wizard screens using the default parameters until finished.

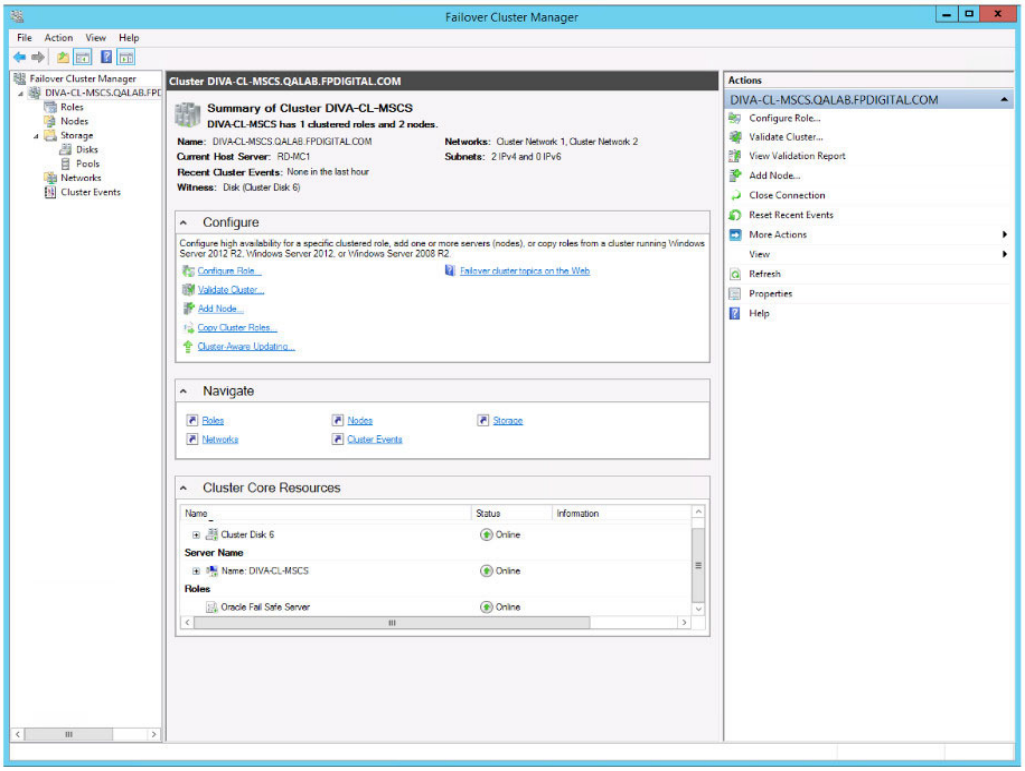
    When finished with the wizard your configuration in the Oracle Fail Safe Manager should show all of the resources you added and configured. All other cluster configuration is completed within the Failover Cluster Manager. The Oracle Fail Safe Manager and the Failover Cluster Manager should both show the same resources.

Perform the following procedure in the Failover Cluster Manager:

1. In the middle of the Failover Cluster Manager, locate the entry for the **DIVA Core Manager** and click it one time to highlight the entry.
2. On the right side of the screen, click **Properties** to open the Properties dialog box for the DIVA Core Manager.
3. Click the **Dependencies** tab.
4. The last entry in the list displays ***Click here to add a dependency***. Select the field, and then click **Insert**.
5. Select ***AND*** from the list.
6. Add the following resources to the dependencies:
   - IP address (*172.20.128.130 in the examples*)
   - DIVA-CL-ORC
   - LIB5
   - Oracle Database TNS Listening Service
   - All Cluster Storage Disks
7. Click **OK**.
8. Repeat Step 14 through Step 20 to add the following dependencies to the *LIB5* service:
   - IP address (*172.20.128.130 in our examples*)
   - All Cluster Storage Disks
9. Repeat Step 14 through Step 20 to add the DIVA-CL-ORC to the dependencies for the *OracleIORaDB11g Listener* service.

Cluster Configuration Examples

This section only includes sample screen shots of successful cluster configuration and no instructional content.



Cluster DIVA-CL-MSCS.QALAB.FPDIGITAL.COM

Summary of Cluster DIVA-CL-MSCS

DIVA-CL-MSCS has 1 clustered roles and 2 nodes.

Name: DIVA-CL-MSCS.QALAB.FPDIGITAL.COM

Current Host Server: RD-MC1

Recent Cluster Events: None in the last hour

Witness: Disk (Cluster Disk 6)

Networks: Cluster Network 1, Cluster Network 2

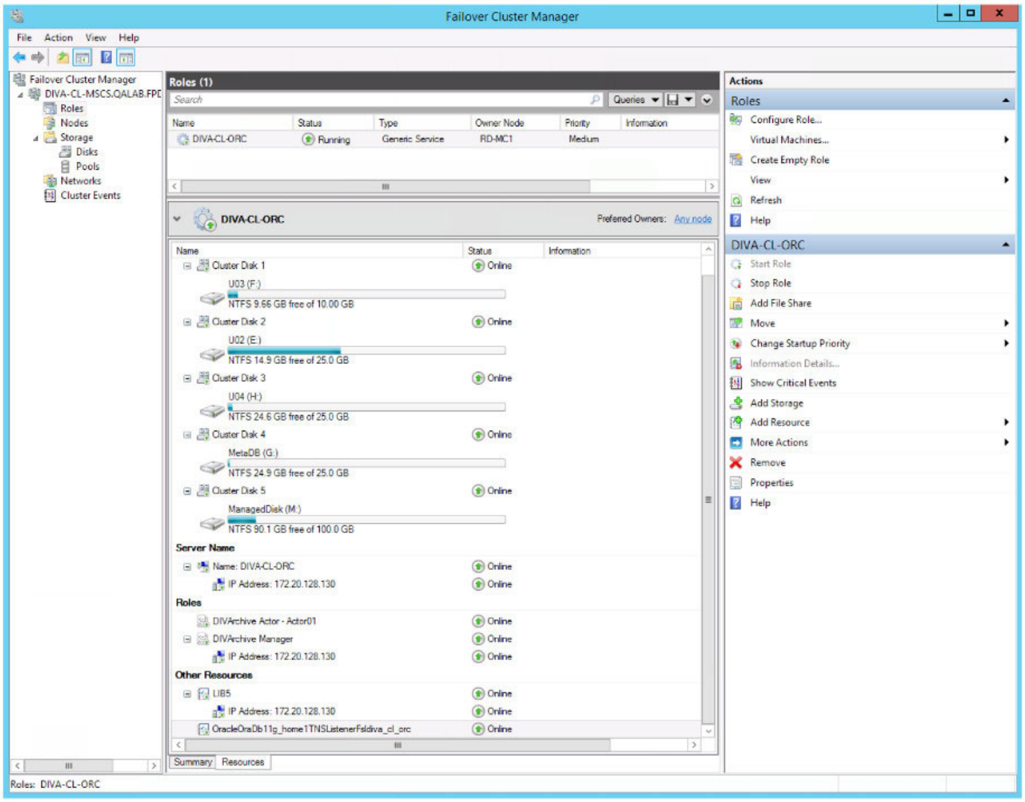
Subnets: 2 IPv4 and 0 IPv6

Configure

Configure high availability for a specific clustered role, add one or more servers (nodes), or copy roles from a cluster running Windows Server 2012 R2, Windows Server 2012, or Windows Server 2008 R2.

Cluster Core Resources

Name	Status	Information
Cluster Disk 6	Online	
Server Name		
Name: DIVA-CL-MSCS	Online	
Roles		
Oracle Fail Safe Server	Online	



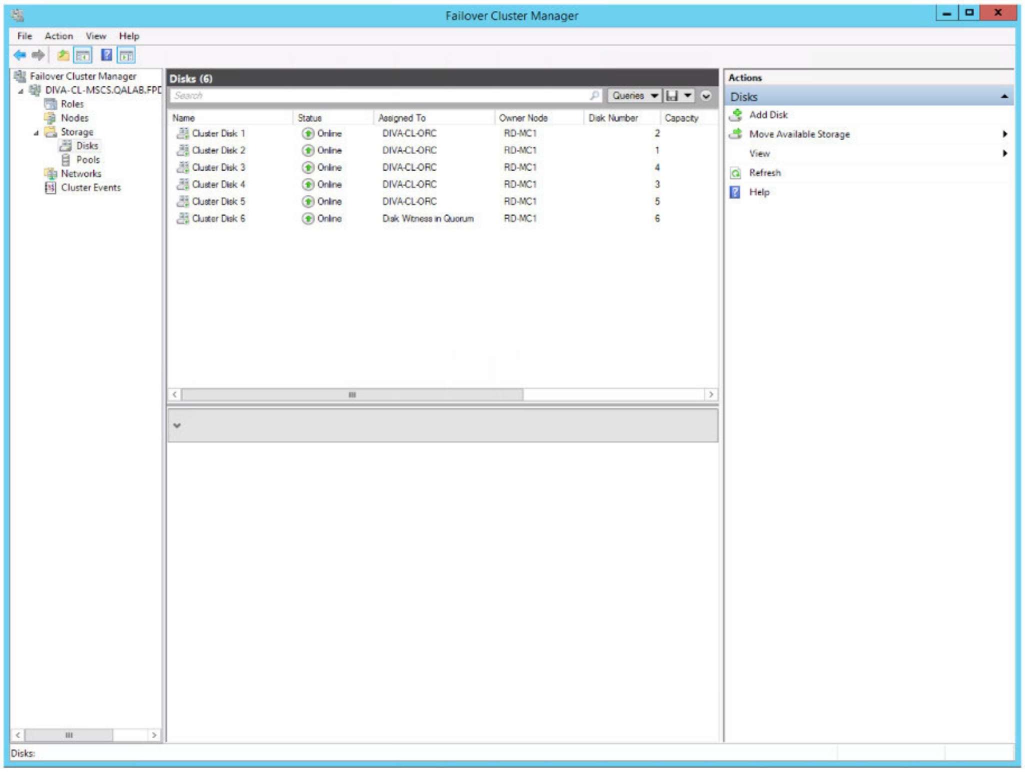
Roles (1)

Name	Status	Type	Owner Node	Priority	Information
DIVA-CL-ORC	Running	Generic Service	RD-MC1	Medium	

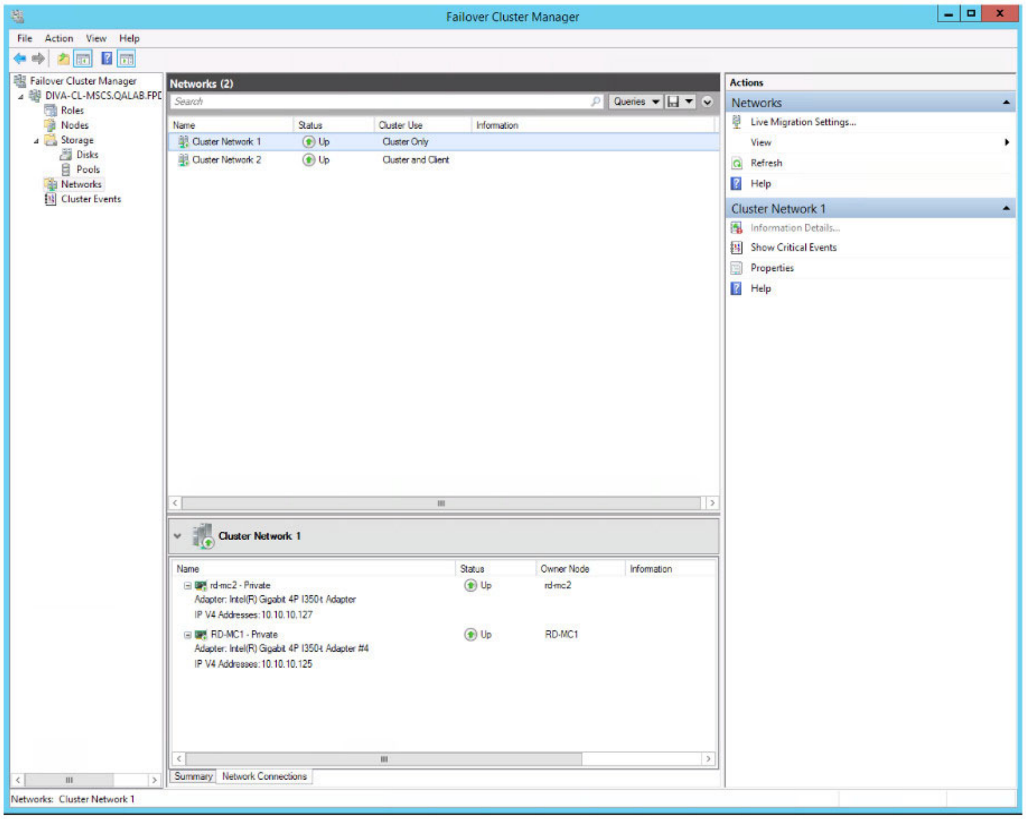
DIVA-CL-ORC Preferred Owners: Any node

Name	Status	Information
Cluster Disk 1	Online	
U03 (F:) NTFS 9.66 GB free of 10.00 GB		
Cluster Disk 2	Online	
U02 (E:) NTFS 14.9 GB free of 25.0 GB		
Cluster Disk 3	Online	
U04 (H:) NTFS 24.6 GB free of 25.0 GB		
Cluster Disk 4	Online	
MetaDB (G:) NTFS 24.9 GB free of 25.0 GB		
Cluster Disk 5	Online	
ManagedDisk (M:) NTFS 90.1 GB free of 100.0 GB		
Server Name		
Name: DIVA-CL-ORC	Online	
IP Address: 172.20.128.130	Online	
Roles		
DIVArchive Actor - Actor01	Online	
DIVArchive Manager	Online	
IP Address: 172.20.128.130	Online	
Other Resources		
LIB5	Online	
IP Address: 172.20.128.130	Online	
OracleOraDb11g_home1TNSListenerFsldiva_cl_orc	Online	

Roles: DIVA-CL-ORC



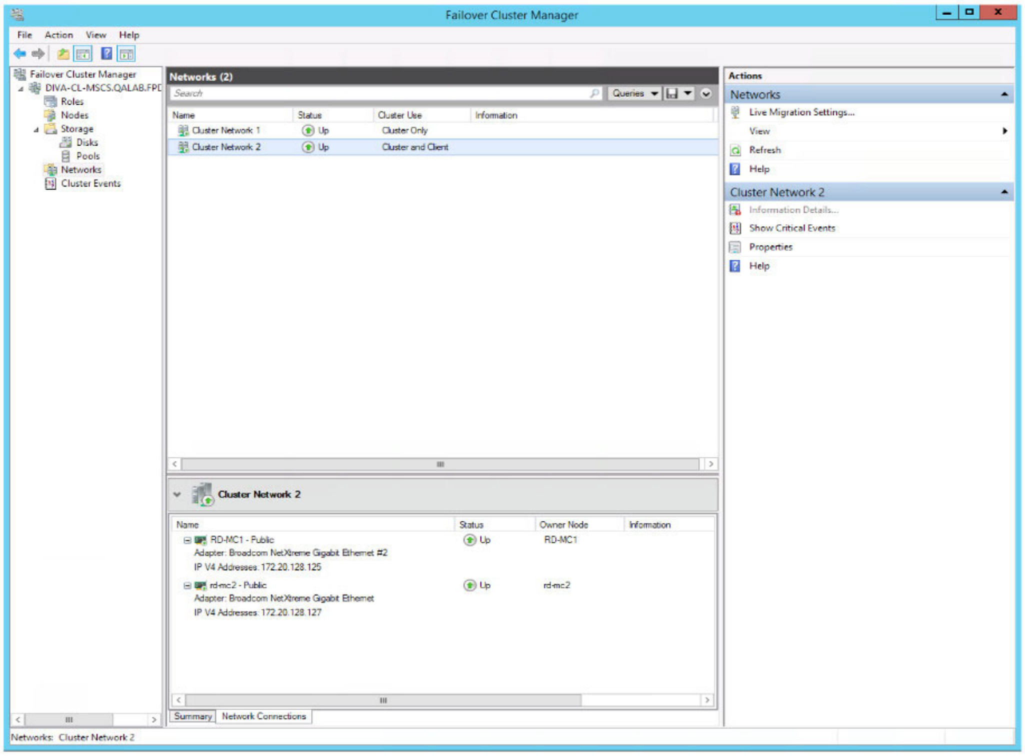
Name	Status	Assigned To	Owner Node	Disk Number	Capacity
Cluster Disk 1	Online	DIVA-CL-ORC	RD-MC1	2	
Cluster Disk 2	Online	DIVA-CL-ORC	RD-MC1	1	
Cluster Disk 3	Online	DIVA-CL-ORC	RD-MC1	4	
Cluster Disk 4	Online	DIVA-CL-ORC	RD-MC1	3	
Cluster Disk 5	Online	DIVA-CL-ORC	RD-MC1	5	
Cluster Disk 6	Online	Disk Witness in Quorum	RD-MC1	6	



Name	Status	Cluster Use	Information
Cluster Network 1	Up	Cluster Only	
Cluster Network 2	Up	Cluster and Client	

Cluster Network 1

Name	Status	Owner Node	Information
rd-mc2 - Private Adapter: Intel(R) Gigabit 4P I350-t Adapter IP V4 Addresses: 10.10.10.127	Up	rd-mc2	
RD-MC1 - Private Adapter: Intel(R) Gigabit 4P I350-t Adapter #4 IP V4 Addresses: 10.10.10.125	Up	RD-MC1	



Networks (2)

Name	Status	Cluster Use	Information
Cluster Network 1	Up	Cluster Only	
Cluster Network 2	Up	Cluster and Client	

Cluster Network 2

Name	Status	Owner Node	Information
RD-MC1 - Public Adapter: Broadcom NetXtreme Gigabit Ethernet #2 IP V4 Addresses: 172.20.128.125	Up	RD-MC1	
rd-mc2 - Public Adapter: Broadcom NetXtreme Gigabit Ethernet IP V4 Addresses: 172.20.128.127	Up	rd-mc2	

Maintenance

This section describes routine maintenance and procedures necessary during normal operations. If you have an issue not covered here, refer to the appropriate Related Documentation at the beginning of the book or contact Telestream Support.

Manually Placing a Service Offline

When a service is experiencing issues, Microsoft Cluster detects that it is offline and restarts the service on the active node. You can take the service offline for maintenance to avoid the service restart using the following procedures:

1. Open the Failover Cluster Manager.
2. Expand the Cluster Object (*DIVA-CL-ORC*) in the navigation tree on the left side of the screen.
3. Select **Roles** in the expanded tree on the left side of the screen.
4. Select the failing service in the Roles area in the middle of the screen.
5. Right-click the selected service, and then click **Take Offline** from the resulting menu.
6. The status of the selected service should now show *Offline* in the Roles area in the middle of the screen.

Adding a Network for Client Access

You can configure additional client access using the Failover Cluster Manager. This is useful when another subnet is configured for automation. Each node must have one static IP address on the same subnet as listed in the Network Requirements. Use the following procedure to configure additional clients:

1. Configure the new interfaces and subnetwork on each node.
2. Click **Start**, **Administrative Tools**, and then **Failover Cluster Management Console**.
3. Expand the Cluster Object (*DIVA-CL-ORC*) in the navigation tree on the left side of the screen.
4. Select **Networks** in the expanded tree on the left side of the screen.
5. Select the new network to use for automation from the **Networks** list in the middle of the screen.
6. Click **Properties** under the listed network on the right side of the screen.
7. Enter a new name for the network used for automation in the **Name** field.

   Using the name Automation for the network makes it easily identifiable.
8. Select the **Allow clients to connect through this network** check box.
9. Click **Apply**, and then click **OK**.
10. Right-click **Roles** in the navigation tree on the left side of the screen.
11. Click **Add Resource** from the resulting menu, and then click **Client Access Point** to open the Client Access Point Wizard.
12. On the Client Access Point screen enter an access point name (*for example, DIVA-CL-AUTO*) in the **Name** field.
13. Select the proper network and associated IP address in the **Networks** list.

    You must add the FQDN to the DNS. Refer to the procedures in Registering the Required Host Names to the DNS Manager and Creating the Windows 2012 R2 Server Cluster if necessary.
14. Click **Next**.
15. Verify the selected configuration on the Confirmation screen, and then click **Next**.
16. When the configuration is complete, verify that all configurations were successful by clicking **View Report**.
17. Click **Finish** after you have confirmed that the configuration was successful.

Rebuilding the Cluster after a Node Hardware Failure

Use this procedure when one node fails. The procedure requires downtime during Fail Safe configuration. To rebuild the cluster, complete the steps in the following sections:

1. Evicting a Failed Node
2. Preparing New Hardware
3. Joining a New Node Server to a Cluster
4. Installing DIVA Core
5. Installing and Configuring Oracle Fail Safe

Evicting a Failed Node

Do not perform this procedure as the primary troubleshooting method. Eviction should only be used when:

- Replacing a node with different hardware.
- Reinstalling the operating system.

- Permanently removing a node from a cluster.
- Renaming a node in a cluster.

Use the following procedure to evict a node:

1. Log in to the Active Node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
2. Click **Start**, **Administrative Tools**, and then **Failover Cluster Management Console**.
3. Expand the Cluster Object (*DIVA-CL-ORC*) in the navigation tree on the left side of the screen.
4. Right-click the failed node in the **Nodes** list in the middle of the screen.
5. Click **More Actions f**rom the resulting menu, and then click **Evict**.
6. A confirmation dialog box asks if you are sure you want to evict the node from the cluster - click **Yes** to evict the node (*or **No** to leave the node in the cluster*).

Preparing New Hardware

When the new hardware is ready, install Windows Server 2012 R2 Standard and all patches to match the Active Node.

Note: Both nodes must be at the same patch level.

Refer to the following procedures:

1. Configuring the Operating System
2. Installing the Windows 2012 R2 Standard Server Clustering Feature
3. Enabling the Remote Registry Service

Joining a New Node Server to a Cluster

Use the following procedure to add a new server to the cluster:

1. Follow the procedure in Validating the Nodes Configuration for MSCS Clustering.
2. Before connecting the external disk, ensure there are no local partitions using the D:, E:, F:, or H: drives.

   Use the Windows Server Manager to view the disks and assigned drive letters.
3. Follow the procedure in Replacing an HBA (Host Bus Adapter).
4. Add the node to the cluster as follows:
   1. Log in to the Active Node server as a dedicated cluster domain account user (*DIVAClusterAdmin*).
   2. Click **Start**, **Administrative Tools**, and then **Failover Cluster Management Console**.
   3. Expand the Cluster Object (*DIVA-CL-ORC*) in the navigation tree on the left side of the screen.
   4. Right-click **Nodes** in the expanded tree on the left side of the screen.
   5. Click **Add Node** in the resulting menu to open the Add Node Wizard.
   6. Click **Next** on the first wizard screen.
   7. Proceed through the wizard to add the new node to the cluster.

Installing DIVA Core

Refer to Configuring DIVA Core to complete DIVA Core installation and configuration. Since the DIVA Core Database schema is already in place, do not reinstall the schema on the Active node.

Installing and Configuring Oracle Fail Safe

Use the following procedure to install and configure Oracle Fail Safe:

1. To install Oracle Fail Safe, refer to Installing Oracle Fail Safe
2. Complete the Oracle Fail Safe configuration as follows:
    1. Confirm the Fail Safe service was created during the installation.
    2. Confirm the LIB5 service instance was created during the installation.

    Note: The initLIB5.ora file must be replicated on both nodes.

    3. Confirm the Oracle TNS Listener service was created during installation.
    4. Restart the new node and run the tests described in Testing the Configuration.

Replacing an HBA (*Host Bus Adapter*)

The SAS (Serial Attached SCSI) HBA interfaces external disks dedicated for the database and quorum partitions. Use the following procedure if a SAS HBA fails, or if a node fails and you must rebuild the node using new hardware:

1. Replace the failed SAS HBA in the server following the manufacturer's installation and configuration instructions and recommendations.
2. Launch the Storage Manager software on the Active Node.
3. Locate the Host Mapping area of your Storage Manager.
4. Expand the **DIVA Host Group** and select the host that contains the new HBA.
5. Right-click the host and click **Manage Host Port Identifiers** (*your menu item listing may be different*) from the resulting menu.
6. Select the failed port in the list, and then click **Replace**.
7. On the following screen, click the **Replace by creating a new host port identifier** option under **Choose a method for replacing the host port identifier**.
8. Enter the new host port identifier in the **New host port identifier (16 characters required)** field, and then click **Replace**.
9. When the replacement process completes, you should see the Cluster Volumes from the Active Node.

Configuring Windows Firewall with Advanced Security

Microsoft Best Practices recommend enabling the Windows Firewall, however it is not mandatory for DIVA Core. To use the Windows Firewall, use the DIVACloud_Firewall_Exceptions_2012.ps1 PowerShell script to enable DIVA Core exceptions through the firewall. Use the following procedure to create and run the Firewall Exceptions script in PowerShell:

1. Open Notepad to create a text file.
2. Copy the following script content and paste it into the file you just created.

Note: You may (*or may not*) need to make adjustments to the line breaks, and so on due to formatting.

```
### Oracle DIVACloud Firewall Exception list. This will enable the Windows Firewall for all profiles and exclude
common DIVA ports. ###
### WINDOWS 2012 Only BELOW ###
Set-NetFirewallProfile -Profile Domain,Public,Private -Enabled True
New-NetFirewallRule -DisplayName "DIVACloud SSH" -Description "Oracle DIVACloud
(SSH Remote Access)" -Direction Inbound -LocalPort 22 -Protocol TCP -Action
Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA View HTTP" -Description
"Oracle DIVACloud (DIVA View HTTP)" -Direction Inbound -LocalPort 80
-Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud Remote Administration" -Description
"Oracle DIVACloud (Remote Administration)" -Direction Inbound -LocalPort 135
-Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA View HTTPS" -Description
"Oracle DIVACloud (DIVA View HTTPS)" -Direction Inbound -LocalPort 443
-Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud CIFS" -Description "Oracle
DIVACloud (Req. Collection Script)" -Direction Inbound -LocalPort 445
-Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud RSYNC" -Description "Oracle
DIVACloud (RSYNC)" -Direction Inbound -LocalPort 873 -Protocol TCP -Action
Allow
New-NetFirewallRule -DisplayName "DIVACloud Oracle TNS Listener" -Description
"Oracle DIVACloud (Oracle Database - Transparent Network Substrate)"
-Direction Inbound -LocalPort 1521 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud VACP" -Description "Oracle
DIVACloud (Automation (Harris) Control)" -Direction Inbound -LocalPort 5010
-Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DataExpedition" -Description
"Oracle DIVACloud (ExpeDat - Accelerated File Transfer)" -Direction Inbound
-LocalPort 8080 -Protocol UDP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA Core Robot Manager"
-Description "Oracle DIVACloud (DIVA Core Robot Manager)" -Direction Inbound
-LocalPort 8500 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA Core Manager" -Description
"Oracle DIVACloud (DIVA API Listener / Systems Monitoring)" -Direction Inbound
-LocalPort 9000 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA Core Webservices"
-Description "Oracle DIVACloud (DIVA Systems Monitoring)" -Direction Inbound
-LocalPort 9443,9763 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA Core AccessGateway"
-Description "Oracle DIVACloud (DIVA Communications)" -Direction Inbound
-LocalPort 9500 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud DIVA Core Actor" -Description
"Oracle DIVACloud (DIVActor)" -Direction Inbound -LocalPort 9900 -Protocol TCP
-Action Allow
New-NetFirewallRule -DisplayName "DIVACloud SNMP" -Description "Oracle
DIVACloud (Systems Monitoring)" -Direction Inbound -LocalPort 161 -Protocol
UDP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud RDP" -Description "Oracle DIVACloud
(Remote Desktop Protocol)" -Direction Inbound -LocalPort 3389 -Protocol TCP
-Action Allow
New-NetFirewallRule -DisplayName "DIVACloud NRPE" -Description "Oracle
DIVACloud (Icinga Systems Monitoring - Nagios NRPE)" -Direction Inbound
-LocalPort 5666 -Protocol TCP -Action Allow
```

```
New-NetFirewallRule -DisplayName "DIVACloud NSClient++" -Description "Oracle
DIVACloud (NSClient++ Monitoring w/Icinga)" -Direction Inbound -LocalPort
12489 -Protocol TCP -Action Allow
New-NetFirewallRule -DisplayName "DIVACloud ICMP" -Description "Oracle
DIVACloud (Packet Internet Groper ICMPv4)" -Protocol ICMPv4 -IcmpType 8
-Enabled True -Profile Any -Action Allow
### OPTIONAL LOGRHYTHM ONLY### New-NetFirewallRule -DisplayName "DIVACloud
LogRhythm TCP" -Description "Oracle DIVACloud (LogRhythm Log Collection TCP)"
-Direction Inbound -LocalPort 135, 137, 138, 139, 445, 49153 -Protocol TCP
-Action Allow
### OPTIONAL LOGRHYTHM ONLY### New-NetFirewallRule -DisplayName "DIVACloud
LogRhythm UDP" -Description "Oracle DIVACloud (LogRhythm Log Collection UDP)"
-Direction Inbound -LocalPort 514 -Protocol UDP -Action Allow
### OPTIONAL NEVERFAIL ONLY### New-NetFirewallRule -Program "C:\Program
Files\Neverfail\R2\bin\nfgui.exe" -Action Allow -Profile Domain, Private,
Public -DisplayName "DIVACloud Neverfail" -Description "Oracle DIVACloud
(Neverfail)" -Direction Inbound
New-NetFirewallRule -Program "%SystemDrive%\Oracle\Ofs41_
1\FailSafe\Server\FsSurrogate.exe" -Action Allow -Profile Domain, Private,
Public -DisplayName "DIVACloud Oracle Fail Safe" -Description "Oracle DIVACloud
(Fail Safe)" -Direction Inbound
### WINDOWS 2012 Only ABOVE ###
```

3. Save the file with the file name DIVACloud_Firewall_Exceptions_2012.ps1.
4. Open a Windows PowerShell command prompt. You may have to open the PowerShell as a Windows Administrator to successfully execute the script.
5. Navigate to the folder where the script is located.
6. Execute the script by entering DIVACloud_Firewall_Exceptions_2012.ps1 at the command prompt.
7. All necessary exceptions required for DIVA Core operations should now be included in the Windows Firewall configuration.

If you require additional information or assistance refer to the Microsoft TechNet document named *Windows Firewall with Advanced Security* located at http://technet.microsoft.com/en-us/library/hh831365.aspx.

Cluster-Aware Updating

Cluster-Aware updating automates the Microsoft software updating process on clustered servers while maintaining availability. It is a Microsoft best practice to perform regular Windows updates, however it is not mandatory for DIVA Core. Refer to the following Microsoft TechNet documentation for details on Cluster-Aware updating:

- Microsoft Cluster-Aware Updating

  http://technet.microsoft.com/en-us/library/hh831694.aspx

- Microsoft Cluster-Aware Updating Best Practice

  http://technet.microsoft.com/library/jj134234#BKMK_FW

5

DIVA Core Installation

This chapter describes DIVA Core software components and system installation, and includes the following information:

- Software Component Relationships
- DIVA Core Backup Service
- Installing the DIVA Core System

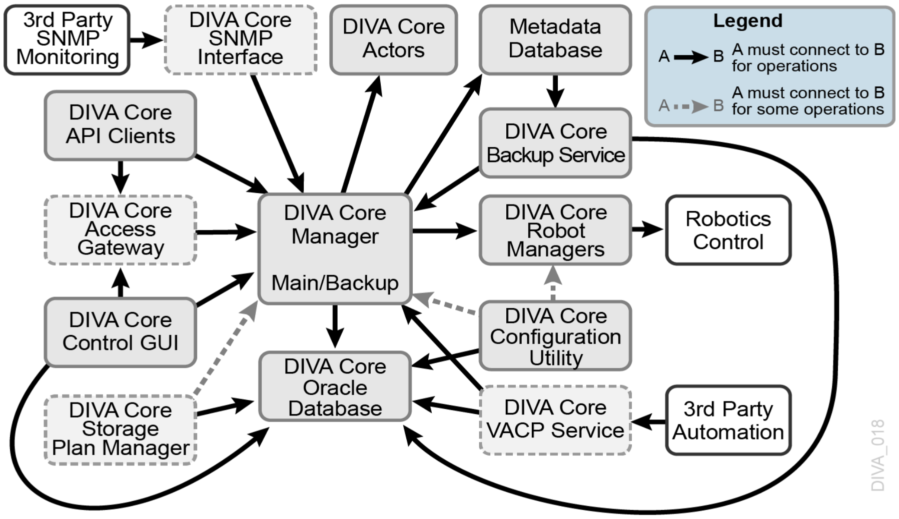
Software Component Relationships

The following figure displays the relationships and dependencies among the software components of a DIVA Core system. It specifically points out the client/server links between them.

A client/server link between two components does not necessarily mean that the server software must be started before the client. For example, the DIVA Core Manager to Actor connection. Each Actor acts as a server and the Manager initiates a client connection to the Actor. However, an Actor can be launched after the Manager is running since the Manager will attempt to reconnect to the Actor at periodic intervals.

See Appendix A for DIVA Core options and licensing information.

Note: DIVA Core can run independently of the Control GUI and Configuration Utility. They can be launched at any time after the DIVA Core Manager is running.



Software Component Distribution

The DIVA Core platform is flexible and scalable, so the installation of some software components can vary depending on the degree of storage and servers that are managed. Small installations can have all DIVA Core software components installed on a single computer. A very large installation will have these components distributed among several servers. All of these components run as system services.

The following list identifies where the components are typically installed:

DIVA Core Managers
Main and Backup DIVA Core Manager servers

DIVA Core Oracle Database
Main and Backup DIVA Core Manager servers

DIVA Core Metadata Database
Main and Backup DIVA Core Manager servers

DIVA Core Backup Service
Main and Backup DIVA Core Manager and Actor servers

DIVA Core Robot Managers
Main and Backup DIVA Core Manager servers. Robot Managers can also be installed on a separate server when the tape library is installed a substantial distance from the DIVA Core Manager servers.

DIVA Core Storage Plan Manager
Main and Backup DIVA Core Manager servers

DIVA Core VACP Services
Main and Backup DIVA Core Manager servers

DIVA Core SNMP Agent
Main and Backup DIVA Core Manager servers

DIVA Core DIVA Connect
Main and Backup DIVA Core Manager servers

DIVA Core Actors
DIVA Core Actor servers

DIVA Core Transfer Manager Communicator (*TMC*)
DIVA Core Actor servers

DIVA Core Archive Manager Communicator (*AMC*)
DIVA Core Actor servers

DIVA Core Drop Folder Monitor (*DFM*)
DIVA Core Actor servers

DIVA Core Backup Service

Caution: Users should have an elevated awareness of error messages from the Backup Service.

The DIVA Core Backup Service ensures reliability and monitoring of both the Oracle Database and Metadata Database backups.

The DIVA Core Backup Service component is installed as an integral part of the standard DIVA Core system installation. The component is typically installed on the same server as the DIVA Core Manager and Oracle Database. The DIVA Core Backup Service enables configuration of scheduled backups through its configuration file. The DIVA Core Backup Service manages and monitors the entire backup process.

When using complex objects, it is *strictly required* to use the Backup Service. The DIVA Core Backup Service is the only component backing up the Metadata Database and removing outdated Metadata files. When a delete request for a complex object is sent and processed, the data is removed from the Oracle Database, but the Metadata Database file is not deleted. The Metadata Database file is removed by the Backup Service after the configured clean up period (*defined by the* ***Recovery Period*** *parameter*) has been reached.

Caution: Do not change the ***Metadata Location*** parameter when the system is running.

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 and should be performed by Telestream Support personnel only.

The DIVA Core Backup Service uses existing Oracle RMAN backup scripts to generate full database backups and incremental database backups. Oracle Database backups and Metadata Database backups are incrementally replicated to all remote backup systems by the DIVA Core Backup Service.

The DIVA Core Backup Service periodically sends status messages to the DIVA Core Manager. The DIVA Core Manager saves all error messages received in the Manager Events Log, and also forwards messages to all connected Control GUI applications to be displayed in a dialog box. If no Control GUIs are connected at the time of the error, no error dialog boxes will be displayed, but errors can be reviewed later in the Events Log.

You can configure the service to monitor specific disks for space and send warnings and errors accordingly. By default, the monitored disks are C: and H: drives. You can change this configuration modifying the MONITORED_DRIVES=d1:,d2: parameter in the Backup Service configuration file.

MONITORED_DRIVES=d1:,d2:
Identifies the drive letters to be monitored buy the DIVA Core Backup Service. The default is C: and H: and may be changed as required. The d1 and d2 represent the drive letters to backup.

Set the value for the Backup Service monitor timeout in the Configuration Utility **Manager Setting** tab. The default setting is fifteen minutes.

Installing the DIVA Core System

The following sections describe installation of the DIVA Core system. Contact Telestream Support if you need assistance.

Note: The Oracle Database must be available for DIVA Core before installation. *See* Chapter 3, "Database Installation and Configuration".

Downloading the Software

You must stay current with the release of DIVA Core that you install and operate. Current releases of the software are found on the Telestream Software Delivery Cloud.

Use the following procedure to obtain the DIVA Core software:

1. Log in to the Telestream Software Delivery Cloud and search for *DIVA Core*.
2. Select the licenses you require (*for example, DIVA Core Actor, DIVA Core Manager, and so on*). You must search each time after adding a new license to the list.
3. Select the operating system you run for each selected license using the **Select Platform** button.
4. Continue through the download wizard, accepting the terms, until the final download screen appears.
5. Confirm that all the licenses you require are listed.
6. Click **Download All** on the bottom right of the screen, or click the file name link, to download the software.
7. Save the download where it is easily accessible.

DIVA Core License Generator

DIVA Core 8.0 requires a license. The Manager will not start without a valid license in the database. The details of the license, and tool used to create the license are new. The license can be imported as part of the DIVA installer if you create the license before DIVA is installed. If DIVA is already installed, a license can be imported using the License Tab in the Configuration Utility. In addition to enabling the Manager, the license includes a set of options that are necessary to enable the associated features in DIVA. *See* Appendix A *for DIVA Core options and licensing information*.

Installing DIVA Core for Windows

1. Double-click the executable file to begin the installation.
2. After installation begins, select the components to be installed and then click **Next** to proceed.
3. Enter the desired installation folder in the ***Destination Folder*** field. Telestream highly recommends using the default installation folder (*C:\DIVA*). However, if another location is desired, click **Browse** to navigate the computer to locate the folder. Click **Next**.
4. Select **Install**, and then click **Next**.
5. Select the components to install, and then click **Next**.

   In DIVA Core 8.0 the option to install different DIVA components such as Actors, Manager, and so on has been removed. The installer will always install all DIVA components together. If you select Database, the installer will create the DB user schema as well and you will be prompted to enter the DB information.

   For 7.6.1 and earlier, after installing, the user must create the database user and schema manually. *See* Manually Create the Database User and Schema for 7.6.1 and earlier.

   If upgrading 7.2.2 and lower using the 8.0 installer, you must manually update the actor configuration and actor partial restore configuration in the database using config utility. *See* Actor Configuration in the Database.

6. Installation will continue in the specified destination folder using the selected components. The installation progress screen is displayed until installation is complete. Clicking **Show Details** will show the detailed progress (*per file*) of the installation.
7. The **Close** button will be highlighted when the wizard is finished.
8. Click **Close** to complete installation and close the program.

Manually Create the Database User and Schema for 7.6.1 and earlier

The database user must be created using the DIVA operating system user account. Use the following procedure to create the database user:

1. Open a terminal console.
2. Change to the DIVA_HOME/Program/Database/Core/Install directory.
3. Execute create_diva_user.bat (*Windows*) or create_diva_user.sh (*Linux*), which creates the given DIVA database user and its associated tables

   Usage:

   ```
   create_diva_user syspasswd username userpasswd oracle_connection [-useronly|-tablesonly] [-custom_tablespaces
   tables_tablespace indexes_tablespace temp_tablespace]

   create_diva_user {DIVA|SYS} current_password new_password [-orapwd]
   ```

Parameter Definitions:

- syspasswd — Password of the Oracle ’sys’ account
- username — Username to create
- userpasswd — Associated user password
- oracle_connection — Oracle TNS service name or Oracle connection string (*such as IP_ADDRESS:PORT/ORACLE_SERVICE_NAME*)
- DIVA|SYS — Mention either DIVA or SYS to reset the respective password in the password file
- new_password — New password
- current_password — Current password. If there is no current database password, then enter the new password for the is parameter.
- -useronly — Only creates the database user and no database objects
- -tablesonly — Only creates the database objects for the given user.
- -custom_tablespaces — Use of custom tablespaces
  - tables_tablespace — tablespace for tables
  - indexes_tablespace — tablespaces for indexes
  - temp_tablespace — database temp tablespace
- -orapwd — Option to reset/generate password file.

Installing DIVA Core for Linux

Installing DIVA Core in a Linux environment is a manual installation. The following sections describe installation procedures for DIVA Core 8.0 and above on a Linux host computer.

Prerequisites and Initial Set-up

These instructions assume that Oracle Linux 7, x86_64 or later, is installed with sqlplus, and the Oracle client.

If you require a Linux environment in a language other than English, create a user and identify the desired language in the user profile. Oracle Linux 7 x86_64 and later has support for a variety of languages (*other than English*) and the language can be selected during Linux installation.

For more information on Oracle Linux 7 x86_64 and later see the documentation located at https://docs.oracle.com/en/operating-systems/?tab=2, or contact Telestream Support for assistance.

Note: Linux paths and file names are case-sensitive.

Use the following procedure to prepare for installation:

1. Use the following command to create a directory on the host computer:

```
mkdir /home/oracle/Downloads/DIVA_INSTALL
```

2. Copy the installation packages to the directory.
3. Confirm you have the latest DIVA Core and DIVA Core API releases and copy them into the directory you created in Step 1. The file transfer can take a bit of time due to the large file size.
4. If the system will have the Oracle Database server, see Chapter 3 to verify the system meets requirements.

Installing FTP Services

1. Open a terminal console on the host computer.
2. At the prompt enter yum install vsftpd.x86_64 and press **Enter**.
3. When prompted if it is OK to install, enter y and press **Enter**.
4. When installation is complete, start the service and confirm that it starts on system startup using the following commands:

```
service vsftpd start
chkconfig vsftpd on
```

5. Create a directory in the /home/diva path for managed storage and then mount the /managed partition in this location as follows:

```
mkdir /home/diva/managed
mount --bind /managed /home/diva/managed
```

Installing DIVA Core 8.0 for Linux

The DIVA Core 8.0 installer has an option to create the database user schema. If you select this option you must provide the database information.

1. Open a terminal console.
2. Use the following command to change the permissions and make the installation script executable:

```
chmod +x DIVA Core-8.0.{build_number}.sh
```

The {build_number} in this command will be the last two digits of the file name. For example, in DIVA Core-8.0.17.sh, the 0.17 is the build number

3. Use the following command to execute the installation script:

```
./DIVA Core-8.0.{build_number}.sh
```

4. When the Please specify diva user home directory [/home/diva] prompt is displayed, press **Enter** to accept the default directory.
5. The8.0 installer can create the DB user schema using the installer. When prompted, enter the DB information.

   For 7.6.1 and earlier, after installing DIVA Core you must create the database user and schema manually. See Manually Create the Database User and Schema for 7.6.1 and earlier.

Installing the DIVA Core Services

You control the DIVA Core services using the divaservice script.

1. Open a terminal console.
2. Change to the /home/diva/DIVA/Program directory.
3. Execute the divaservice script using the following options:

command[1]	**Descriptions**
divaservice configure {SERVICE_NAME}	Configures the specified (*already installed*) DIVA Core service. The first time you install a service you must use the configure option to include the configuration settings. It will generate a configuration file, install, and then start the service.
divaservice install {SERVICE_NAME} {configuration_file_absolute_path}	Installs the specified DIVA Core service using the specified configuration file. If you already have a fully configured configuration file, use the install option and include the absolute path to the configuration file for that service.
divaservice {start-all|stop-all|restart-all}	Starts, stops, or restarts all of the services at the same time.
divaservice {start|stop|restart|uninstall|status} {SERVICE_NAME}	Starts, stops, restarts, uninstalls, or gets the current status of a specific service.
divaservice list	Lists the names of all currently installed DIVA Core services.
divaservice profile	Displays the DIVA Core services profile.
chkconfig {SERVICE_NAME} on	Use this to start the DIVA Core services when Linux starts. For example, chkconfig DIVAmanager_manager80 on will cause the Manager service to start with Linux.

[1] {SERVICE_NAME} can be one of the following: manager, actor, robotmanager, migrate, dfm, dbbackup, lynxlocaldelete, spm, or rsync.

Example — If you are upgrading, or want to install the services with preconfigured configuration files, you can use the && command to do it consecutively (*linking them together*):

```
divaservice install manager '/home/diva/DIVA/Program/conf/manager/manager.conf' && divaservice install actor '/home/diva/DIVA/Program/conf/actor/actor.conf' && divaservice install robotmanager
```

```
'/home/diva/DIVA/Program/conf/robot_manager/robotmanager.conf'
```

Creating Control GUI and Configuration Utility Shortcuts

You can add Control GUI and Configuration Utility shortcuts to your desktop (*for easy access*) using the following procedure:

1. Open a terminal console.
2. Open the gedit program with root user permissions. If you are not logged in as the root user, use the following command:

   ```
   sudo gedit
   ```

3. To create the Control GUI shortcut, enter the following text and save the file as /usr/share/applications/diva-control-gui.desktop:

   ```
   [Desktop Entry]
   Version=8.0
   Name=Control GUI
   Comment=Telestream DIVA Core CSM
   Exec=sh -c "cd /home/diva/DIVA/Program/GUI/bin/ && ./gui.sh"
   Icon=/home/diva/DIVA/Program/GUI/bin/gui.ico
   Terminal=false
   Type=Application
   Categories=Application;DIVA;Telestream;
   ```

4. To create the Configuration Utility shortcut, enter the following text and save the file as /usr/share/applications/diva-config-util.desktop:

   ```
   [Desktop Entry]
   Version=8.0
   Name=Config Utility
   Comment=Telestream DIVA Core Configuration Utility
   Exec=sh -c "cd /home/diva/DIVA/Program/ConfigUtility/bin/ && ./configUtility.sh"
   Icon=/home/diva/DIVA/Program/ConfigUtility/bin/configUtility.ico
   Terminal=false
   Type=Application
   Categories=Application;DIVA;Telestream;
   ```

5. Use the following command to copy the shortcuts to the desktop after you have created both files:

   ```
   cp /usr/share/applications/{diva-control-gui.desktop,diva-config-util.desktop} /home/diva/Desktop
   ```

When you click each shortcut for the first time you may be asked if you trust the file. You must confirm them as being trusted files and they will be marked *trusted*.

Starting, Stopping, and Accessing DIVA Core in Linux

The following aliases become available after DIVA Core installation and are defined in /home/diva/DIVA/Program/.divaenv.:

```
alias DIVAgui="CurrDIR=`pwd`; cd /home/diva/DIVA/Program/GUI/bin; ./gui.sh; cd ${CurrDIR}"

alias DIVAconf="CurrDIR=`pwd`; cd /home/diva/DIVA/Program/ConfigUtility/bin; ./configUtility.sh; cd ${CurrDIR}"
```

Note: All Linux paths, file names and command are case-sensitive.

Use the following procedure to start DIVA Core when running in a Linux environment:

1. Open a terminal console.
2. Change to the proper directory as follows:

   ```
   cd /home/diva/DIVA/std_linux
   ```

3. Start all DIVA Core services as follows:

   ```
   ./divaservice start-all
   ```

4. Open the Configuration Utility as follows (*or use the Desktop shortcut*):

   ```
   DIVAconf
   ```

   Use the following connection parameters:

   User Name
   Enter the database user name that was created.

   Password
   Enter the database user's associated password.

   SID
   Enter lib5

   Service Name
   Leave this field blank.

   IP Address
   Enter the IP address of the database host computer.

   Oracle Port
   Enter 1521

5. Open the Control GUI as follows (*or use the Desktop shortcut*):

   ```
   DIVAgui
   ```

When shutting DIVA Core down, close the Control GUI and Configuration Utility. When they have closed, use the following command to stop all DIVA Core services:

```
./divaservice stop-all
```

You can use the following command to restart the services (*if necessary*) for any reason when they are already running:

```
./divaservice restart-all
```

Installing the Database

See Chapter 3, "Database Installation and Configuration"

6

DIVA Core Configuration Overview

This chapter describes a general overview of the DIVA Core configuration and includes the following information:

Module Configuration Files

Each DIVA Core software module has its own static configuration text file with parameters needed to launch that particular application. The files are typically denoted with the .conf file name extension. There are some DIVA Core modules that use an XML based file rather than a text file for their configuration and those will be noted where applicable.

Unlike older releases of DIVA Core that stored these configuration files in the same folder as the application itself, DIVA Core 8.0 centralizes them to a dedicated conf subfolder under the DIVA Core Program Group.

The configuration files are typically updated with additional or changed settings in newer releases of the software. A new or patch release of DIVA Core will have the new releases of the .conf files appended with a .ini extension. For example, the new release of the DIVA Core Manager Configuration file will be named manager.conf.ini. You must remove the .ini extension after the installation is complete and the new configuration file updated.

Each configuration file can be opened and edited with any plain text editor (*for example, Windows Notepad*).

Any changes made to the configuration file of a DIVA Core software component requires that the component be shut down and then restarted for the changes to take effect. The exceptions to this are the Manager and DIVA Connect options, both of which allow configuration changes to be reloaded while they are still running. There are codependencies between some applications in the DIVA Core platform, so other components may also need to be restarted for changes to take effect.

DIVA Core Databases

At the system level, settings that relate to the overall operation of each DIVA Core component and their interaction are configured and retained by an Oracle Database. This is commonly known (*and will be referred to in this document*) as the *DIVA Core Database* (*or just simply as **the database***).

User modification of this database is performed through the DIVA Core Configuration Utility.

The DIVA Core Configuration Utility connects only to the database and does not necessarily require the DIVA Core Manager to be running. It is only intended for experienced users and caution should be exercised when altering settings using the utility. An incorrect setting can impede DIVA Core operations or prevent the DIVA Core Manager from starting successfully. Contact Telestream Support for assistance if you are unsure about making a particular change.

When launched, the DIVA Core Manager obtains the DIVA Core system configuration from the database. However, it does not poll the database for changes made through the Configuration Utility. Therefore, the database must be notified of any changes made. This is performed using the **Notify Manager** menu item in the Configuration Utility.

You can accomplish most changes to the configuration while the DIVA Core Manager is running. There are a small number of configuration changes that require a restart of the DIVA Core Manager to become effective. A full list of changes that can be made to the system configuration dynamically while the Manager is running is listed in Appendix D.

The Configuration Utility also does not dynamically poll the database for changes that are made when the Manager is running. In such cases, you click the **Update** button in the utility to refresh the information displayed from the database.

You can install the Configuration Utility on any computer that has TCP/IP connectivity to the database and a supported Java Runtime Environment installed. DIVA Core release 8.0 requires the Java Runtime Environment 64-bit (*build 1.8.0_45-b14*), to be installed to launch the Configuration Utility successfully.

In some cases, a network firewall between the two can prevent a connection. For complete operation and functionality of the Configuration Utility, the *Oracle Listener Port* (*typically 1521*) and the *DIVA Core Robot Manager Ports* (*typically 8500 and higher*) must be opened in the firewall. Full functionality of the Control GUI also requires that the *DIVA Core Manager Port* (*typically 9000*) is open.

Metadata Database

The DIVA Core Metadata Database has very high performance and almost unlimited scalability. The Metadata Database should be treated with the same caution as the Oracle Database. It should be backed up at regular intervals through the DIVA Core Backup Service.

Telestream highly recommends that the Metadata Database files are stored on a RAID disk array. The Metadata Database should not be on a standard disk due to decreased performance and the real-time backup functionality that a RAID array offers the system.

Metadata Database files stored on a standard disk are vulnerable to data loss if a single disk failure until the information is replicated through the DIVA Core Backup Service. Storing the Metadata Database files on a RAID array isolates the data from this type of failure.

The information stored in the Oracle Database is already stored on a RAID-1 array and is not subject to data loss if a single disk fails.

Metadata Database Sizing

The following formula can be used as a rough guide to determine the minimum amount of disk space required to support the Complex Object Metadata Database:

```
(100+average_path_filename_size)*1.15*avg_num_component_files*num_objs
```

The following is a general example using the equation:

average_path_filename_size = 60
For example, this/nested/subdir01/As_The_World_Turns_24fps_scenes1-10.avi

avg_num_component_files = 200,000
The Average Number of Files and Folders within the complex object.

num_objs = 50,000
The number of complex objects to be archived.

In this example, *minimum* budgeting for a Metadata Database size of approximately 1.67 TB would be recommended.

When planning the system, you must allocate enough Metadata Database disk space to ensure for expected, or unexpected, growth of the environment. The same amount of disk space must also be allocated for the Metadata Database in all of the backup systems.

Environment Variables

Some DIVA Core software components may require defining one or more Windows operating system environment variables for those components to launch successfully.

An environmental variable allows the configured variable to be available to all programs rather than requiring it to be configured from the application each time it is executed. This makes the variable independent of the application and therefore you do not need to manually insert or update the value when the application software is updated or modified.

A *User Environmental Variable* only applies to an individual Windows User Profile. A *System Environmental Variable* is applicable to all Windows User Profiles.

The following example illustrates how to configure the DIVA_JAVA_HOME environment variable on a Windows system.

Note: This is simply an example and NOT required for DIVA_JAVA_HOME as it is already pointing to a valid JRE after installation.

This variable defines the path of the Java Runtime Environment for DIVA Core applications on the Windows host. This particular parameter is required on any Windows computer that will run either the DIVA Core Configuration Utility or the DIVA Core Control GUI.

Use the following procedure to configure an environment variable:

1. Open the Windows Control Panel.
2. Double-click the **System** icon.
3. Click the **Advanced** tab.
4. Click the **Environment Variables** button.
5. Click the **New** button.
6. Enter the variable name in the ***Variable name*** field. In this example the name is DIVA_JAVA_HOME.
7. Enter the variable value in the ***Variable value*** field. This is the path (*or other value*) to use for the named variable. In this example the value is C:\DIVA\java.
8. Click **OK** to complete the process.

You have now defined the variable and it is displayed in the ***System variables*** list. The DIVA_JAVA_HOME environment variable is now accessible to all users (*and applications*) on the system and does not need to be defined each time an applications is executed.

SSL Authentication and Security

DIVA Core 8.0 includes **SSL Certificate Authentication** for authentication of services, and securing the internal and API communications in DIVA Core. Certificate authentication provides unique identification and secure communications for each DIVA Core service in a network.

Certificate authentication functions similar to identification cards like passports and drivers licenses. For example, passports and drivers licenses are issued by recognized government authorities. **SSL (Secure Sockets Layer)** certificates are signed by a recognized **CA (Certificate Authority)**. An SSL certificate verifies the identity of its owner. When the SSL certificate is presented to others, it helps verify the identity of its owner based on the quality of the contents of the certificate.

DIVA Core it comes with Default Root Certificate Authority called DIVA_CA. The DIVA_CA is a self signed CA created for this purpose, and signs all SSL certificates for the DIVA Core services. Every DIVA Core service now has its own password protected private keys and an SSL certificate which will be signed by the DIVA_CA.

See SSL (Secure Sockets Layer) and Authentication for configuration information.

External Certificate Authorities

You can use external third party CAs (*for example, VeriSign, Comodo, and so on*) with DIVA Core. The external CA must create a **CSR (Certificate Signing Request)** for DIVA_CA, signed by the third party CA, and the third party certificate must be added to the **Trust Store** to satisfy the certificate chain.

See SSL (Secure Sockets Layer) and Authentication for instructions to create the CSR, and installing the thirty party CA in your DIVA Core installation.

DIVA Core Configuration Utility Overview

Caution: The Configuration Utility is intended only for experienced users. Incorrect or incomplete changes in the Configuration Utility can adversely affect DIVA Core operations (*and possibly even delete data from the archive*), or prevent the DIVA Core Manager from running. Contact Telestream Support for assistance if you are unsure about making desired changes.

The DIVA Core Configuration Utility primarily connects to the DIVA Core Database, and for some tasks, directly to the DIVA Core Robot Managers (*if installed*). After launching the utility you must first connect to the database to edit the DIVA Core system configuration. The Oracle user name and password for DIVA Core is arbitrary and can vary between installations.

The utility can be installed and run on any computer with TCP/IP connectivity to the DIVA Core Database, Manager, and Robot Managers. Because it is a Java-based utility, a valid JRE (*Java Runtime Environment*) must also be installed on the host. For the Configuration Utility to launch, the DIVA_JAVA_HOME environmental variable in the host operating system must also be defined (*see the previous section*). This variable should match the absolute directory path to the JRE bin folder. For example DIVA_HOME\Java (*where DIVA_HOME is the chosen DIVA Core installation directory*). The required release of Java is delivered with DIVA Core, and installed during the DIVA Core installation process.

Connecting to the DIVA Core Database

Use the following procedure to connect the Configuration Utility to the DIVA Core database:

1. Open the DIVA Core Configuration Utility.
2. Click **File**, and then **Connect**.

   Alternatively click the **Connect** icon just under the **File** menu.
3. Enter the following information in the fields on the DB Connection dialog box:

   User Name
   The database user name (*typically diva*).

   Password
   The Oracle password associated with the entered user name.

   S.I.D.
   The Oracle System Identifier (*typically lib5*).

   IP Address
   The IP address of the computer where the DIVA Core Database is installed.

   Oracle Port
   The Oracle Listener Port (*typically 1521*).
4. Click **OK** to connect to the database.

The connection status is displayed in the notification area at the bottom of the screen. If the connection fails an error message is generated, including an error code, and displayed in this area. Contact Telestream Support if you still cannot connect after attempting to resolve the error.

Disconnecting from the DIVA Core Database

Disconnect the Configuration Utility from the database when not in use. Use the following procedure to disconnect from the database:

1. Click **File**, and then **Disconnect**.

   Alternatively click the **Disconnect** icon just under the **File** menu.

2. Click **Yes** in the displayed Confirm dialog box.
3. Click **OK** in the displayed Disconnected dialog box.

The notification area at the bottom of the screen will display the *Not Connected* message.

Configuration Utility Frame Buttons

Each frame in the Configuration Utility includes a set of buttons that perform various functions as follows:

Plus (+)
This button is a plus sign (**+**). Clicking the button launches a dialog box to add an entry to the frame.

Edit
Highlighting a frame entry and clicking this button enables editing of the entry's properties.

Minus (-)
This button is a minus sign (-). Highlighting a frame entry and clicking this button will remove the entry from the frame. Entries with child dependencies cannot be removed.

Update
Clicking this button refreshes the associated frame content listing from the database.

DIVA Core Control GUI Profiles and Passwords

The DIVA Core Control GUI provides four fixed user profiles (*Administrator, Operator, Advanced Operator, and User*) to provide varying levels of access. The Administrator, Operator, and Advanced Operator profiles require a password that you can change using the Configuration Utility.

The difference between the Operator and Advanced Operator profiles are the **Insert** and **Eject** commands, which are only accessible from the Advanced Operator profile. You use the Operator profile during normal operations unless you are inserting or ejecting a tape.

There is no default password to log in to the Control GUI as an Administrator or Operator. You must assign an Administrator and Operator password in the Configuration Utility after DIVA Core installation is complete. Without an assigned password you are not permitted to switch to the respective profile in the Control GUI. If you attempt to switch to Administrator or Operator mode without first assigning a password to the profile, an error message is displayed notifying you that you must set a password. After you set the profile password in the Configuration Utility the first time, it no longer matters what you use for the *old password* when changing passwords.

Setting the Control GUI Administrator Password

Use the following procedure to set the Administrator password:

1. Open the Configuration Utility.
2. Connect to the DIVA Core Database.

3. Click the **Tools** menu item.
4. Click the **Change GUI Administrator Password** menu item (*or use Control+G*).

   This option is only available when the Configuration Utility is connected to the database.
5. Enter the following information in the appropriate fields on the Change GUI Administrator Password dialog box:

   Old Administrator Password
   Enter the old Administrator password in the **Old Administrator Password** field. You must leave this field blank the first time you set the Administrator password.

   New Password
   You enter the new password in the **New Password** field.

   Confirm Password
   You enter the new password again in the **Confirm Password** field.
6. Click **OK** to save the password.

Setting the Control GUI Operator Password

Use the following procedure to set the Operator password:

1. Open the Configuration Utility.
2. Connect to the DIVA Core Database.
3. Click the **Tools** menu item.
4. Click the **Change GUI Operator Password** menu item (*or use Control+G*).

   This option is only available when the Configuration Utility is connected to the database.
5. Enter the following information in the appropriate fields on the Change GUI Administrator Password dialog box:

   Administrator Password
   Enter the Administrator password in the ***Administrator Password*** field.

   New Operator Password
   You enter the new password in the ***New Operator Password*** field.

   Confirm Password
   You enter the new password again in the ***Confirm Password*** field.
6. Click **OK** to save the password.

Changing the Database Logging Level

Use the following procedure to change the Database Logging Level:

1. Open the Configuration Utility.
2. Connect to the DIVA Core Database.
3. Click the **Tools** menu item.
4. Click the **Change DB Logging Levels** menu item (*or use F12*).

   This option is only available when the Configuration Utility is connected to the database.
5. Use the menu lists to select the desired logging level for each package listed in the Change DB Logging Levels dialog box. Available levels are:

FATAL
When selected, this level displays very severe errors that may cause DIVA Core to terminate.

ERROR
When selected, this level displays errors that still allow DIVA Core to operate.

WARN
When selected, this level displays warning messages that are potentially harmful to operations.

INFO
When selected, this level displays informational messages about the progress of the operations.

TRACE
When selected, this level displays messages used to help debug the system.

6. Click **OK** to save your changes.

Configuration Utility Tabs Overview

The following sections describe a general overview of each tab in the Configuration Utility. Each tab includes multiple frames where you configure different aspects of the system.

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

System Tab

The System tab defines key parameters for your DIVA Core installation and is the starting point for creating your DIVA Core configuration.

You should create a drawing of the system components before entering details into the Configuration Utility. The drawing includes the data and control paths between components, how they interact with each other, established naming conventions for resources such as disks and tapes, and the workflow of the platform. Some parameters are difficult to change once they have dependencies from other configuration parameters in the database.

System Tab Frames

The **System** tab includes the following frames:

Production System Definitions
All DIVA Core installations have at least one production system. Additional production systems allow dedication of a particular Actor for specific destinations.

Sites
All installations have at least one site. Additional sites are optional and may be considered by the DIVA Core Manager for optimal resource allocation.

Note: ***Site Support*** must be enabled in the DIVA Core Manager configuration, otherwise all sites will be considered equally.

Sources and Destinations
These define where DIVA Core archives from (*Sources*) and restores to (*Destinations*).

Actor Settings

These define Actor host definitions and logical functions. All installations have at least one Actor. *See Appendix A for DIVA Core options and licensing information*.

Transcoders

These define DIVA Core transcoders and analyzers. DIVA Core automatically selects the Actors either attached to a *BitStream Flip Factory Transcoder* installation or integrated with the *DIVAnalyze Harris QuiC* compressed file analysis software. DIVA Core allows a single transcoder to perform multiple transcodings. DIVA Core assigns additional ports as needed from the base port specified in the configuration. Therefore, a gap of one hundred between individual transcoder port settings is recommended to avoid port conflicts.

Actor Configuration in the Database

Except for the *Service Name* and *Port*, all Actor configuration settings are located in the Configuration Utility under the **Actor Advanced** and **Partial Restore Settings** tabs of the Actor frame of the **Systems** tab. Some settings are only available In *Engineering Mode* and are labeled with an **X** in the *Engineering Mode* column of the following tables.

Name	Type	Min.	Max.	Engineering Mode	Default
DISABLE_DISK_PREALLOCATION	Boolean			X	**Yes**
TAPE_TEST_UNIT_READY_TIMEOUT (S)	Integer	60	1200		180
DO_NOT_CHECK_OBJECT_NAME	Boolean				No
DO_NOT_CHECK_CATEGORY	Boolean				No
SIMULATION	String			X	
SIMULATION_READING_ERROR_RATE (%)	Integer	0	100	X	0
SIMULATION_WRITING_ERROR_RATE (%)	Integer	0	100	X	0
SIMULATION_TAPE_SIZE (MB)	Integer	20	500000	X	300000
SEACHANGE_CHECK_DELAY (MS)	Integer	0	10000	X	1000
PROFILE_READ_BLOCK_SIZE (B)	Integer	1500	262144		1500
PROFILE_WRITE_BLOCK_SIZE (B)	Integer	1500	262144		32768
QUANTEL_RENAME_CLIPS	Boolean				**No**
QT_SELF-CONTAINED_THRESHOLD (MB)	Integer	10	100		50
RENAME_TRANSCODED_CLIPS	Boolean			X	
DIRECTORY_SERVER_ENABLED	Boolean			X	**Yes**
DISK_FTP_PASSIVE_MODE	Boolean				**No**
DISK_FTP_BLOCK_SIZE	Integer	1024	524288		32
DISK_FTP_SOCKET_WINDOW_SIZE (B)	Integer	65536	10485760		65536

Name	Type	Min.	Max.	Engineering Mode	Default
QT_IGNORE_START_TIMECODE	Boolean				**No**
QT_OMNEON_FIRST_FRAME_HANDLING	String				**Reset**
AVI_IGNORE_START_TIMECODE	Boolean				**No**

Name	Type	Min.	Max.	Engineering Mode	Default
EVS_MXF_IGNORE_START_TIMECODE	Boolean				**No**
GXF_TIMECODE_REFERENCE	Integer	0	2		1
GXF_PROGRESSIVE_TIMECODE_TRANSLATION	Boolean				**No**
LXF_IGNORE_START_TIMECODE	String				**No**
MXF_PARTIAL_RESTORE_DICTIONARY_FILE	String				
MXF_TIMECODE_FROM_SOURCE_PACKAGE	Boolean				No
MXF_TIMECODE_VALUE_TO_SWITCH_ PACKAGE	String				-1
MXF_ENFORCE_CLOSED_HEADER	String				**Yes**
MXF_RUN_IN_PROCESSOR	String				
MXF_IGNORE_START_TIMECODE	Boolean				**No**
MXF_USE_BMX_LIBRARY	Boolean				No
MXF_USE_OMNEON_DARK_METADATA	Boolean				**No**
MXF_SERIALIZE_DEPTH_FIRST	Boolean				**No**
MXF_GENERATE_RANDOM_INDEX_PACK	Boolean				**Yes**
MXF_NUMBER_FRAMES_PER_BODY_ PARTITION	Integer	50	500		250
MXF_UPDATE_TCTRACK_ORIGIN	Boolean				**No**
MXF_TOLERANCE_ON_TCOUT	Integer	0	250		0
MXF_DURATION_FROM_FOOTER	Boolean				**Yes**
MXF_MAX_QUEUE_SIZE	Integer	100	1000		200
SEACHANGE_IGNORE_START_TIMECODE	Boolean				**No**
MPEG2_TRANSPORT_STREAM_IGNORE_ START_TIMECODE	Boolean				**No**
MPEG2_PROGRAM_STREAM_IGNORE_START_ TIMECODE	Boolean				**No**

Robots Tab

All DIVA Core installations include the **Robots** tab, although not every installation necessarily has a library. This tab defines basic associations with the robotics software and hardware components.

Robots Tab Frames

The **Robots** tab includes the following frames:

Robot Managers

This frame defines to DIVA Core the connection parameters to each host running a DIVA Core Robot Manager Instance. *See Appendix A for DIVA Core options and licensing information*.

Libraries

Displays the tape or DVD libraries currently configured through one or more DIVA Core 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 you can manually remove entries in this frame, 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 ACS (*Automated Cartridge System*) number. Although you can manually remove entries in this frame, 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 to be used by DIVA Core, how they are grouped together for either permanent or cache storage, and how each disk is logically accessed by the Actors.

Disks Tab Frames

The **Disks** tab includes the following frames:

Arrays

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

Disks

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

Configures how each disk is logically connected to each DIVA Core Actor, and how it is to be used. For shared disks accessible by more than one Actor, the disk connection must be declared for all Actors. *See Appendix A for DIVA Core options and licensing information*.

Object Storage Accounts

Configures how each object storage account is logically connected to each DIVA Core Actor, and how it is to be used. *See Appendix A for DIVA Core options and licensing information*.

Drives Tab

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

Drives Tab Frames

The **Drives** tab includes the following frames:

Drives

Displays the drives currently identified to DIVA Core in a database synchronization and their current status.

The Drive Edit dialog box enables editing the **Serial Number**, **Status** (*online or offline*), **Enabled Operations** (***Archive, Restore****, and so on*), and **Used** (*yes or no*), information for a drive. This is useful if this information was not retrieved, or was entered improperly, during a SyncDB process. The firmware release for the drive is also displayed in a non-editable field. The firmware information is obtained from the Actors when they scan for tape drive devices. Other additional non-editable information is also displayed in this dialog box, and all of the information is displayed in the Drives frame.

Drive Properties

This displays the drive models currently configured for use with DIVA Core. Although you can manually remove entries in this frame, they can only be added by performing a database synchronization with a Robot Manager. *See Appendix A for DIVA Core options and licensing information*.

Actors-Drives

Indicates to DIVA Core which Actors have access to the drives configured in the Drives frame. *In this area associations can be added, edited, or deleted.*

Clicking the **+** button adds an existing Actor-Drive association. The Add New Row in Actors-Drives dialog box is displayed. Use the menu list to select the Actor, and then use the check boxes next to each drive to associate with the selected Actor.

Clicking the **Edit** button enables edit of an existing Actors-Drives association. The Edit Drives Entry dialog box is displayed. Make the required or desired updates and click **OK** to save the changes.

See Appendix A for DIVA Core options and licensing information.

Tapes Tab

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

Tapes Tab Frames

The **Tapes** tab includes the following frames:

Tape Properties

Displays the ***Tape Media Types*** and configuration parameters currently configured in DIVA Core after a library database synchronization.

In the Tape Properties frame, you can highlight an existing tape and click **Edit** to open the Tape Properties dialog box.

Empty Ejected Tapes

Displays the tapes that no longer have any DIVA Core content and have been ejected from an attached library. Clicking the **-** button permanently removes the selected tape from the DIVA Core Database.

Inserted Protected Tapes

When a tape is externalized, it is set to *Protected Mode* by DIVA Core. You must manually remove this state after reinsertion into the library if the tape is to have content written to it.

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. The ***Enable for Writing*** state can be automatically disabled by DIVA Core if it encounters an error during a read, write, or repack operation.

Click the **+** button in the Tape States frame to add a tape to the Tape States. Select the tape to add from the list in the displayed dialog box, and then click **OK** to add the tape.

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 DIVA Core 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*.

Sets, Groups & Media Mapping Tab

You use the **Sets, Groups & Media Mapping** tab to allocate tapes into pools for use by DIVA Core. The ***Set ID*** represents each media pool. The ***Set ID*** is typically used to distinguish different types of tape media. However, it may also be used to dedicate a specific set of tapes to specific groups.

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

You can use the Configuration Utility to define the format of an array or group. The format is configured in the **Disks** and **Sets, Groups & Media Mapping** tabs for arrays and groups respectively. Alternatively, you can use the addGroup API call define a group or array and its format. The default format is AXF. This can also be achieved by selecting **Legacy** in the Configuration Utility, or specify the corresponding value for the format using the API call.

Changing the format of an array is performed through the Edit Array Entry dialog box. Changing the format of a group is performed through the Edit Groups Entry dialog box. In either case, highlight the desired array or group and then click **Edit** to open the associated dialog box. Use the menu list to select the format (***Legacy*** *or* ***AXF***). Use the following procedure to change the format of an array or group:

1. Navigate to either the **Disks** (*for arrays*) or the **Sets, Groups & Media Mapping** (*for groups*) tab.
2. Highlight the desired array or group in the displayed list.
3. Click the **Edit** button at the top of the frame.
4. Use the ***Tape Format*** menu list to select the format for the selected array or group.
5. Click **OK** to complete the change.

Sets, Groups & Media Mapping Tab Frames

The **Sets, Groups & Media Mapping** tab includes the following frames:

Unused Tape Sets

Displays empty tapes that are recognized by DIVA Core and the library module where they are located. The ***Set ID*** of each tape can also be defined in this frame.

You can highlight an existing tape and click **Edit** to display the Edit Unused Tapes Sets Entry dialog box. When done editing the Tape Set click the **Refresh** button to refresh the list.

The *Unused Tape Sets* frame includes the following columns:

Barcode

These are tapes not currently in use by a group.

ACS

The ACS number is the specific library where the tape is located.

LSM

The LSM number is the specific library where the tape is located.

Media Type

This is the set's *Media Type*.

Set ID

This is the tape's *Set ID*. Click the desired tape to edit and then click the **Edit** button.

You can select multiple tapes by holding the **CTRL** key and clicking each tape. You select a range of tapes by holding the **SHIFT** key, click the first tape in the range, and then click the last tape in the range. Click **Edit** to open the Edit Multiple Rows dialog box.

Select the Set ID for the tape from the ***Set ID*** list. Only Set IDs that have already been created in the Groups window will be listed.

Setting the Set ID to 99 indicates that the DIVA Core is not to use the tape. This particularly applies to cleaning tapes installed in the library if they are reported to DIVA Core after a library audit. For example, a cleaning tape's typical barcode is CLNnnnn.

This also applies to some installations where DIVA Core shares its libraries with other applications. Tapes in use by other applications should also have their Set ID set to 99 to prevent DIVA Core from using them.

Groups

Adds, removes, or edits existing groups and each group's association with the tape pools defined in the *Unused Tapes Sets* frame. A group can only be removed when it no longer contains any DIVA Core objects.

Additional ***Set IDs*** for the *Unused Tape Sets* frame are only available after they are first created in a group. Tapes that should not be used by DIVA Core (*for example, cleaning tapes*) must be configured with a ***Set ID*** of 99.

The Groups frame includes the following columns:

Id

This is the library ID the group belongs to. This is automatically generated by the system and not editable.

Group Name

The name assigned to the group. These names will appear in the ***MEDIA*** list of an Archive request in the Control GUI.

Set ID

Default *Set ID* of each group is 1. You cannot assign tapes to additional *Set IDs* until after they are included in a group.

Description

This is an arbitrary description of the group.

Media Types

This is the tape *Media Types* currently in use by this group. This is updated automatically when a tape is assigned to the groups *Set ID* in the *Unused Tapes Sets* frame.

Tape Format

This is the format of the tape (***Legacy*** *or* ***AXF***).

Encryption

Identifies whether tape group encryption is enabled or disabled.

Compression Enable

Identifies whether tape group compression is enabled or disabled.

Worse Fit Enable
By default, DIVA Core attempts to fill any tapes already assigned to a group before assigning an unused tape. The **Worst Fit** option attempts to span objects on as many tapes as possible.

Repack Reservation
This only applies if the **Worst Fit** option is enabled. It sets the number of unused tapes in the pool to reserve for tape repacking. All other groups that also use this group's *Set ID* must also have identical values.

VW
This column identifies whether **Verify Write** is on or off for the group.

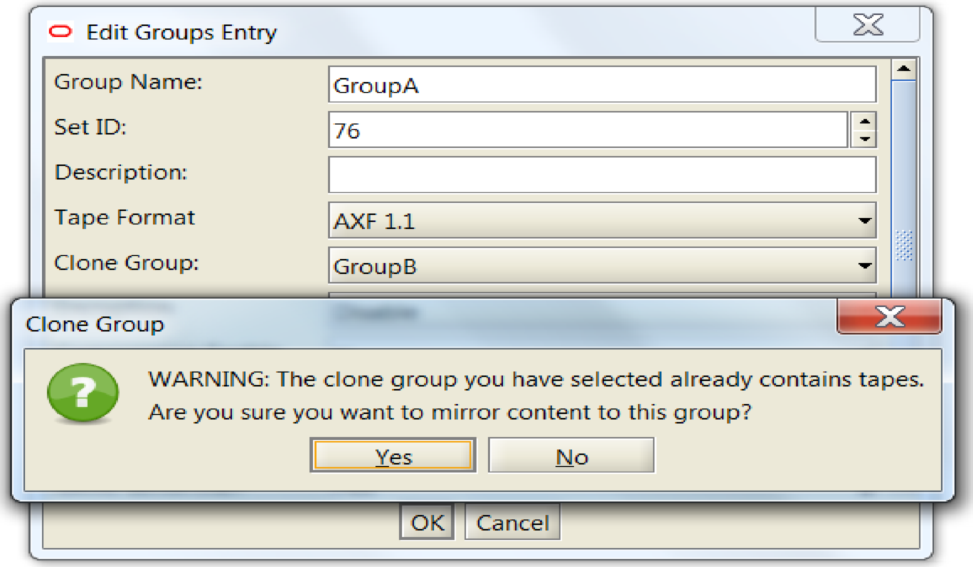
Media Mapping
Media Mapping enables DIVA Core to automatically alter the specified media in an Archive request to another Disk Array, Tape Group or Storage Plan. In this way, you can alter the storage for Archive requests without requiring any changes in the archive initiator (*automation or MAM system*).

To edit an existing Media Map, highlight the desired mapping and then click **Edit** to edit the entry. Click **OK** to save your changes.

Click the **+** button in the Media Mapping frame to add a Media Mapping entry. Enter the **Name** for the mapping in the **Name** field. Use the menu lists to select the **From** (*source*), **Media to Map** to and **Storage Plan to Map** to, and then click **OK** to save the entry.

Configuring Clone Groups

A unidirectional link from a Source Group to a Clone Group can be established by selecting Clone Group in the Configuration Utility's Group configuration window. If the Clone Group already contains tapes, a warning dialog box is displayed to alert the user that this group will also contain tapes that are not clones of tapes in the Source Group.



Edit Groups Entry

Group Name: GroupA

Set ID: 76

Description:

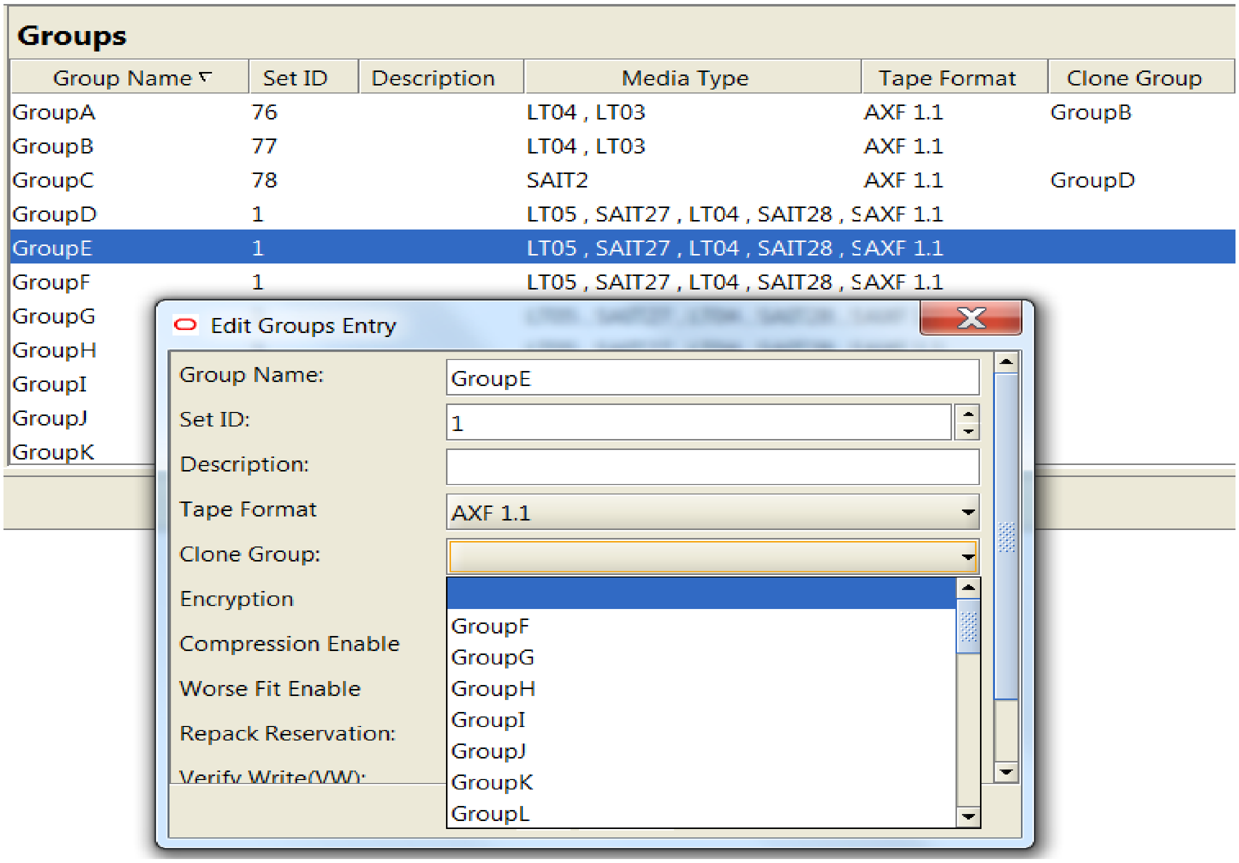
Tape Format AXF 1.1

Clone Group: GroupB

Clone Group

WARNING: The clone group you have selected already contains tapes.
Are you sure you want to mirror content to this group?

Only groups that are not already part of a unidirectional link can be selected as a clone group.



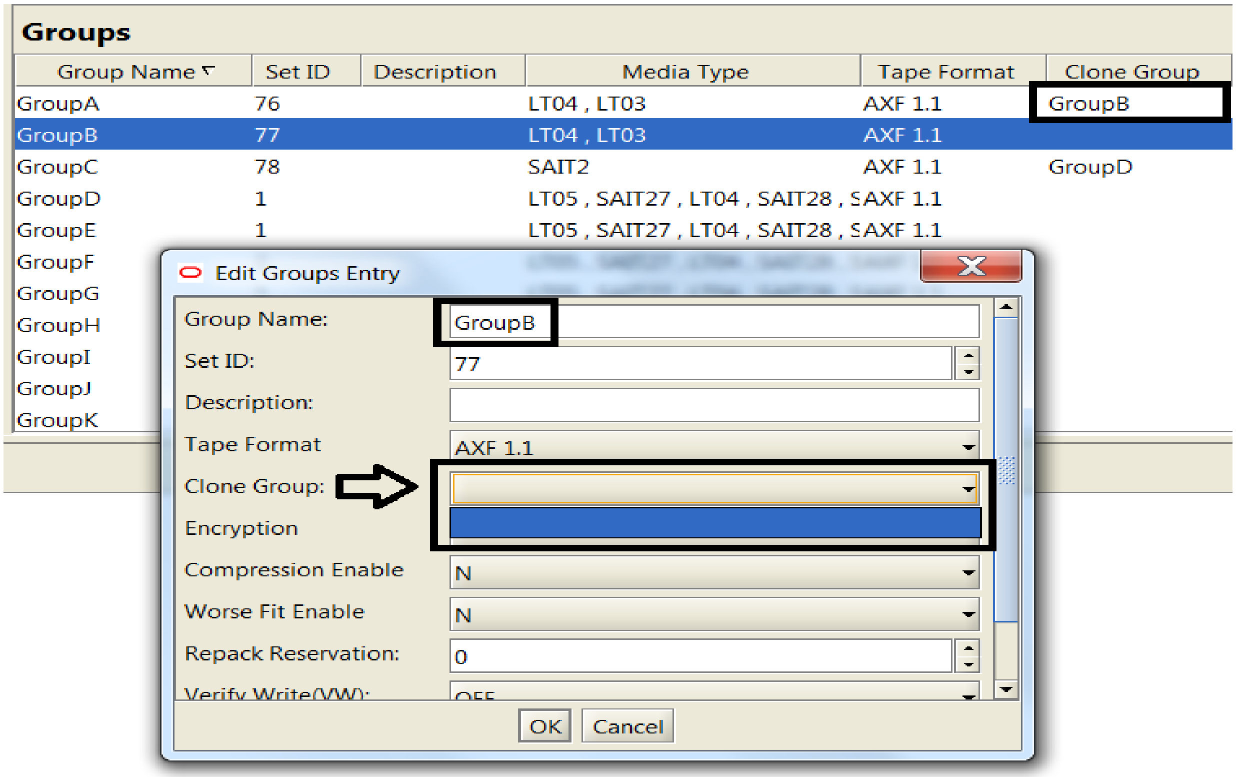
Groups

Group Name	Set ID	Description	Media Type	Tape Format	Clone Group
GroupA	76		LT04 , LT03	AXF 1.1	GroupB
GroupB	77		LT04 , LT03	AXF 1.1	
GroupC	78		SAIT2	AXF 1.1	GroupD
GroupD	1		LT05 , SAIT27 , LT04 , SAIT28 , S	AXF 1.1	
GroupE	1		LT05 , SAIT27 , LT04 , SAIT28 , S	AXF 1.1	
GroupF	1		LT05 , SAIT27 , LT04 , SAIT28 , S	AXF 1.1	
GroupG					
GroupH					
GroupI					
GroupJ					
GroupK					

Edit Groups Entry

Group Name:	GroupE
Set ID:	1
Description:	
Tape Format	AXF 1.1
Clone Group:	
Encryption	
Compression Enable	
Worse Fit Enable	
Repack Reservation:	
Verify Write(VW):	

It is not possible to chain Clone Groups, so no Clone Groups are available for selection when a user attempts to edit a group that was already designated as a Clone Group.



Groups

Group Name	Set ID	Description	Media Type	Tape Format	Clone Group
GroupA	76		LT04 , LT03	AXF 1.1	GroupB
GroupB	77		LT04 , LT03	AXF 1.1	
GroupC	78		SAIT2	AXF 1.1	GroupD
GroupD	1		LT05 , SAIT27 , LT04 , SAIT28 , S	AXF 1.1	
GroupE	1		LT05 , SAIT27 , LT04 , SAIT28 , S	AXF 1.1	
GroupF					
GroupG					
GroupH					
GroupI					
GroupJ					
GroupK					

Edit Groups Entry

Group Name:	GroupB
Set ID:	77
Description:	
Tape Format	AXF 1.1
Clone Group:	
Encryption	
Compression Enable	N
Worse Fit Enable	N
Repack Reservation:	0
Verify Write(VW):	OFF

Note: A Clone Tape will remain linked to its Source Tape even after the group link is removed. The only way to remove a tape link is through the **Modify Clone Link** action.

DIVAprotect Tab

The DIVAprotect settings are identified in the Configuration Utility's **DIVAprotect** tab as described in the following sections.

Configuration Frame

You set the main parameters in the Configuration frame as follows:

DB: Maximum possible history of Events in Months
Enter the number of months to retain DIVAprotect event history.

DB: Maximum possible number of Metrics
Enter the maximum number of DIVAprotect Metrics stored in the system. DIVAprotect will remove the oldest entries after this number is exceeded. This is completed through an automated database job that executes once per day, every day.

Manager: Size triggering Event Queue DB flush (nb events)
Enter the number of events collected in memory before saving them to the database.

Manager: Time delay triggering Event Queue DB flush (secs)
Enter the maximum interval for saving events to the database. If this interval is reached before the size triggering parameter is reached, the events will be saved to the database regardless of how many have been collected.

Event Definitions Frame

The Event Definitions panel displays the list of Event Definitions available for use in the metrics. Double-clicking an Event Definition or clicking **Open** will display a dialog box listing its associated parameters

Event Definitions are factory set and cannot be modified. Built-in metrics (*DIVAPROTECT* metrics*) cannot be edited and therefore do not appear in the Metric Definitions frame.

Metrics Definitions Frame

You double-click a Metric Definition to display an editing dialog box where the metric can be examined or modified. This has the same effect as selecting a metric in the list and clicking the **Edit** button.

The **+** and **-** buttons at the top of the frame enable adding or deleting a metric.

When adding a metric definition or editing an existing one, the Metric Definitions Properties dialog box is displayed. You can now enter or edit the following information as necessary:

Name
This is the name of the Metric Definition.

Description
This field enables you to enter a description of the Metric Definition that is displayed next to the Metric Name in the Metric Definitions panel. This description also appears in the Control GUI when pausing your mouse over an entry of the Metric Definition list.

Enabled

Select this check box to enable the metric. Unselect it to disable the metric.

Collection Type

The **Collection Type** fields specify which event parameter (*for example, Transfer Size*) is collected as the data and the statistical computation performed on it (*for example, Sum*). Available statistics are as follows:

- Average
- Count
- Maximum
- Minimum
- Sum
- Weight-based Average

Weighted By

The **Weighted By** field specifies the divider parameter for Weight-Based Average collection (*for example, Duration*).

Collected Event

The **Collected Event** list specifies the events from which the collected event parameter is retrieved. The list will only display event types suitable for the parameter specified in the **Collection Type** second field. Event types that have no such parameter attached are absent from the listing.

Resource Type

The **Resource Type** field specifies which resource breaks down the data. For example, if you select **Drive Serial Number**, separate metrics will be generated for each drive. Use the menu list to select the resource type for the metric.

Interval

The **Interval** specifies the interval for metric calculation. For example, selecting **1 Day** will generate a metric each day (*if corresponding data is available*). The metric calculation is based on the associated events that occurred in the last 24 hours. Use the menu list to select the desired interval.

Default Events and Metrics Configuration

The following table identifies the default events and metrics that are internal to DIVA Core:

Event Field ID	Displayed Name	Is Aggregatible? Is Resource?	Is Collectible?	Date or Number	Quantifier
1	Event ID	No	Yes	Number	
2	Event Type	Yes	No		
3	Tape Type	Yes	No		
4	Tape Barcode	Yes	No		
5	Drive Type	Yes	No		
6	Drive Name	Yes	No		
7	Drive Serial Number	Yes	No		

Event Field ID	Displayed Name	Is Aggregatible? Is Resource?	Is Collectible?	Date or Number	Quantifier
8	Actor Name	Yes	No		
9	Object Name	Yes	No		
10	Object Category	Yes	No		
11	Object Instance	No	No		
12	Media	Yes	No		
13	Request ID	No	No		
14	Event End Time	No	No		
15	Event Duration	No	Yes	Number	Seconds
16	Transfer Size	No	Yes	Number	Bytes
17	Transfer Rate	No	Yes	Number	MB/Second
18	Transfer Error Rate	No	Yes	Number	Errors/GB
19	Error Code	Yes	No		
20	Error Message	No	No		
21	Disk Name	Yes	No		
22	Library Serial Number	Yes	No		
23	SD Name	Yes	No		
24	Transcoder Name / Analyzer Name	Yes	No		
25	Local DIVA Core System	Yes	No		
26	Number of Operations	No	Yes	Number	

Sample Metrics Definition

The following is a sample use case scenario:

You want to create your own metric for average duration of read and write operations on a tape in a DIVA Core system. You use the following procedure to create this metric:

1. Open the Configuration Utility.
2. Click the **DIVAprotect** tab.
3. Click the **+** button on the *Metrics Definitions* frame to open the Metric Definition dialog box.
4. Enter a unique name for the metric in the ***Name*** field.
5. Enter a description in the ***Description*** field.
6. Select the ***Enabled*** check box to enable the metric.
7. Set the ***Collection Type*** and ***Weighted By*** fields as appropriate using the menu lists.

   For example, if you select **Weight-Based Average** as the ***Collection Type***, the ***Weighted By*** field is enabled. Because the ***Weighted By*** field is active, you are required to select a value to use to *weigh* the metric definition. In this case, the values for the ***Weighted By*** field are identical to the second ***Collection Type*** field.

8. Use the check boxes in the *Collected Event* area to select the events for collection.
9. Use the menu list to select the aggregation ***Resource Type***.
10. Use the menu list to select the aggregation ***Interval***.
11. Click **OK** to save your metric definition and complete the process.

Media Tab

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

The Source Media Priority determines which source instance is preferred during the instance selection process of a Restore, Partial Restore, and Copy To Group request, by the media on which the instance resides. Instances on media with a higher priority are preferred. If two instances reside on media with the same priority, DIVA Core will select an instance based on its internal algorithm (*same algorithm used in earlier versions of DIVA Core*).

Note: Cloud instances are only copied or restored if all local instances are offline or no local instances exist. In other words, this condition is an absolute condition independent of the Source Media Priority.

Storage Plans Tab

Caution: Misconfiguration of the DIVA Core SPM (*Storage Plan Manager*) 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 Telestream Support before making any changes to SPM. Failure to do so may result in severe damage to the DIVA Core system or even permanent data loss.

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

For detailed configuration information, see the *DIVA Core Storage Plan Manager (SPM) User's Guide*. *See Appendix A for DIVA Core options and licensing information*.

Storage Plans Tab Frames

The **Storage Plans** tab includes the following frames:

Storage Plans

Displays the Storage Plan names and definitions.

You click the **+** button in the *Storage Plans* frame to add a Storage Plan. Enter the Storage Plan name in the **Storage Plan Name** field. Use the menu lists to select whether to **Allow Last Instance Deletion**, **Please Specify Origin (Internal/External)** (*this is typically **Internal***), and the **Group/Array Name** to associate with the Storage Plan. Click **OK** to save the changes.

You highlight a desired Storage Plan, and then click **Edit** to edit the selected Storage Plan. Click **OK** to save your changes.

Media Groups

Defines the tape groups or disk arrays to be allocated to slots, and if content deletion will be managed by the Storage Plan Manager.

You click the **+** button in the *Media Groups* frame to add a Media Group. Enter the **Medium Name** and **Storage Name** in the designated fields. Use the menu lists to select the **Group/Array Name**, **Watermarked**, and the **Disk Cleaning Strategy**. Click **OK** to save the changes.

You highlight a desired Media Group, and then click **Edit** to edit the selected Media Group.

Storage Plans

Displays the Storage Plan names and definitions.

You click the **+** button in the *Storage Plans* frame to add a Storage Plan. Enter the Storage Plan name in the **Storage Plan Name** field. Use the menu lists to select whether to **Allow Last Instance Deletion**, **Please Specify Origin (Internal/External)** (*this is typically **Internal***), and the **Group/Array Name** to associate with the Storage Plan. Click **OK** to save the changes.

You highlight a desired Storage Plan, and then click **Edit** to edit the selected Storage Plan. Click **OK** to save your changes.

After you click **OK**, A warning dialog box appears asking whether you want to continue saving the changes. Click **Yes** to save the changes, or **No** to cancel.

Filters

This frame displays filter definitions related to the Storage Plan Objects. It enables performing actions on all or specific objects (*based on object filters*).

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.

For detailed configuration information, see the *DIVA Core Storage Plan Manager (SPM) User's Guide*.

Slots Tab Frame

The **Slots** tab includes only one frame named Slots.

You click the **+** button in the *Slots* frame to add a Slot. Configure the Slot's parameters by entering the information desired for this slot, or using the menu lists to select the options. Click **OK** to save the changes.

You highlight a desired Slot, and then click **Edit** to edit the selected Slot. Click **OK** to save your changes.

The Slot Configuration screen serves two purposes; new slot configuration and editing an existing slot configuration. Both functions use the same dialog box. However, the information displayed in the dialog box is determined by whether a slot is being added, or an existing slot is being edited.

Manager Setting Tab

You use the **Manager Setting** tab to set several parameters related to the Media and the Metadata Database in the system.

Media Configuration

There are two settings to configure for the Media in the **Manager Setting** tab:

Media/Storage Plan Submission Delimiter

The object is assigned to a specific Storage Plan and saved to the specified media. The **Media Name** and the **SP Name** must be separated by the & delimiter.

Maximum Number of Records in DP_OPERATIONS Table

The maximum number of records maintained in the DP_OPERATIONS table in the database.

Metadata Database Configuration

You must configure the following three parameters in the **Manager Settings** tab to enable complex objects processing:

Complex Objects Metadata Database Location

Enter the full path to the Metadata Database files in this field.

Database Backup Notification

Select the check box to enable the Metadata Database backup notifications, or unselect the check box to disable notifications.

Notifications must be enabled to receive DIVA Core Backup Service messages to the Control GUI. If this parameter remains disabled, there will be no notification of errors or warnings displayed in the Control GUI. The default is enabled (*selected*).

Enable Metadata Database Feature

Select the check box to enable the Metadata Database Backup feature. The default is disabled (*unselected*).

Keystore Configuration

The Keystore password is set in the Configuration Utility in the *Manager Configuration* view. You enter the Keystore password in the **Export: Tape Encryption Keystore Password** field. The password must be at least eight characters and contain at least one digit, at least one lowercase alphabetic character, at least one upper case alphabetic character, and at least one special character within a set of special chars (*! @ # % $ ^*).

You enable exporting encryption keys by selecting the **Export: Enable Export of Encryption Keys** check box. Exporting encryption keys is disabled by default. You must be in Engineering mode to view or edit both settings.

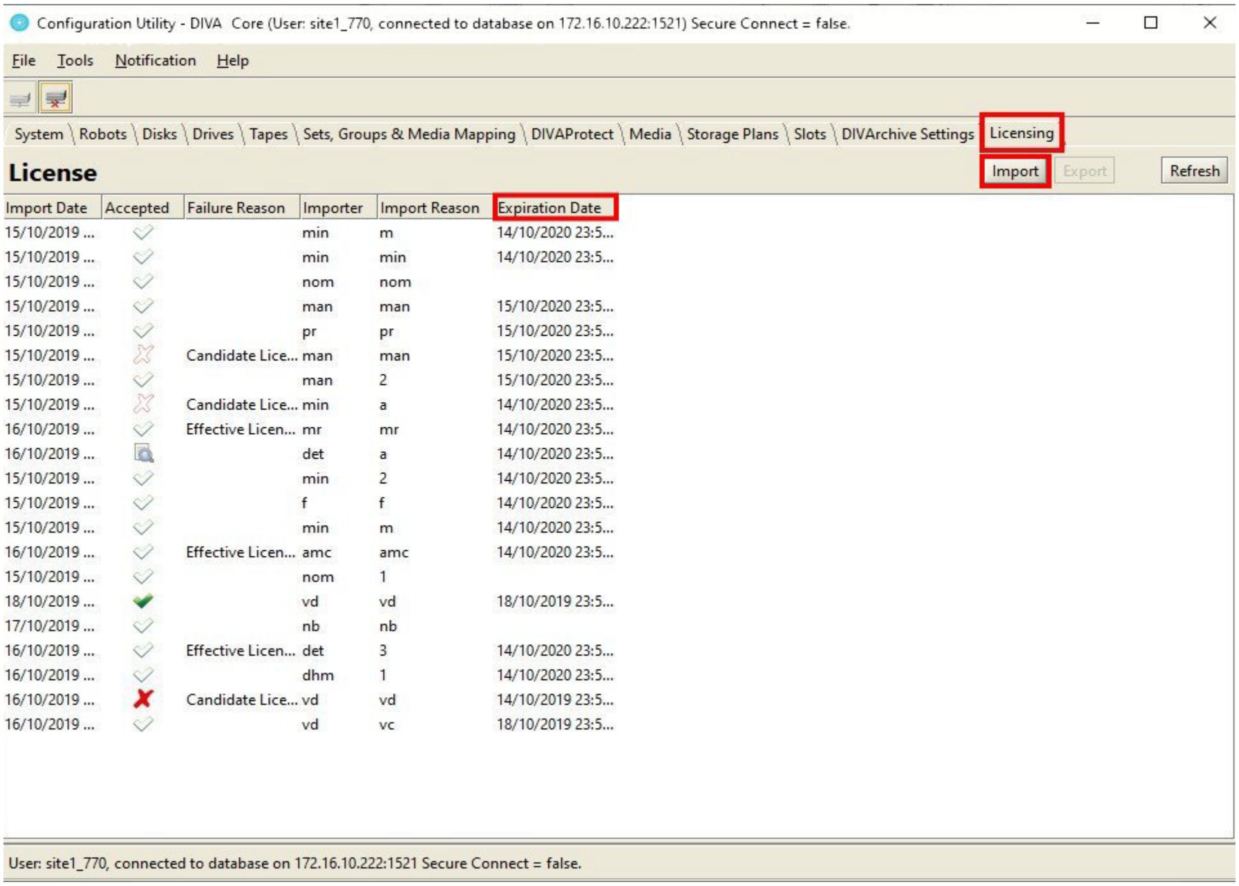
You can verify the integrity of the Keystore file using the Java keytool. See https://docs.oracle.com/javase/6/docs/technotes/tools/solaris/keytool.html for details on Java's keytool.

License Tab

This tab is used to import or export your DIVA Core licensing information into the DIVA Core Database. New licenses can be added using this tab without restarting the system.

The following figure displays the License Tab in the Configuration Utility.

- Click the **Import** button to open the *Import License* window. Enter all of the required information and click **Submit** to import the license.
- The *Expiration Date* column shown is used for temporary licenses.


Configuration Utility - DIVA Core (User: site1_770, connected to database on 172.16.10.222:1521) Secure Connect = false.
File
Tools
Notification
Help
System
Robots
Disks
Drives
Tapes
Sets, Groups & Media Mapping
DIVAProtect
Media
Storage Plans
Slots
DIVArchive Settings
Licensing
Import
Export
Refresh

License

Import Date	Accepted	Failure Reason	Importer	Import Reason	Expiration Date
15/10/2019 ...	✓		min	m	14/10/2020 23:5...
15/10/2019 ...	✓		min	min	14/10/2020 23:5...
15/10/2019 ...	✓		nom	nom	
15/10/2019 ...	✓		man	man	15/10/2020 23:5...
15/10/2019 ...	✓		pr	pr	15/10/2020 23:5...
15/10/2019 ...	✗	Candidate Lice...	man	man	15/10/2020 23:5...
15/10/2019 ...	✓		man	2	15/10/2020 23:5...
15/10/2019 ...	✗	Candidate Lice...	min	a	14/10/2020 23:5...
16/10/2019 ...	✓	Effective Licen...	mr	mr	14/10/2020 23:5...
16/10/2019 ...	🔍		det	a	14/10/2020 23:5...
15/10/2019 ...	✓		min	2	14/10/2020 23:5...
15/10/2019 ...	✓		f	f	14/10/2020 23:5...
15/10/2019 ...	✓		min	m	14/10/2020 23:5...
16/10/2019 ...	✓	Effective Licen...	amc	amc	14/10/2020 23:5...
15/10/2019 ...	✓		nom	1	
18/10/2019 ...	✓		vd	vd	18/10/2019 23:5...
17/10/2019 ...	✓		nb	nb	
16/10/2019 ...	✓	Effective Licen...	det	3	14/10/2020 23:5...
16/10/2019 ...	✓		dhm	1	14/10/2020 23:5...
16/10/2019 ...	✗	Candidate Lice...	vd	vd	14/10/2019 23:5...
16/10/2019 ...	✓		vd	vc	18/10/2019 23:5...

User: site1_770, connected to database on 172.16.10.222:1521 Secure Connect = false.

7

Starting DIVA Core Configuration

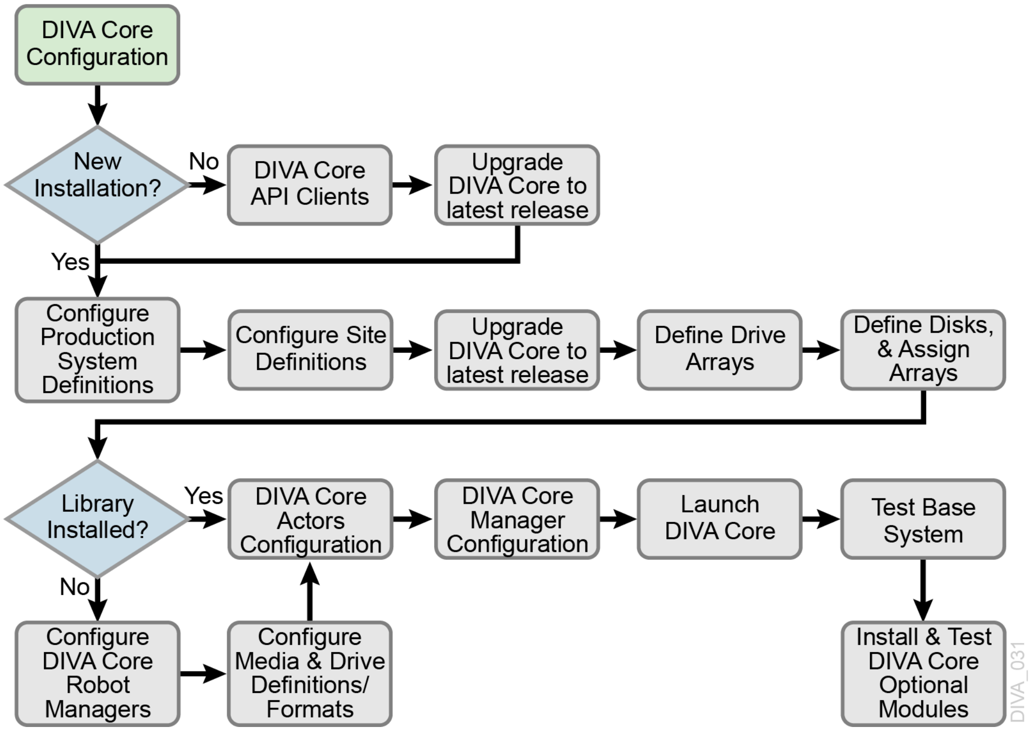
This chapter describes initial DIVA Core configuration and includes the following information:

There are many interrelated components in a DIVA Core System. The following figure shows the basic configuration workflow.

The configuration of DIVA Core is hierarchical and top-level parameters such as Production Systems, Sites, Arrays, and Disks need to be configured before configuring other components such as DIVA Core Actors.

If you intend to modify an existing DIVA Core system, you must *always* start by backing up the existing DIVA Core installation, configuration files, and *especially* the DIVA Core Oracle and Metadata Databases.

Contact Telestream Support before making any modifications to your DIVA Core platform if you are unsure about any steps in the procedures, or require clarification.


DIVA Core Configuration
New Installation?
No
DIVA Core API Clients
Upgrade DIVA Core to latest release
Yes
Configure Production System Definitions
Configure Site Definitions
Upgrade DIVA Core to latest release
Define Drive Arrays
Define Disks, & Assign Arrays
Library Installed?
Yes
DIVA Core Actors Configuration
DIVA Core Manager Configuration
Launch DIVA Core
Test Base System
No
Configure DIVA Core Robot Managers
Configure Media & Drive Definitions/ Formats
Install & Test DIVA Core Optional Modules
DIVA_031

SSL (*Secure Sockets Layer*) and Authentication

DIVA Core consist of services in Java and C++. The format in how certificates and keys are represented are different in each. DIVA Core has the keys and certificates for JAVA services in a Java Keystore file, and in PEM (*Privacy Enhanced Mail*) format files for the C++ services.

The Manager can simultaneously support two communications ports - one secure, and one unsecure. The default secure port number is 8000 and the unsecure default port number is 9000.

All internal DIVA Core 8.0 services (*Control GUI, Configuration Utility, DBBackup, Migration Utility, Actor, SPM, DFM, SNMP, Robot Manager, RDTU, and Migration Services*) can only connect to secure ports. The control GUI will report an *SSL Handshake Timeout* if you attempt to connect to the non-secure port. Clients using the Java or C++ API are allowed to connect to either port.

The following is a relative snippet from the Manager configuration file:

```
# Port number on which the DIVA Manager is waiting for incoming connections.
# Note: If you are using a Sony library and plan to execute the DIVA Manager
# on the same machine as the PetaSite Controler (PSC) software, be aware
# that the PSC server uses the 9000 port and that this cannot be modified.
# In that situation, you have to use a different port for the DIVA Manager.
# This same warning applies to FlipFactory which uses ports 9000 and 9001.
# The default value is 9000.
DIVAMANAGER_PORT=9000

# Secure port number on which the DIVA Manager is waiting for incoming connections.
# The default value is 8000.
DIVAMANAGER_SECURE_PORT=8000
```

A new folder called %DIVA_API_HOME%/security is added to the DIVA Core API installation structure as follows:

```
%DIVA_API_HOME%
```

```
security
 conf
```

The conf folder contains the SSLSettings.conf file to configure the SSL handshake timeout.

Secure Communication with Oracle Database

With DIVA 7.6.1, a new DIVAOracle package version 3-1-0 was created:

- Windows: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_Windows_64-bit
- Linux: OracleDivaDB_3-1-0_12_2_0_1_0_SE2_OEL7_x86_64

This new package includes the following

1. Secure Oracle Database listener listening on port 1522, additional on top of the regular unsecured listener listening on port 1521.
2. Oracle Database wallet for storing the Trust Certificate and DIVADatabaseServer Certificates. During installation DIVADatabaseServer.jks holding the default DIVA_CA trust certificate and Default DIVADatabaseServer certificate is import into the Oracle Database wallet for enabling the secure communication.
3. This new package also creates a secure TNSNames LIB5SSL which enables any DIVA services to connect to the Oracle database securely over SSL connecting to the new secure Oracle database listener listening on port 1522 using the TNSNames.

New Entry in TNSNames.ora:

```
LIB5SSL =
 (DESCRIPTION =
  (ADDRESS = (PROTOCOL = TCPS)(HOST = HOSTNAME)(PORT = 1522))
  (CONNECT_DATA =
   (SERVER = DEDICATED)
   (SERVICE_NAME = LIB5.WORLD)
  )
 )
```

A new Configuration Parameter “DIVAMANAGER_DB_SECURE_CONNECT” was added to the Manager, Migrate, DBBackup configuration file to enable secure communication to database using Hostname/IPAddress and port. This parameter has no effect if using DIVAMANAGER_ TNSNAME parameter in the configuration file.

Valid parameter values are:

- TRUE - When set to TRUE, the DIVAMANAGER_DBPORT in the Manager, Migrate, DBBackup configuration file must point to the secure port of the Oracle Database.
- FALSE (*default*)

The Configuration Utility and Control GUI also supports connecting securely to the database. SPMService can connect securely only using TNS names.

Security Tools

The DIVA Core 8.0 release includes the following security tools:

- Windows: DivaSecurityTool.bat
- Linux: DivaSecurityTool.sh

The tool is located in the %DIVA_HOME%/security/bin directory and provides the following functions:

Reset Key Store and Trust Store Passwords

The JAVA Keystore file DIVA.jks, Trust Store file DIVATrust.jks, and the private keys in the respective PEM format files are protected by a single password. Use the **Reset Key Store and Trust Store Password** option to reset the default password (*changit*), add the new password to %DIVA_HOME%/security/conf/DIVAKeyPass.conf, and restart all services. Use the following format for the file:

```
DIVAKeyPass=newpassword
```

The KeyPass must be between 8 and 12 characters. All services must check for the existence of the DIVAKeyPass.conf file and attempt to read the password from it before defaulting to changeit.

To protect the password from being visible in the configuration file when the Manager is started, it reads the password and encrypts it. Then the Manager writes the encrypted value back into the configuration file. The file could look like the following after the Manager is started with a new password.

```
DIVAKeyPass=ycJrKsA8NPQUuVaXBA+kkO/XpZ4PQNeq6YTkcxq5SwJF==MEbFTnOHd8jxXBA3jnQ0w=
```

All of the services will try to decrypt the password if the value for the property DIVAKeyPass is longer than 12 characters. If the length of the value for the property DIVAKeyPass is less or equal to 12 charterers the value will be used as password directly.

Generating New Keys and Certificates

This option generates new keys and certificates for all DIVA Core services. DIVA Core installs with default private keys and SSL certificates for all of its services by default. The new generated keys and certificates are signed by DIVA_CA.

Generating Certificate Signing Requests

This option generates certificate signing requests for DIVA_CA to send to third party Certificate Authorities. The generated Certificate Signing Request file is placed in the %DIVA_HOME%/Program/security/CSR folder.

If you use a third party CA to sign the DIVA_CA certificate, the third party CA becomes the Root CA, and DIVA_CA becomes the intermediate CA. The DIVA_CA will sign all SSL certificates for the DIVA Core services.

You send the Certificate Signing Request file to the third party to have it signed. The third party CA returns the signed DIVA_CA certificate and the third party's own certificate.

Installing External Certificate Authority

This option installs the third party CA Certificate into the DIVA Core installation. After the third party completes the CSR they will return the signed DIVA_CA certificate and their own certificate. You must include the path to the returned files as arguments, to install the external third party CA Certificate into DIVA Core.

DIVADBWallet

You can use DIVADBWallet (*Windows - DIVADBWallet.bat or Linux - DIVADBWallet.sh*) to update the Oracle Database Server wallet with the DIVADatabaseServer.jks changes after installing an external certificate authority using the DivaSecurityTool. Oracle Database Server wallet is created during Oracle Database Installation using DIVAOracle Database package OracleDivaDB_3-1-0_12_2_0_1_0_SE2_Windows_64-bit or OracleDivaDB_3-1-0_12_2_0_1_0_SE2_OEL7_x86_64 and later.

DIVADBWallet provides the following options that DIVA administrator can choose to perform.

Display DIVADBWallet
Displays the certificates information from Oracle Database Server wallet used by DIVA Core.

Update DIVADBWallet
Updates the Oracle Database Server wallet with the new DIVADatabaseServer.jks provided by the user. Use this option after installing an external certificate authority to communicate securely with the Oracle Database server.

Change DIVADBWallet password
Resets the password for Oracle Database Server wallet.

Securing the API

The following sections describe securing communications when using one of the available DIVA Core APIs. The JAVA and C++ Initiators use the default keys and certificates file in the %DIVA_API_HOME%/Program/security folder when connecting to the Manager.

The Manager Service is backward compatible with earlier versions of the DIVA Core JAVA, C++, Web Services APIs, DIVA Enterprise Connect 1.0, and DIVA Connect 2.2 establishing connections over regular sockets. The DIVA Core 8.0 (*and later*) Java and C++ API releases can establish Manager communications using secure, or unsecure, sockets. Secure communications are only supported by the Manager.

The Manager Service supports both secure and unsecure communication ports simultaneously. The default secure port is tcp/8000, and the default unsecure port is tcp/9000.

DIVA Core Java API

See the DIVA Core Java API documentation for information on the new methods added to the SessionParameters Class for secure communications. See the *DIVA Core Java API Readme* for the location of the full Java API documentation (*delivered with the API*).

DIVA Core C++ API

The DIVA Core C++ API includes a new call named DIVA_SSL_initialize added to set the environment for secure communication with the Manager Service. You must call DIVA_SSL_initialize before calling DIVA_connect starting with DIVA Core 8.0, otherwise the DIVA_connect call will fail.

Defining Production Sites and Other Sites

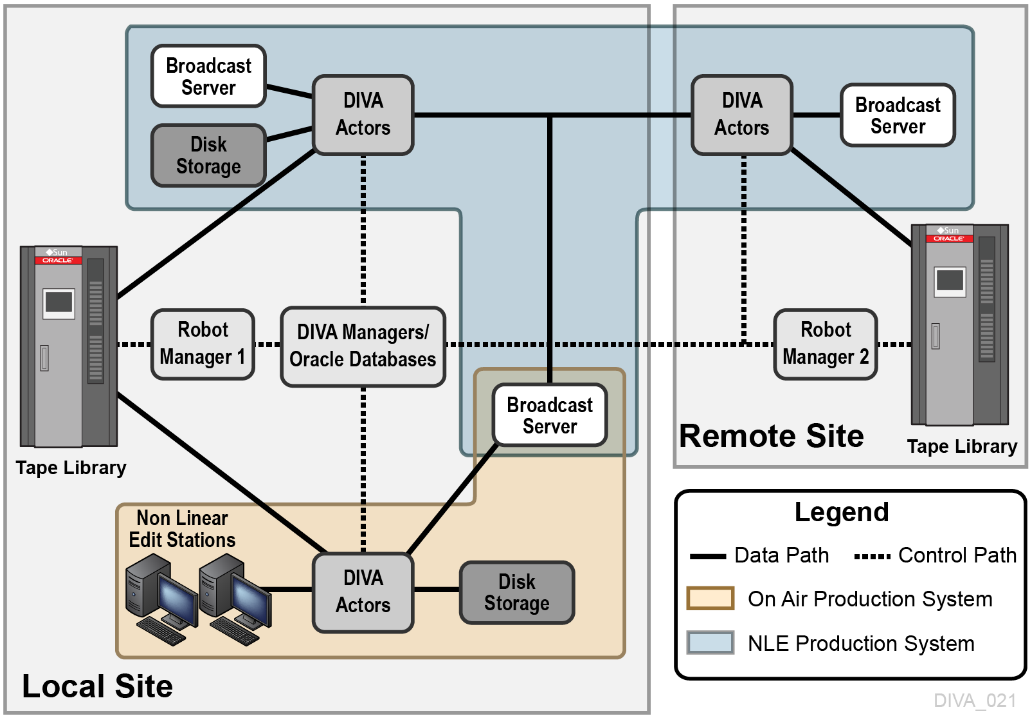
A *Production System* is a logical group within DIVA Core that associates Actors to your sources and destinations. It enables splitting DIVA Core resources among different applications, or prioritizing specific functions over others within the platform. This is accomplished by assigning more DIVA Core Actors to one Production System over another. Although DIVA Core Actors cannot be shared between Production Systems, it is possible to share a source or destination. In this case, you can declare the specific source or destination more than one time, but each instance declared must have a unique name. *All installations must have at least one Production System defined*.

For applications requiring extremely high bandwidth, the Production System concept also enables you to dedicate an Actor to an individual source.

For example, you may have a Production System used for on-air transmission, and another Production System for offline editing. The Production System concept enables fine-tuning your resource allocation between the two systems based on the workflow and bandwidth requirements of each system.

A *Site* enables you to associate an Actor tape library or disk with a physical location. DIVA Core determines the most optimal use of resources during event execution. For example, a remote installation connected over a WAN that is used for disaster recovery purposes for the primary site. *All installations have at least one Site Definition*.

You identify Production Systems and Site Definitions under the Configuration Utility's **System** tab.



Defining Sources and Destinations

A *Source* is defined as any connected system that contains content intended to be transferred to DIVA Core. A *Destination* is defined as any connected system that requires content to be transferred to it from DIVA Core. Examples of both are Broadcast Video servers, FTP servers, and disk file systems.

These entries are defined in the *Sources and Destinations* frame of the **System** tab in the Configuration Utility. *See* Appendix C *for details on specific settings for each type*.

Use the following procedure to define a source or destination:

1. Open the Configuration Utility.
2. Click the **System** tab.
3. Click the **+** button at the top of the *Sources and Destinations* frame.
4. Enter the following information in the appropriate fields on the Sources and Destinations Entry dialog box:

Source Name
Enter a unique source name in this field. You can have multiple entries for the same physical source if they have different names. Multiple entries enables sharing the source with multiple Production Systems.

IP Address

Enter the IP Address or host name of the source. If you use host names they must be resolvable by the Actor host computers. Some **Source Types**, such as **Disk**, do not require an IP Address and can be left blank for those **Source Types**.

Source Type

Select a **Source Type** from the list. The Actor uses the **Source Type** to select the correct communications protocol for the device.

Prod. System

This field specifies this source's dedicated Production System.

Site

Select the **Site** location from the list. This field identifies the physical location of the source.

Connect Options

Enter any parameters required to connect to the source. For example, the user name and password.

Root Path

Enter the root directory path (*if any*) for accessing content on the source.

Max. Throughput (Mb/s)

This setting limits the total bandwidth used in transfers to or from this source. This is useful when the source does not natively provide any bandwidth throttling. This is typically set to a higher value than the source can provide (*that is, unthrottled*).

Max Accesses

Enter the maximum combined simultaneous read and write operations permitted to the source. For example, if this value is five and there are five requests active, any additional requests will be set to **Waiting for Resources** until at least one of the other requests has completed.

Max Read Accesses

The ***Max*** **Read Accesses** and **Max Write Accesses** enable fine tuning of transfers to and from the source. For example, you can allocate more restore operations than archive operations.

If the **Max Read Accesses** value is 0, this component is only used as a Source.

Max Write Accesses

The **Max Write Accesses** and **Max Read Accesses** enable fine tuning of transfers to and from the source. For example, you can allocate more restore operations than archive operations.

If the **Max Write Accesses** value is zero, this component is only used as a Destination.

First Utilization Date

This is a read-only field that displays the first date this component was put into service.

The remaining fields are related to Checksum Support and identified here for completeness.

External Checksum Source

Select the appropriate option to identify whether the checksum source is external (***Yes***) or internal (***No***).

Checksum Type
Select the type of checksum (***MD5*, *SHA256*, *and so on***) in use from the list.

GC Mode
Select the **Genuine Checksum (GC)** mode from the list.

Verify Following Archive (VFA)
Select the check box to enable VFA on this source. Unselect the check box to disable VFA.

Verify Following Restore (VFR)
Select the check box to enable VFR on this source. Unselect the check box to disable VFR.

5. Click **OK** to save your configuration.

Object Storage Destinations

DIVA Core 8.0 enables restoring content to a destination, and archiving content from a source, linked to an OCI, Swift or S3 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.

You must select **Swift**, **OCI** or **S3** from the **Source Type** list, and select an account from the **IP Address** list to link a Swift Source (*or Destination*) to a Swift Oracle Object Storage account. The following two specific connection options are associated with the Swift type Source/Destination. The -max_object_size parameter is specific to Swift and not applicable to OCI or S3 type accounts.

-max_object_size
As a destination, the Swift connector can create SLO (*Static Large Objects*) on the destination server if the size of the file being restored is larger than a configurable size; the maximum object size. This option defines the size threshold and the size of each segment of an SLO. Segments of an SLO are uploaded to a separated container. For example, if DIVA Core needs to restore a large object named directory/large_file under my_container, the segments of the SLO will be uploaded to a container named my_container_segments.

The syntax for this option is -max_object_size {size in MB}.

Example:

```
my_container/directory/large_file [this object contains the manifest file]
my_container_segments/directory/large_file_00000
my_container_segments/directory/large_file_00001
my_container_segments/directory/large_file_00002
```

-oracle_storage_class
This option defines the type of container that DIVA Core must create if the container does not exist. If this option is set to **ARCHIVE**, the Swift Source/Destination will create an archive container; otherwise, standard containers are created. This option is specific to the Oracle Archive Cloud.

The syntax for this option is -oracle_storage_class {ARCHIVE|STANDARD}.

After you define a **Swift**, **OCI** or **S3** destination, you can use the DIVA Core Object Transfer Utility (*through the Control GUI*) to browse the Oracle Object Storage account container's folder trees, and to initiate Archive and Restore requests to the Source/Destinations. The Cloud OTU can also identify a manifest file and remove all file fragments in the manifest so that only a single manifest file is displayed.

You must select OCI from the Source Type list, and select an account from the IP Address list to link a Source (*or Destination*) to an OCI Oracle Object Storage account. See the *DIVA Core Object Transfer Utility (OTU) User's Guide* for more information on using OTU with Object Storage Accounts.

Source and Destination Overview

This section describes additional Source and Destination configuration and expands on the previous section.

Source and Destination Configuration Limitations

If you configure a Source/Destination with the -rxml option, a proper MD5 checksum is generated only if the object contains a single file. If the object contains more than one file, no checksums are generated. You typically use this configuration in DIVA Connect configurations for restoring to a second DIVA Core system with checksums.

When this is the case, and an object that contains more than one file is restored, the resultant .xml Metadata file will not have checksums present. A Source/Destination on the receiving side configured with GC active will fail to archive the object because the checksum verification will fail (*there is no matching checksum*).

Source Type

The ***Source Type*** parameter of the Source or Destination definition establishes the specific protocol for the interface between the DIVA Core Actor and the target device or file system.

The source types supported by DIVA Core are predefined and selection is limited to the listing from the ***Source Type*** list.

Deprecated indicates that this is a software feature or function within DIVA Core that has subsequently been replaced by an improved feature set, however the feature or function is still supported by DIVA Core in the current release. The following is a list of source types available in the current DIVA Core release:

AM Communicator
Avid Archive Manager interface

TM Communicator DET Interface
AVID Unity interface using the DET (*Dynamically Extensible Transfer*) protocol

TM Communicator DHM Interface
AVID Unity interface using the DHM (*Data Handling Module*) protocol

CIFS
A disk source (*that is assumed to be*) visible to all Actors in the associated Production System. Buffered I/O will be used for transfers to and from this source. Linux-based Actors can use CIFS by automatically mounting them. When specifying the Vantage transcoder cache, Linux-based Actors can also automatically mount to it, or use a fixed user-created mount point, to transfer content to and from SMB network shares (*transcoder cache*).

Disk

A disk source (*that is assumed to be*) visible to all Actors in the associated Production System. Direct I/O will be used for transfers to and from this source.

EXPEDAT

DataExpedition (*Expedat*) Server (*up to release 1.17*)

FTP_STANDARD

FTP protocol for RFC959 compliant servers.

LEITCH

This source type is deprecated, and is only provided for backward compatibility for older Leitch servers. Newer servers must use the **FTP_STANDARD** source type.

LOCAL

Represents a disk partition bound to a specific Actor.

MEDIAGRID

Omneon MediaGrid

METASOURCE

Used for accommodating multiple servers sharing the same online storage.

MSS

AVID MediaStream servers

OBJSTORE_ON_DISK

Used to export a DIVA Core object to a disk in the cloud instance format. For example:

```
divastorage_DIVA_STD_000006_metadata/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf
divastorage_DIVA_STD_000006_metadata/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.footer
divastorage_DIVA_STD_000006/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.00001
divastorage_DIVA_STD_000006/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.00002
divastorage_DIVA_STD_000006/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.00003
divastorage_DIVA_STD_000006/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.00004
divastorage_DIVA_STD_000006/72ecd6fe-157b-11e8-b642-0ed5f89f718b.axf.00005
```

OCI

The interface to Oracle Cloud Infrastructure (*formerly Oracle Bare-Metal Cloud*) for use with object storage accounts.

OMNEON

Omneon Spectrum servers using unique FTP site commands

PDR

GVG Profile servers

QUANTEL_ISA

Quantel Q or sQ servers utilizing the Quantel Power Portal

QUANTEL_QCP

Older Quantel servers utilizing the QCP protocol

S3

Amazon AWS S3 Storage Accounts

SEACHANGE_BMC

SeaChange Broadcast Media Clusters or Media servers using Vstream Streaming API

SEACHANGE_BML

SeaChange Broadcast Media libraries using FTP or CIFS protocols

SEACHANGE_FTP

SeaChange FTP support; *this Source Type is deprecated*

SFTP

SSH (*Secure Shell*) FTP protocol

SONY_HYPER_AGENT

For use with Sony Newbase FTP server

SWIFT

The interface to Oracle Cloud Interface Classic (*formerly Oracle Public Cloud*) and EMC ECS for use with Object Storage Accounts.

SIMULATION

For simulator platforms only. This creates simulated Sources and Destinations

One record is required for each Content Director that DIVA Core has to move data to and from. The following list identifies the Content Director attributes:

Attribute	Value	Example
IP Address	Leave this field empty	
Source Type	The desired source type	**MEDIAGRID**
Root Path	\\ContentDirector\file_system\clip.dir	\\10.30.0.200\cldev4\clip.dir \\mycontentdir\fs5\clip.dir

Connect Options

You define the *Default Quality Of Service* for DIVA Core transfer requests and additional protocol specific parameters (*for example, user name and password*) in the ***Connect Options*** field.

The ***Connect Options*** enable the DIVA Core Actor to establish a connection to the target device or disk file system. This applies to both requests submitted through the Control GUI or from third party archive initiators using the DIVA Core API.

See Appendix C for details on specific ***Connect Options*** for supported Broadcast Servers and file system types.

Root Path

You can explicitly specify the directory path at the request level. However, you can define the default directory path for the source, or a disk mount point for disk and local sources, in the ***Root Path*** field. The specified ***Root Path*** is appended before any ***Files Path Root*** specified in an archive, restore, or partial file Restore request unless the ***Files Path Root*** specified in the request is an absolute path.

The benefit of the ***Root Path*** approach is that you can specify the server's directories at the source and destination configuration level rather than at the request level. You can alter it without affecting commands issued from DIVA Core clients.

See Appendix C for details on the interaction of the ***Files Path Root*** and ***Root Path*** parameters.

Metasource

The optional **Metasource** enables DIVA Core to combine two or more existing Source/Destinations, which use common storage, or multiple Drop Folder Monitors, into a single Source/Destination configuration.

The **Metasource** feature offers load balancing and fault tolerance from within DIVA Core if an individual server or DFM fails. DIVA Core automatically attempts to use the next server (*or DFM*) in the **Metasource** configuration if the attached server (*or DFM*) is unavailable for a request.

Arrays and Disks

DIVA Core's disk management defines each physical disk, how it is attached (*or mounted*) to the system, and then groups the disks together to perform specific roles within the archive.

Defining an Array

The first step to disk management is to define an array. In DIVA Core an array is a logical grouping of one or more disks for the storage of DIVA Core objects. You define arrays in the *Arrays* frame of the **Disks** tab in the Configuration Utility.

Use the following procedure to define an array:

1. Open the Configuration Utility and connect to the DIVA Core Database.
2. Click the **Disks** tab.
3. Click the **+** button at the top of the *Arrays* frame to open the *Add new row in Arrays* dialog box.
4. Enter the following information in the fields on the dialog box:

Id
The array's ID is automatically generated by the system. The **Id** field is not editable.

Array Name
Enter a name for the array in the **Array Name** field. This is symbolic and typically represents the purpose of the stored objects.

Description
Enter a description for the array in the **Description** field. This is arbitrary and typically denotes the array's function.

Format
Select the array format from the list. Options are **AXF** and **Legacy**. The **AXF** format is required for complex objects. The following list identifies the available AXF formats:

AXF_RF_1.1
This format uses the AXF 1.1 structures, but AXF files won't contain any overhead.

Note: Telestream does not recommend using the AXF_RF_1.1 format with complex objects.

AXF_1.1
This format is compliant with AXF 1.1 standards.

AXF_1.0
This format is compliant with AXF 1.0 standards.

AXF
This is redirected to AXF_1.1.

LEGACY
This is the formal archive format used by DIVA (*index.txt, 00000001, 00000002, and so on*)

Max Allowed Disk Space For Repack (%)
Enter the percentage of disk space available for use by repack requests.

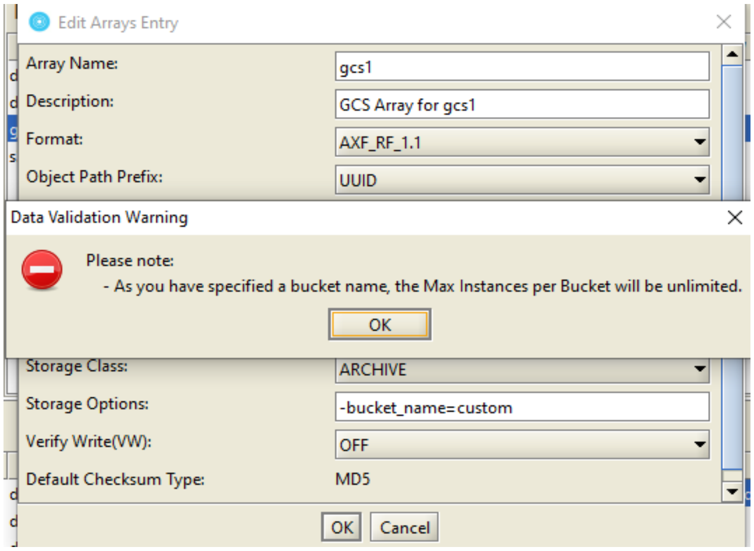
Verify Write (VW)
You select whether to enable Verify Write from the list. Verify Write is not compatible with complex objects.

Default Checksum Type
The **MD5** algorithm is the **Default Checksum Type**. This field is not editable in this dialog box.

Storage Options

- Custom Bucket Name (-bucket_name=<custom>)

  With AXF and AXF native files and folders formats, it may be useful to specify a custom bucket name by specifying it in the storage options as shown in the following figure. When you specify a custom bucket name, all instances will be written into the same bucket. If you specify a custom bucket name, the maximum number of instances per bucket is unlimited. If you allow DIVA to generate the bucket name, then DIVA will only put the configured maximum number of instances per bucket before creating a new bucket. This option applies to object storage arrays only (*OCI, S3, Azure, GCS, and so on*).



Array Name: gcs1
Description: GCS Array for gcs1
Format: AXF_RF_1.1
Object Path Prefix: UUID
Storage Class: ARCHIVE
Storage Options: -bucket_name=custom
Verify Write(VW): OFF
Default Checksum Type: MD5

Please note:
- As you have specified a bucket name, the Max Instances per Bucket will be unlimited.

- SMB IP Address Balancing (-UseRandomSMBAddress)

  This option a specific to arrays configured to access SMB network share from Windows Actors. When the -UseRandomSMBAddress option is specified, DIVA can automatically select one of the IP addresses associated with the hostname of the SMB share and connect using \\<IP address>\share instead of

\\<hostname>\share. The purpose of this option is to offer some load balancing if the configuration permits.

5. Click **OK** to save the array configuration.

You highlight a desired array and click **Edit** on the top of the *Arrays* frame to edit an existing array. When you finish making changes, click **OK** to save your changes.

Note: Existing arrays cannot be edited or removed while they are referenced by a disk, or contain DIVA Core objects.

The ***Storage Options*** column associated with the array is displayed in the Control GUI on the **Home**, **Disks** tab. Non-cloud disks have a storage class of **NONE**. 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*).

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.

Defining Disks

Next you define the physical disks that are going to be used by DIVA Core, and assign them to arrays based on their intended function. You configure disks in the *Disks* frame of the **Disks** tab.

Each configured disk represents a distinct physical volume. Logical associations of disks to DIVA Core are performed in the *Actor-Disk Connections* frame

You can assign each disk declaration in this frame to only one Array. If you intend to share a physical disk between two or more arrays, you can declare the disk multiple times, but each declaration must have a unique name.

Defining how the disks are actually interfaced to DIVA Core is performed in the *Actor-Disk Connections* frame of the **Disks** tab.

Use the following procedure to define a disk:

1. Open the Configuration Utility and connect to the DIVA Core Database.
2. Click the **Disks** tab.
3. Click the + button at the top of the Disks frame to open the *Add new row in Disks* dialog box.
4. Enter the following information in the fields on the dialog box:

   Disk Name
   Enter a symbolic name for the disk in the **Disk Name** field. Telestream recommends that the name describes its function or its location.

   Array
   Assign the disk to an array selected from the menu list. Only arrays configured in the *Arrays* frame are listed.

   Site
   Select the **Site** that defines the location of this disk. This parameter is taken into consideration by DIVA Core for optimum allocation of disk resources in the array if the *Site Selection* parameter is enabled in the DIVA Core Manager configuration file

Status
Set the current status of the disk using the list (***ONLINE** or **OFFLINE***). **OFFLINE** indicates that the disk is offline and not to be used. During DIVA Core operations, the status may be set **Offline** by DIVA Core if an unexpected disk I/O error occurs.

Min. Free Space, MB
You set the minimum free space of the disk in this field. When the remaining free space reaches this amount, DIVA Core considers the disk full. Use this setting on disks that are shared with other applications, or with file systems that suffer poor or degraded performance when approaching 100% capacity.

Verify Write (VW)
You select whether to enable Verify Write from the list. Verify Write is not compatible with complex objects.

Default Checksum Type
The **MD5** algorithm is the **Default Checksum Type**. This field is not editable in this dialog box.

5. Click **OK** to save the disk configuration.

You highlight a desired disk and click **Edit** on the top of the *Disk*s frame to edit an existing disk. When you finish making changes, click **OK** to save your changes.

Configuring Oracle Archive Cloud for DIVA Core

You can use your Oracle Archive Object Storage Account for operations in DIVA Core. Any disks added to cloud arrays are considered cloud disks.

You must create an array with a storage class of **Archive** or **Standard**. Content stored using the **Archive** storage class requires a minimum of four hours retrieval time. Content stored using the **Standard** storage class is immediately available for retrieval. The **None** storage class is reserved for non-cloud arrays.

You can view the Storage Class associated with an array in the *Disks View* under the ***Consumed Size*** column. The column value represents the space (*in kilobytes*) consumed by content on disk. The column is especially useful for Object Storage Accounts with unlimited disk space because it provides visibility into the amount of content stored in the cloud. To view the storage class associated with a particular cloud instance, the *Object Properties View* contains a new column called ***Storage Options***.

In the *Actor-Disk Connections* frame a cloud disk must be designated with the new Swift/OCI interface type, and must have a mount point that points to a Object Storage Accounts. When you select a Swift/OCI interface during the creation or modification of an Actor-Disk connection, the corresponding ***Mount Point*** updates with a list of all Object Storage Accounts and you can select the appropriate Object Storage Account from the list.

Note: The Object Storage Account name must not contain a colon and cannot start with cifs.

Object Storage Accounts are defined in the *Object Storage Accounts* frame. You must specify a unique ***Account Name***, ***Login***, ***Password***, ***URL***, ***Service Name***, and ***Identity Domain***. These five parameters are configured when you create an account through Oracle's Cloud Configuration site (*https://cloud.oracle.com*). The parameter controlling the number of threads used by an Actor in writing content to the cloud is also configurable in the Object Storage Accounts frame. For OCI configuration, additional parameters were introduced: **Private Key**, **Key Password**,

Fingerprint, **Namespace**, and **Compartment ID**. The Private Key, Key Password and Fingerprint may be automatically generated and need NOT be specified by the user.

Actor-Disk connections including a disk belonging to an array with an **ARCHIVE** or **STANDARD** storage class must have the **Swift/OCI Interface** setting and a **Mount Point** pointing to a Object Storage Account name. *See the following section for configuring EMC ECS storage arrays*.

The Actor-Disk connection interface must be the same for all disks of a specific array, that is, either all Swift/OCI interfaces or all non-cloud interfaces.

Using an Actor-Disk connection with a Swift/OCI interface must be identified as **STORAGE ONLY**. Cache and Nearline are not supported for cloud content.

The ability of an Actor to archive or restore from the cloud is configurable in the **Actor Settings** tab of the *Actor Settings Entry* dialog box. Only Actors with ***Cloud Archive*** enabled will be used for *transfers to* the Oracle Archive Cloud. Only Actors with ***Cloud Restore*** enabled will be used for *transfers from* the Oracle Archive Cloud.

For example, when you are copying from tape to the cloud, the Manager will only use Actors configured for Cloud Archive. When you are copying from the cloud to tape, the Manager will only use Actors configured for Cloud Restore. Both Cloud Archive and Cloud Restore require **Direct Archive** and **Direct Restore** respectively. These settings are enabled when the corresponding cloud settings are configured.

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 DIVA Core 8.0 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. However, in DIVA Core 8.0.0 both SWIFT and S3 are supported for interfacing with EMC ECS, but you cannot change the existing configuration after the Array is configured. You can set the ***Media Priority*** of a source instance for a Restore, 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.

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***.

If you want to assign a higher priority to a local non-EMC ECS than an EMC ECS array, but a higher priority to an EMC ECS array than a tape group, you can assign the appropriate priorities in the *Media* panel.

Use the following procedure to configure the Source Media Priority:

1. Navigate to the *Media* panel on the **Sets, Groups & Media Mapping** tab in the Configuration Utility.
2. Double-click the media to edit.
3. When the *Edit Media Entry* dialog box appears, enter the appropriate value in the ***Source Media Priority*** field.
4. Click **OK** to save your changes.

The default priority value for all media is 50. Also, when you upgrade from an earlier DIVA Core release, all media is assigned the default priority value (*50*).

See the DIVA Core Operations Guide for detailed information.

EMC ECS (*Elastic Cloud Storage*) Integration

DIVA Core 8.0 supports local arrays that include disks with *Swift* interfaces, such as an EMC ECS Object Store. First, define a disk and assign it to the EMC ECS array (*like a local disk*), and then define an Object Storage Account (*formerly a Cloud Account*).

You can also specify a proxy server to use if your DIVA Core Actor cannot access the Object Storage Account directly. You can view the storage options on the **Home**, **Disks** screen in the DIVA Core Control GUI. For an EMC ECS array, all disks must have actor-disk connections with a Swift Interface. The Mount Point must point to the EMC ECS Object Storage Account, and the only supported Usage is Storage Only.

Note: With ECS, DIVA Core reports infinite capacity because ECS's Swift implementation does not support retrieving the account quota.

1. Navigate to the *Arrays* panel on the **Set, Groups & Media Mapping** tab in the Configuration Utility.
2. Add a new array, or double-click an existing array to configure.
3. In the ***Storage Options*** field, configure array option to -oracle_storage_class=NONE -storage_location=LOCAL.

   Start each option with a dash and include an equal sign between the option and its value. Separate multiple options with a space.
4. Click **OK** to save the configuration and add, or update, the array.

Configuration Checks

DIVA Core 8.0 includes validation checks to verify each step in the configuration process. The validation checks will produce errors in the following instances:

- You attempt to link an object storage account to a local array.
- You attempt to link a local account to a cloud array.
- You attempt to link a cloud mount point to a local array. A cloud mount point is one that points to an object storage account with the *type* **Cloud**.
- You attempt to link a local mount point to a cloud array.

Configuring Oracle Cloud Infrastructure

In 8.0, DIVA Core supports Archives and Restores to the OCI (*Oracle Cloud Infrastructure*) object storage. This functionality works from both Windows and Linux actors.

Note: If you have a multiple DIVA Core sites, connected to the same OCI / OCI Classic storage account, you must use a different array name per site. The array name is used to uniquely identify content of an array in the cloud, and therefore must be different. This constraint is not required for other cloud vendors.

Use the Configuration Utility to create a new type of Storage Account (*OCI*):

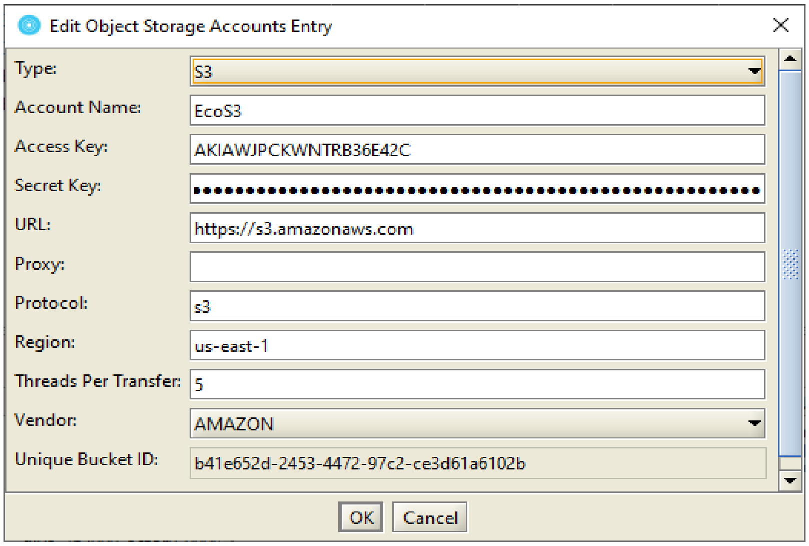
1. On the Object Storage Accounts Entry screen, select Type: **OCI**.

2. Enter Account Name, Login, Password, URL, Tenant Id, and Vendor.
3. Specify the Namespace and Compartment Id of your account, and then click OK.
4. Click **OK**.
5. Copy the key from the pop-up warning.
6. Go to your OCI account. Click **Add Public Key** and then paste the key. Click **Add**.

Configuring Amazon S3 Storage Accounts

Storage accounts allow a user to configure programmatic access to a their AWS account. The configuration data in a DIVA Core storage account is exclusively used by DIVA Core 's Actors to query S3 storage and transfer content to and from S3 buckets. To configure an S3 storage account, a user must select a type of S3 and specify a unique account name. This name is only used to uniquely identify the account in DIVA Core. Then, the user must specify the access and secret keys provided by Amazon to the user during creation of an AWS account. A unique bucket identifier is automatically generated on creation of an S3 storage account. This identifier is used by DIVA Core in the naming of buckets. The identifier is unique to each storage account.The remainder of the configuration is identical to the configuration of an OCI-Classic / OPC storage account.

Upon creation of a storage account, the Configuration Utility will automatically create the set of DIVA Core resources needed to store DIVA Core managed objects in S3. The resources generated by the Configuration Utility are an Array, Disk, and Actor-Disk connections. The following figure displays entry of an S3 account in the Configuration Utility:



Edit Object Storage Accounts Entry

Type: S3
Account Name: EcoS3
Access Key: AKIAWJPCKWNTRB36E42C
Secret Key: ••
URL: https://s3.amazonaws.com
Proxy:
Protocol: s3
Region: us-east-1
Threads Per Transfer: 5
Vendor: AMAZON
Unique Bucket ID: b41e652d-2453-4472-97c2-ce3d61a6102b

The URL field has the following format:

[<protocol>://]<ipaddress or hostname>[:<port>]

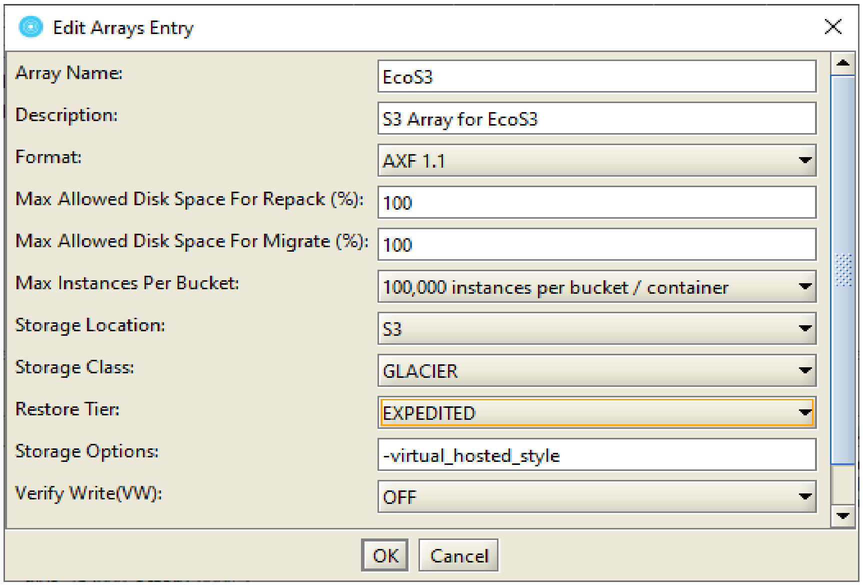
Where the following applies:

- The protocol can be http or https. If it is omitted, the default protocol is https.
- IP address or hostname is mandatory
- Port is optional (*it is defaulted to 80 with http and 443 with https*)

Arrays and Disks

Arrays allow users to configure properties applicable to a collection of storage disks in DIVA Core. However, currently only a single cloud disk can be linked to a cloud array. The creation of a storage account triggers the creation of the associated cloud array. Notably, the array is configured with a storage class of Standard and virtual hosted style enabled. The Array configuration interface is modified to extract the free-form -storage_location and the -storage_class options from the **Storage Options** field because both are required for all storage account vendors; and their corresponding list of options differ from each other.

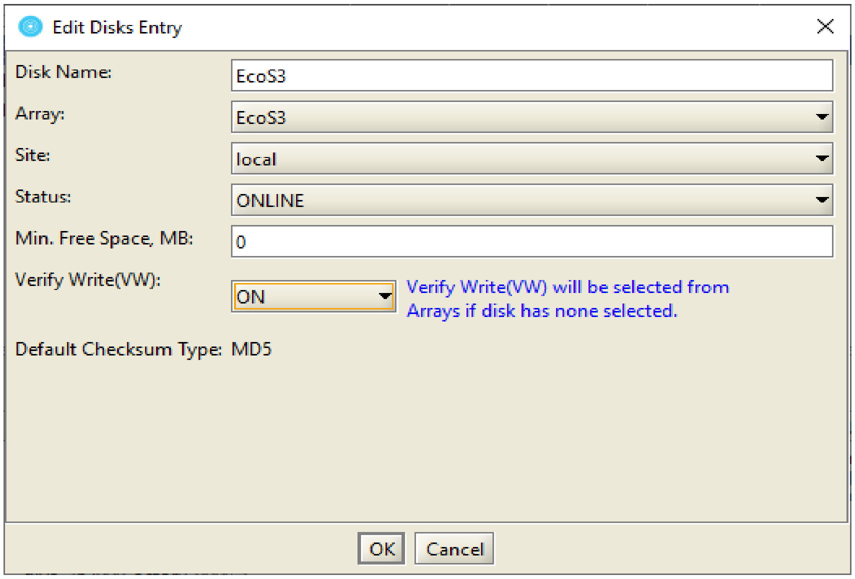
It is now possible to assign a maximum number of instances per bucket. Previously, this value was hard-coded to 1000, but now it is configurable and simply defaults to 1000 instances per bucket for an Oracle OCI / OPC account and 100,000 for an Amazon S3 account. It can be configured to 1,000, 10,000 or 100,000 instances per bucket. For a storage classes of Glacier and Deep Archive, it is possible to specify an additional configuration setting named the *Restore Tier*. The *Restore Tier* is used to specify the rate of retrieval. For Glacier, it can be one of the following; **EXPEDITED** (*1-5 minutes*), **STANDARD** (*default - 3-5 hours*), or **BULK** (*5-12 hours*). For Deep Archive, it can only be **STANDARD** (*within 12 hours*) or **BULK** (*within 24 hours*). It is possible to override both the storage class and tier using *Request Options*. Users can specify the options as -storageClass=<STORAGE CLASS> or -storage_class=<STORAGE CLASS> and -restoreTier=<RESTORE_TIER> or -restore_tier=<RESTORE_TIER>.



Edit Arrays Entry

Array Name:	EcoS3
Description:	S3 Array for EcoS3
Format:	AXF 1.1
Max Allowed Disk Space For Repack (%):	100
Max Allowed Disk Space For Migrate (%):	100
Max Instances Per Bucket:	100,000 instances per bucket / container
Storage Location:	S3
Storage Class:	GLACIER
Restore Tier:	EXPEDITED
Storage Options:	-virtual_hosted_style
Verify Write(VW):	OFF

The disk configuration is also automatically generated during storage account creation. The disk is linked to its array. Both the disk and array are given the same name as the storage account.



Edit Disks Entry

Disk Name: EcoS3

Array: EcoS3

Site: local

Status: ONLINE

Min. Free Space, MB: 0

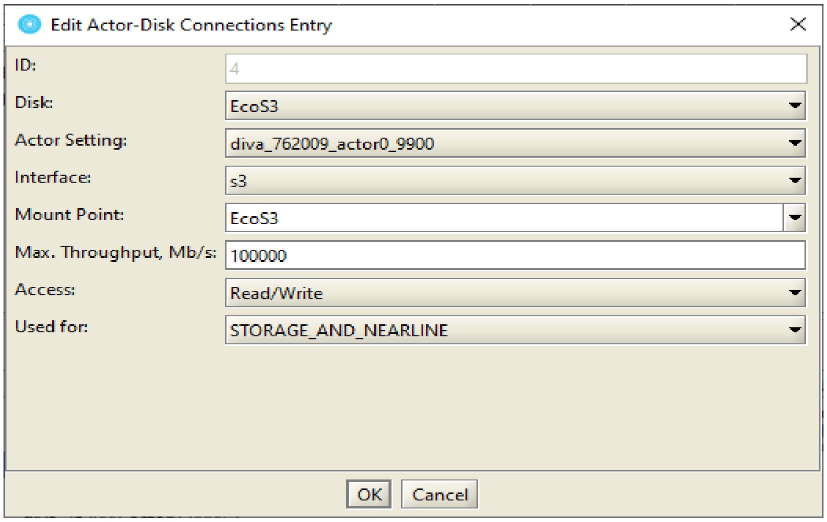
Verify Write(VW): ON

Verify Write(VW) will be selected from Arrays if disk has none selected.

Default Checksum Type: MD5

Actor-Disk Connections

Actor-Disk connections allow a user to configure the interface between an Actor and a disk. In addition to automatically configuring disks and arrays, storage account creation automatically creates an Actor-Disk connection for every Actor configured in DIVA Core. Every Actor-Disk connection is configured with an S3 interface/connection type, and a mount point that points to the Amazon S3 storage account.



Edit Actor-Disk Connections Entry

ID: 4

Disk: EcoS3

Actor Setting: diva_762009_actor0_9900

Interface: s3

Mount Point: EcoS3

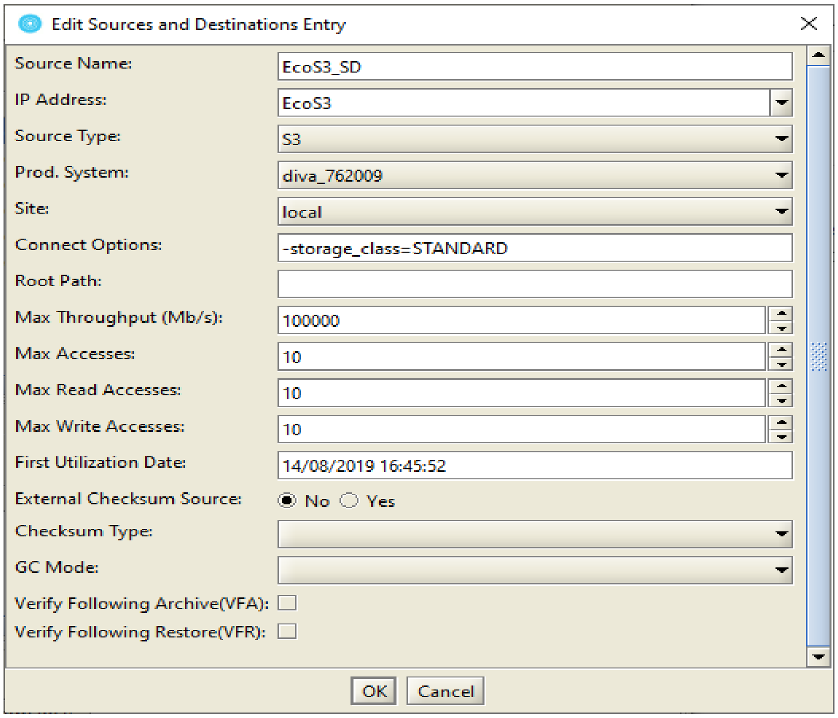
Max. Throughput, Mb/s: 100000

Access: Read/Write

Used for: STORAGE_AND_NEARLINE

Source/Destinations

Source/Destinations allows a user to configure the Source or Destination for a transfer in DIVA Core. Users must manually configure a Source/Destination resource linked to a storage account. Defaults for fields such as **Production System** and **Site** are not obvious except in the most basic case of a single production system and site configuration. In the **IP address** field, the user must select the storage account to use as a Source/Destination. The user must specify the storage class in the **Connect Options**.



Source Name: EcoS3_SD
IP Address: EcoS3
Source Type: S3
Prod. System: diva_762009
Site: local
Connect Options: -storage_class=STANDARD
Root Path:
Max Throughput (Mb/s): 100000
Max Accesses: 10
Max Read Accesses: 10
Max Write Accesses: 10
First Utilization Date: 14/08/2019 16:45:52
External Checksum Source: ● No ○ Yes
Checksum Type:
GC Mode:
Verify Following Archive(VFA): □
Verify Following Restore(VFR): □

Configuring Azure Blob Storage Accounts

Azure Blob Storage is the object storage service offered by Microsoft to Azure account owners. Like any other object storage service, Azure Blog Storage offers an interface to create blobs (*objects*) under buckets.

Manager-Actor Communications

The following table identifies the Manager-Actor communications for Azure Blob Storage:

XML Element under DeviceDisk	Description	Example
DiskPath	Object Storage URL	http://127.0.0.1:10000 for emulators or https://blob.core.windows.net
Login	This is set to the account name.	devstoreaccount1
Password	This is the account key that is used to sign HTTP requests. This is a Base64 encoded string.	Eby8vdM02xNOcqFlqUwJPLlmEtlCDXJ1OUzFT50uSRZ6IFsuFq2UVErCz4I6tq/K1SZFPTOtr/KBHBeksoGMGw==
ContainerName	Target bucket/container name. bucket limitations are listed here: https://docs.microsoft.com/en-us/rest/api/storageservices/naming-and-referencing-containers--blobs--and-metadata	

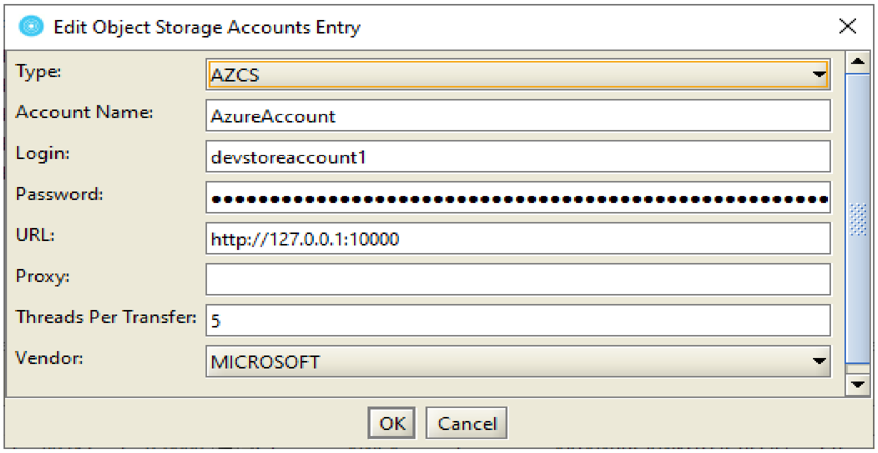
XML Element under DeviceDisk	Description	Example
StorageClass	Specifies the target storage tier associated with the buckets created by DIVA. Azure supports multiple storage tiers: Premium, hot, cool and archive as described on these pages: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/disks-types#premium-ssd https://docs.microsoft.com/en-ca/azure/storage/blobs/storage-blob-storage-tiers?tabs=azure-portal	Standard
ThreadsPerTransfer	Number of concurrent threads per transfer.	5

Azure Blob Configuration

The configuration of AZCS (*Azure Cloud Storage*) is similar to the configuration of other cloud storage in DIVA Core.

Storage Account

To configure an AZCS storage account you must specify an ***Account Name***, ***Login***, ***Password***, ***URL***, ***Proxy*** (*optional), **Threads Per Transfer***, and ***Vendor*** (*must be Microsoft)*. The following figure displays a proper storage account configuration:



Edit Object Storage Accounts Entry

Type: AZCS

Account Name: AzureAccount

Login: devstoreaccount1

Password: ••

URL: http://127.0.0.1:10000

Proxy:

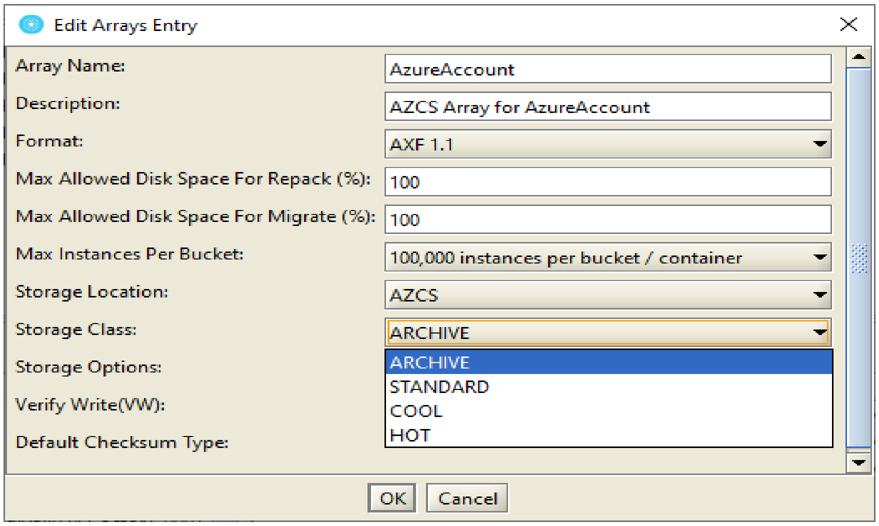
Threads Per Transfer: 5

Vendor: MICROSOFT

Click **OK** and the corresponding *Array*, *Disk* and *Actor-Disk* connection is generated.

Array Configuration

On the Edit Array Entry configuration dialog you select between **Archive**, **Standard**, **Cool** and **Hot** storage classes as shown in the following figure:



Array Name: AzureAccount

Description: AZCS Array for AzureAccount

Format: AXF 1.1

Max Allowed Disk Space For Repack (%): 100

Max Allowed Disk Space For Migrate (%): 100

Max Instances Per Bucket: 100,000 instances per bucket / container

Storage Location: AZCS

Storage Class: ARCHIVE

Storage Options:

Verify Write(VW):

Default Checksum Type:

Configuring Google Cloud Storage Accounts

(GCS) Google Cloud Storage is the object storage service offered by Google to Google Cloud account owners. Like any other object storage service, GCS offers an interface to create buckets and objects under buckets.

Google Account Configuration

For security reasons, do not directly use a Google account for the object storage interface. DIVA needs to be associated with a *service account* and a *specific role/permission*. This account is created from the console (https://console.cloud.google.com) under **IAM & Admin**, **Service Accounts**.

To be able to Archive, the role needs the following authorizations:

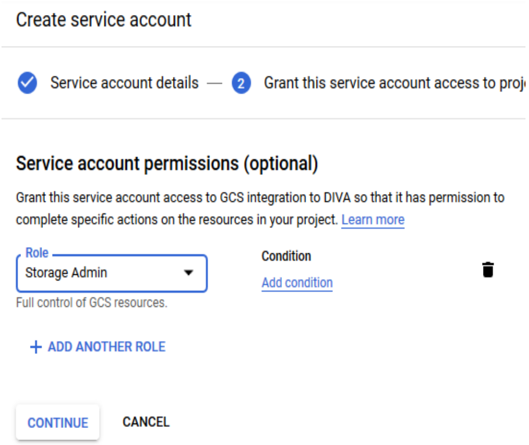
- storage.objects.create
- storage.objects.delete
- storage.objects.get
- storage.objects.list
- storage.objects.update
- storage.multipartUploads.abort
- storage.multipartUploads.create
- storage.multipartUploads.listParts

The following permissions are required to only be able to Restore objects:

- storage.objects.get
- storage.objects.list

Use the following procedure to create the required account:

1. Create the Service Account.



Create service account
Service account details — 2 Grant this service account access to proj

Service account permissions (optional)

Grant this service account access to GCS integration to DIVA so that it has permission to complete specific actions on the resources in your project. Learn more

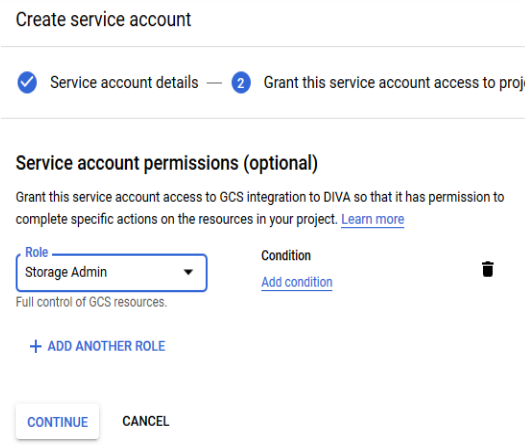
Role: Storage Admin

Full control of GCS resources.

Condition: Add condition

+ ADD ANOTHER ROLE
CONTINUE
CANCEL

2. Add the Storage Admin role so that DIVA Core can create, read and write objects and buckets.



Create service account
Service account details — 2 Grant this service account access to proj

Service account permissions (optional)

Grant this service account access to GCS integration to DIVA so that it has permission to complete specific actions on the resources in your project. Learn more

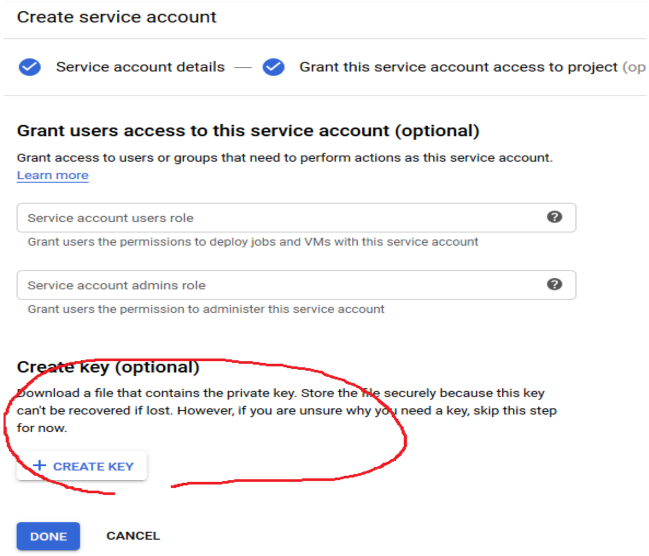
Role: Storage Admin

Full control of GCS resources.

Condition: Add condition

+ ADD ANOTHER ROLE
CONTINUE
CANCEL

3. Create a JSON key and save it.



Create service account
Service account details — Grant this service account access to project (op

Grant users access to this service account (optional)

Grant access to users or groups that need to perform actions as this service account. Learn more

Service account users role

Grant users the permissions to deploy jobs and VMs with this service account

Service account admins role

Grant users the permission to administer this service account

Create key (optional)

Download a file that contains the private key. Store the file securely because this key can't be recovered if lost. However, if you are unsure why you need a key, skip this step for now.

The JSON key contains information that is required to configure a GCS account in the DIVA configuration.

Example:

```
{
"type": "service_account",
"project_id": "gcs-integration-to-diva",
"private_key_id": "513bd217d88b38f8f6a5fdca1fadd79bb62826e0",
"private_key": "-----BEGIN PRIVATE KEY-----\nMIIEvgIBAD……hhpRt5\n-----END PRIVATE KEY-----\n",
"client_email": "gregory-s-dev-actor@gcs-integration-to-diva.iam.gserviceaccount.com",
"client_id": "117535311288780186075",
"auth_uri": "https://accounts.google.com/o/oauth2/auth",
"token_uri": "https://oauth2.googleapis.com/token",
"auth_provider_x509_cert_url": "https://www.googleapis.com/oauth2/v1/certs",
"client_x509_cert_url":
"https://www.googleapis.com/robot/v1/metadata/x509/gregory-s-dev-actor%40gcs-integration-to-diva.iam.gserviceaccount.com"
}
```

4. Click **Done** to complete the process.

Manager-Actor Communications

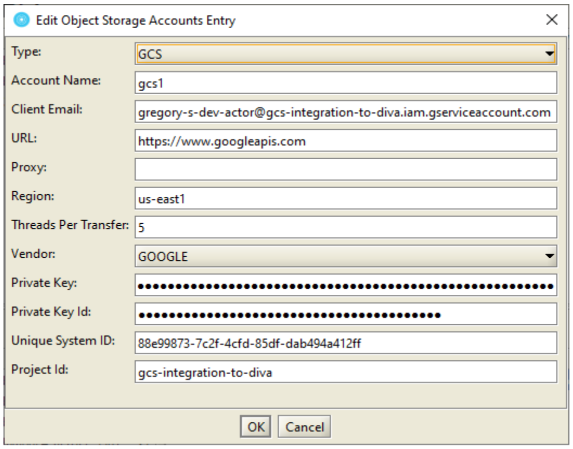
The following table identifies the Manager-Actor communications for Google Cloud Storage:

XML Element under DeviceDisk	Description	Example
DiskPath	Object Storage URL	https://www.googleapis.com
Login	This is set to the client email address found in the JSON key.	devstoreaccount1
PrivateKeyID	The private key ID can be found in the JSON key.	gregory-s-dev-actor@gcs-integration-to-diva.iam.gserviceaccount.com
PrivateKey	This private key can be found in the JSON key of the service account. The private key must have new lines instead of \n characters.	-----BEGIN PRIVATE KEY----- MIIEvgIBADANBgkqhkiG9w0BAQEFAASCBKgwggSkAgEAAoIBAQDBBBnTBdCnzWyO … ----END PRIVATE KEY-----
IdentityDomain	This is the region where buckets and objects are stored. Available locations are listed here: https://cloud.google.com/storage/docs/locations	us-east1
CompartmentID	This is the Google Cloud Project ID and also the JSON key.	gcs-integration-to-diva
ContainerName	This is the target bucket name. Bucket limitations are listed here: https://cloud.google.com/storage/docs/naming	
StorageClass	Specifies the target storage tier associated with the buckets created by DIVA. GCS support multiple storage tiers as described on this page: https://cloud.google.com/storage/docs/storage-classes	standard
ThreadPerTransfer	Number of concurrent threads per transfer.	5

DIVA Core Configuration

Storage Account

Configuration of a Google Cloud Storage Account is similar to the configuration of other storage accounts in DIVA Core. The only difference is that the ***Client Email***, ***Private Key Id***, and ***Project Id*** fields must be specified with a Google Cloud Storage account. A *Private Key* and *ID* must be generated as described in the previous section. The vendor must be set to Google. As usual, the creation of a Google Cloud Storage Account will trigger the creation of the associated ***Disk Array***, ***Disk*** and ***Actor-Disk*** connections.

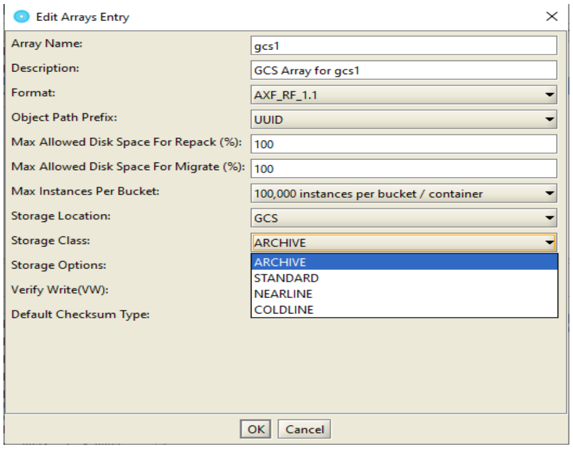


Edit Object Storage Accounts Entry

Type:	GCS
Account Name:	gcs1
Client Email:	gregory-s-dev-actor@gcs-integration-to-diva.iam.gserviceaccount.com
URL:	https://www.googleapis.com
Proxy:	
Region:	us-east1
Threads Per Transfer:	5
Vendor:	GOOGLE
Private Key:	•••
Private Key Id:	•••
Unique System ID:	88e99873-7c2f-4cfd-85df-dab494a412ff
Project Id:	gcs-integration-to-diva

Array

At the Array level, the default storage class can be changed from *Archive* to one of the GCS supported storage classes; *Standard*, *Nearline* and *Coldline*.



Edit Arrays Entry

Array Name:	gcs1
Description:	GCS Array for gcs1
Format:	AXF_RF_1.1
Object Path Prefix:	UUID
Max Allowed Disk Space For Repack (%):	100
Max Allowed Disk Space For Migrate (%):	100
Max Instances Per Bucket:	100,000 instances per bucket / container
Storage Location:	GCS
Storage Class:	ARCHIVE
Storage Options:	
Verify Write(VW):	
Default Checksum Type:	

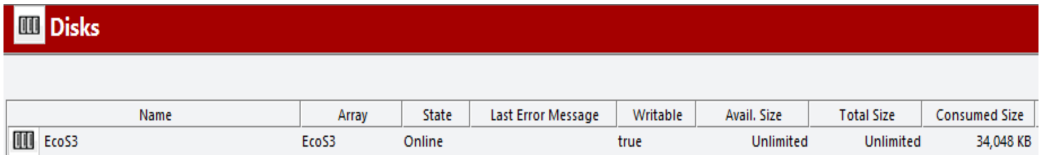
Configuring Other Types of Cloud Accounts

The additional cloud type storage and Source/Destinations are configured the same way as AWS S3 accounts. When you select one of the additional account types (*that is Scality Zenko, Cloudian, NetApp StorageGrid, or Alibaba OSS*) all Array, Disk and Actor-Disk connections are automatically added and configured. This is also the default for S3 accounts.

The Storage Class is STANDARD for all of these account types. ARCHIVE bucket support is planned for a future DIVA Core release for the Alibaba OSS type accounts.

Disk Status

Cloud disk status is reflected in the Control GUI *Disks* view, where a user can see whether a cloud disk is online and if it is available, total and consumed sizes, and so on.



Disks

Name	Array	State	Last Error Message	Writable	Avail. Size	Total Size	Consumed Size
EcoS3	EcoS3	Online		true	Unlimited	Unlimited	34,048 KB

8

Robot Manager Configuration

This chapter describes DIVA Core Robot Manager configuration and includes the following information:

- Synchronizing Media and Drive Compatibility with the Database
- Synchronizing the Library Drive List with the Database
- Manually Identifying Drive Serial Numbers
- Creating Tape Groups
- Creating Tape Sets
- Remapping Media

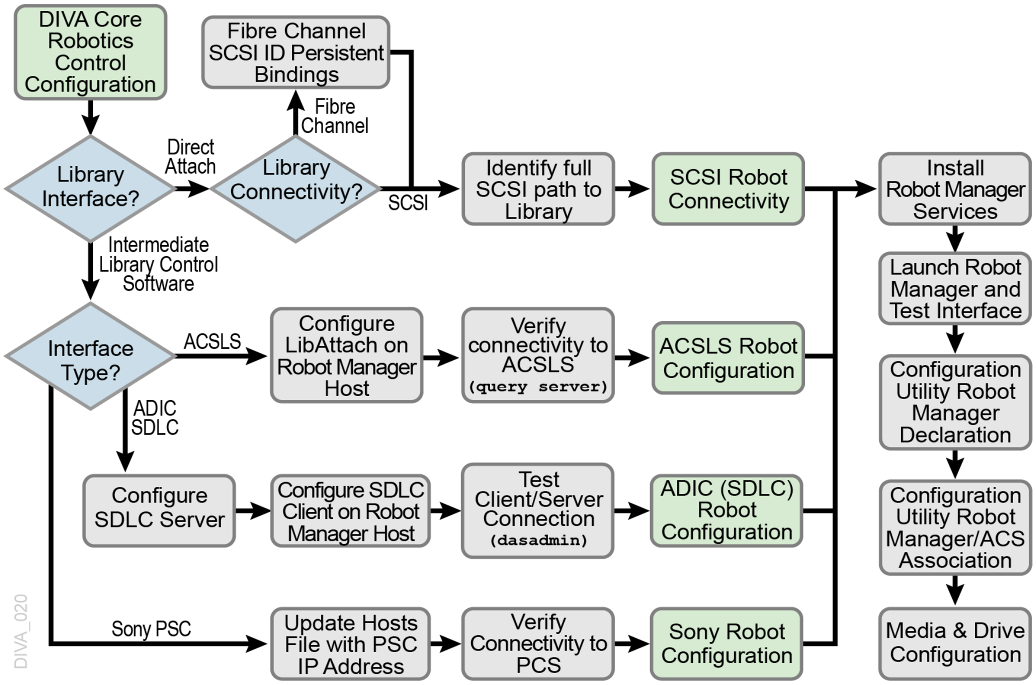
Configuration Overview

The DIVA Core Robot Manager on Windows platforms runs as a Windows service and is launched automatically with Windows. *See Appendix A for DIVA Core options and licensing information*.

You configure the type of interface a specific library in a static configuration file. The file name is robotmanager.conf and is located in the DIVA_HOME\Program\conf\robot_manager folder on the computer where the DIVA Core Robot Manager is installed. In a new installation (*or upgrade*) the file is provided with a .ini extension. You must remove the extension for it to be acknowledged by the Robot Manager. You must copy the file, remove the .ini extension, and then edit the new file.

Since many different types of libraries and connections are supported, not all sections of the configuration file will be relevant to your particular installation. Also, some parameters are specific to the operating system where the Robot Manager is installed. Therefore, some settings in the configuration file are initially commented out (*that is, they have # in front of the parameter*). This indicates to the Robot Manager to ignore the setting. For the setting to be taken into account the # must be removed.

The following figure outlines the steps for configuring the robotics to be controlled by DIVA Core:


DIVA Core Robotics Control Configuration
Fibre Channel SCSI ID Persistent Bindings
Fibre Channel
Library Interface?
Direct Attach
Library Connectivity?
SCSI
Identify full SCSI path to Library
SCSI Robot Connectivity
Install Robot Manager Services
Intermediate Library Control Software
Launch Robot Manager and Test Interface
Interface Type?
ACSLS
Configure LibAttach on Robot Manager Host
Verify connectivity to ACSLS (query server)
ACSLS Robot Configuration
Configuration Utility Robot Manager Declaration
ADIC SDLC
Configure SDLC Server
Configure SDLC Client on Robot Manager Host
Test Client/Server Connection (dasadmin)
ADIC (SDLC) Robot Configuration
Configuration Utility Robot Manager/ACS Association
Sony PSC
Update Hosts File with PSC IP Address
Verify Connectivity to PCS
Sony Robot Configuration
Media &amp; Drive Configuration
DIVA_020

SCSI Connected Libraries

For directly attached SCSI controlled libraries, you must configure and correctly identify the *SCSI ID* controlling the library, and enter this value into the RM_SCSI_DEVICE_LSM parameter in the Robot Manager configuration file. Before changing the configuration, you must understand several concepts as described in the following sections.

The robotmanager.conf configuration file includes the following main parameters:

RM_SCSI_MOVEMEDIUM_TIMEOUT
Robot SCSI uses the MOVE MEDIUM SCSI command during mount, dismount, enter, and eject requests. The value of RM_SCSI_MOVEMEDIUM_TIMEOUT is indicated in minutes, and the default timeout is fifteen minutes for the communication between the library and the robot manager.

Some libraries, like Spectra T950, may require more time to be able to complete a MOVE MEDIUM request and you should set this parameter value accordingly.

RM_SCSI_EJECT_USEGLOBALLOCK
You must set this parameter to one if you want the SCSI Robot Manager Eject calls obtain the lock number of the LSM and hold that lock until all associated tapes to be ejected have completed the ejection process. When all tape ejections are complete, the call unlocks the drive and proceeds on to the next drive. The default setting is zero.

Fiber Channel HBA (*Host Bus Adapter*) and SCSI Persistent Binding

Most installations use FC (*Fiber Channel*) rather than native SCSI to interface to the library (*typically over a SAN*). In these instances, the FC HBA in the DIVA Core Robot Manager host presents the *World Wide Name* of the library interface as a *SCSI ID*. By default, most HBAs automatically map these to a *SCSI ID* for the host operating system to access. This presents a problem if a device is added or removed on the SAN because it could alter the *SCSI ID* of the library by the HBA, and automatically remap the existing devices. Disable the *Automap* feature to avoid this issue and use *Persistent Bindings* instead. This feature allows the SCSI mapping of the library to remain consistent between host restarts, and from the advent of any addition or removal of devices on the SAN.

If the library controller or the HBA in the DIVA Core Robot Manager host is changed, this might alter the library's SCSI Persistent Bindings to the host operating system. This requires the Persistent Binding for the library to be reconfigured in the HBA configuration software on the DIVA Core Robot Manager computer.

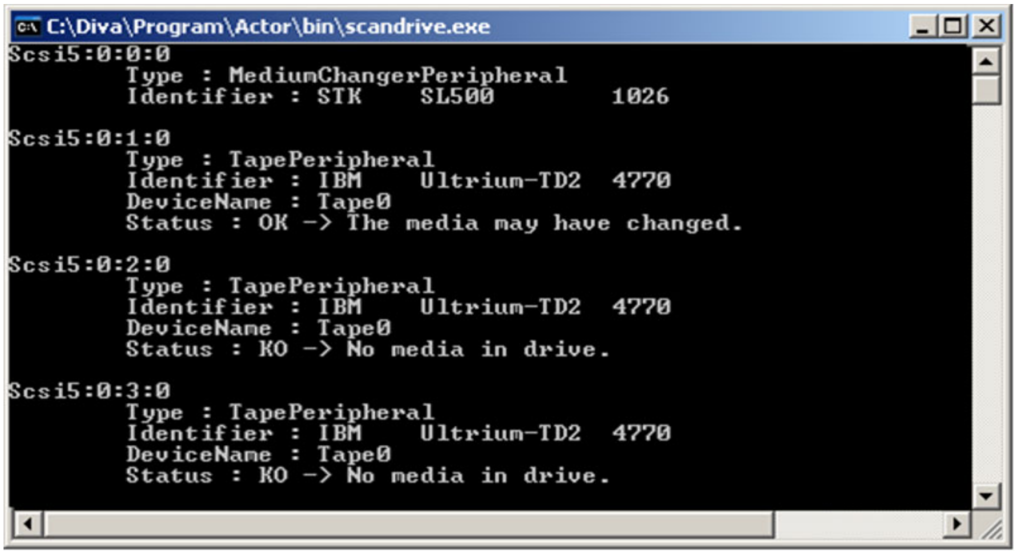
Determining the SCSI Library Connection

For the SCSI interface libraries the DIVA Core Robot Manager communicates with the library directly over the SCSI hardware layer and does not require the Windows driver interface.

For all other libraries it is *essential* that no library driver be loaded for the library interface. If a driver is loaded, the DIVA Core Robot Manager will be unable to communicate with the library. In this case, if your library does not appear in Windows Device Manager as an *Unknown Medium Changer*, the Robot Manager will be unable to communicate correctly with the robotics.

If you cannot locate a specific library in the Scandrive Utility (*see the following*), but that library is visible in your HBA, then the library has likely been disabled in the Windows Device Manager (*denoted by an X over the device icon*). You must re-enable the device for it to appear in the Scandrive Utility.

For Windows, you can determine the RM_SCSI_DEVICE_LSM(n) settings for the DIVA Core Robot Manager using the scandrive.exe utility. The utility is located in the %DIVA_HOME%\Actor\bin directory. The utility automatically reports all devices located in the Windows SCSI hardware tree in the registry and their corresponding Port, Bus, Target, and LUN (*Logical Unit Numbers*).



```
Scsi5:0:0:0
        Type : MediumChangerPeripheral
        Identifier : STK     SL500        1026

Scsi5:0:1:0
        Type : TapePeripheral
        Identifier : IBM     Ultrium-TD2   4770
        DeviceName : Tape0
        Status : OK -> The media may have changed.

Scsi5:0:2:0
        Type : TapePeripheral
        Identifier : IBM     Ultrium-TD2   4770
        DeviceName : Tape0
        Status : KO -> No media in drive.

Scsi5:0:3:0
        Type : TapePeripheral
        Identifier : IBM     Ultrium-TD2   4770
        DeviceName : Tape0
        Status : KO -> No media in drive.
```

The utility reports the SCSI Device ID of the library in the format ScsiP:B:T:L (*see the previous figure*), where P is the port number, B is the bus number, T is the target number, and L is the Logical Unit Number.

The Type section of the utility's output refers to that peripheral's class (*HDD, CDROM, and so on*). A tape library will be reported as a *Medium Changer Peripheral*, and the Identifier for each corresponding device reported should match the model number of the library itself (*for example, SL500*). You can then enter the full SCSI path reported for each library into the RM_SCSI_DEVICE_LSM(n) settings in the robotmanager.conf file.

Sony ODA Drives

DIVA Core supports Sony the new generation of ODA drives; the ODS-280F (*Fiber Channel*) and ODS-280U (*USB*). DIVA Core has only been tested with the Fiber Channel type. The drives are twice as fast as the Gen1 drives. The ODS-280U has not been qualified for use with DIVA Core.

A new cartridge type is also available for this drive, the ODC3300R. This is a WORM drive with a 3.3 TB capacity.

Gen2 drives can read content written on Gen1 media with Gen1 drives. DIVA Core does not support the READ-ONLY media-drive compatibility. Telestream recommends isolating Gen1 media from Gen2 media in the configuration (*because there is no cross-generation compatibility*) and there must be at least one Gen1 drive in a library containing Gen1 cartridges.

DIVA Core supports Sony ODA ODS-D55U and ODS-D77F drives only in the Windows environment. These are Blu-ray Optical Drives and the media is WORM media using a UDF format. Only AXF formatted objects can be written to the discs. The drives are controlled by the Robot Manager and the media is viewed as a Tape Cartridge.

In the Windows Device Manager these drives will be shown as *Unknown Medium Changer* under the ***Medium Changer*** section 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.

Sony ODA Gen 3 is supported. The new drive type is ODS-D380F and uses the following new cartridge:

Cartridge Type
ODC5500R

Capacity
5.5 TB

Block Size
64 KB TB

Drive Type
WORM

> **Note:** The new drive is still R/W compatible with ODC3300R and read-only compatible with older cartridge types.

There are seven different types of disc media available for use with the Sony Optical Drives as follows:

SONY-ODC300R
293,265,408 KB capacity

SONY-ODC300RE
293,265,408 KB capacity

SONY-ODC600R
586,530,816 KB capacity

SONY-ODC600RE
586,530,816 KB capacity

SONY-ODC1200RE
1,173,086,208 KB capacity

SONY-ODC1500R
1,500,020,736 KB capacity

SONY-ODC3300R
3,222,717,696 KB capacity

SONY-ODS-D380F
5,372,184,576 KB capacity

The disc types are identified in the scsi_tape_types.ini file (*described in the following section*).

> **Note:** You must configure the drive settings *before* configuring DIVA Core. The recommended parity setting is **PARITY ON**.

You can view the drive specifics using the Optical Disc Archive Utility. This utility enables viewing of device logs, and viewing and changing drive settings.

To change the drive settings, click the **Setting** tab in the Optical Disc Archive Utility. Telestream recommends leaving the **Default Volume Type** set to **PARITY ON**, and to use the default settings for the remaining items.

Click the **Media** item under the **Drive** navigation tree to view information about the media in a drive.

You click the **Write-protect** button to write-protect a drive. Once an Optical Disc is write-protected, you can no longer write objects to the device. However they are still retrievable.

Configuration File Adjustments

You must change several parameters in the scsi_drive_types.ini configuration file to use these optical drives.

In the robotmanager.conf configuration file, under the SCSI module specific options, the serial number must be identified. You can find the serial number in the RM_SCSI_DEVICE_LSM(n) parameter line. For example, RM_SCSI_DEVICE_LSM(0)=00001003, where (0) is the LSM number, and 00001003 is the serial number. You must identify the serial number for all listed devices (*LSM(0), LSM(1), LSM(2), and so on*).

In the scsi_drive_types.ini file, the *drive types* must be uncommented (*remove the #*). For example, remove the # from in front of the line that reads #601 0x00 0x00 SONY-ODS-D77F 600 601 602 603 604 605 to use your D77F drive as shown. The TransportDomain and TransportType are obtained automatically and not used in the configuration, so you must leave these set to 0x00 as shown in this example.

```
#--------------------------------------------------------------
# If the SCSI Robot Manager is connected to a SONY ODA library
# UNCOMMENT ALL LINES IN THE FOLLOWING PART
#-----
#TypeID TransportDomain TransportType TypeName CompatibleTapeTypes
#-------------------------------------------------------------------
#600 0x00 0x00   SONY-ODS-D55U    600 601 602 603 604 605
601 0x00 0x00   SONY-ODS-D77F    600 601 602 603 604 605
```

Also, in the scsi_tape_types.ini file, uncomment all of the *disc types* listed as shown in the following example. The R or RE after the disc number indicates whether the disc is *Write Once* (R) or *Rewritable* (RE). This indicator is used because the barcode does not contain the video type as in normal tape barcodes.

```
#-----------------------------------------------------------------
# If the SCSI Robot Manager is connected to SONY ODA library,
# UNCOMMENT ALL LINES IN THE FOLLOWING PART
#-----
#TypeID TransportDomain TransportType TypeName CompatibleDriveTypes
#-----------------------------------------------------------------
600 0x00 0x00   SONY-ODC300R   600 601
601 0x00 0x00   SONY-ODC300RE  600 601
602 0x00 0x00   SONY-ODC600R   600 601
603 0x00 0x00   SONY-ODC600RE  600 601
604 0x00 0x00   SONY-ODC1200RE 600 601
605 0x00 0x00   SONY-ODC1500R  600 601
```

Configuration Utility Settings and Information

You must configure the following settings in the DIVA Core Configuration Utility:

Drives Tab

Set the ***Drive Properties*** to 64 KB. The serial number comes from the Robot Manager and the firmware release number comes from the drive.

Tapes Tab

The *Tape Properties* frame displays all of the enabled ***Tape Types*** from the scsi_tape_types.ini file.

Control GUI Settings and Information

The *Optical Drives* and *Discs* are displayed in the DIVA Core Control GUI on the **Drives** tab as *Tape Drives* and *Tapes* respectively.

Repack of the discs and deletion of objects is available. However, the space is not recoverable. When trying to repack the disc, the normal Repack dialog box is displayed, but there is a warning that the space is non-recoverable. Due to this limitation of the discs, auto-repack has been disabled for these drives and discs.

Additional Information

Additional information related to the use of the Optical Drives and Discs includes the following:

- Because Write-Once media must be finalized, zero remaining space will be reported to the Manager.
- Objects are spanned when there is 100 MB of space remaining. This is so that there is space left for the disc to be finalized. Once 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 manually finalize the disc through the Optical Disc Archive Utility.
- If a drive is manually mounted and viewed in the Windows Explorer, the display will show the individual files on the disc. Each file name will begin with a numeric value at the beginning that identifies the object's location on the tape.

Configuring Direct Attached SCSI Libraries

A *Direct Attached Library* is directly connected to the DIVA Core Robot Manager host computer either through a native SCSI interface and SCSI HBA, or through a SCSI over Fiber Channel connection and Fiber Channel HBA (*either directly or through a SAN*).

In either case, the DIVA Core Robot Manager uses its own DIVA Core provided driver (*SCSI_Robot.dll in Windows or libSCSI_Robot.so in Linux*) to directly interface with the library without the need for intermediate library management software. For this type of SCSI attached library, you must uncomment the entries (*in the following sections*) and configure them in the robotmanager.conf file. Library ***Drive Models*** and ***Tape Types*** parameters are located in other configuration files.

Common Settings for SCSI-based Libraries

The following are typical settings for the SCSI-based libraries:

Robot Manager Common Options

Uncomment only the RM_MODULE=SCSI_Robot.dll in the Windows environment.

SCSI Device Parameters

The following table identifies common SCSI device parameters.

Parameter	Parameter Type	Description	Default
SERVICE_NAME	Name	The display name of the Robot Manager Windows Service. You must set this variable if multiple Robot Managers are installed on the same server. If this variable is used, the *Service Name* will be DivaRbt-SERVICE_NAME. If this variable is not set, the *Service Name* will revert to just DivaRbt.	Uncommented
RM_PORT	TCP port number	The TCP port that the DIVA Core Robot Manager listens on for incoming requests. This value must be unique if there are multiple DIVA Core Robot Managers running on a single host computer. This is typically, TCP port 8500 and greater.	8500
RM_ACS	Number	The ACS (*Automated Cartridge System*) controlled by the DIVA Core Robot Manager module. This value will appear in the **Robot Manager/ACS Association List** in the Configuration Utility for this Robot Manager after database synchronization	0

SCSI Module Parameters

The following table identifies common SCSI module parameters. *See* Determining the SCSI Library Connection *for parameter details*.

Module Parameter	Operating System	Description	Values
RM_SCSI_DEVICE_LSM0	Windows	This specifies the SCSI target of the library as it identified by the host operating system.	ScsiP:B:T:L
RM_SCSI_DEVICE_LSM1	Windows	This setting is specific to a StorageTek dual L1400M library with a PTP (*Pass Through Port*), and specifies the SCSI target of the 2nd frame (*LSM*). Although this type of library configuration can be addressed using only the RM_SCSI_DEVICE_LSM0 connection, DIVA Core manages this type of library more effectively when both frames are specified. DIVA Core also manages the PTP in this case.	ScsiP:B:T:L

Additional Settings for Media Type Detection

The following table identifies an additional parameter that can be set to enable media type detection from the barcode.

Parameter	Parameter Type	Description
RM_SCSI_ENABLE_MEDIA_TYPE_DETECTION_LAYOUT	String pattern	The purpose of this parameter is to detect the type of a media from the volume tag retuned by the library. The layout is a string of 8-10 characters indicating where the label and the mediatype are. It must contain these three characters only: L: The character at this position is part of the tape label/barcode considered into DIVA Core database. T: The character at this position will be used for media type detection X: The character at this position will be ignored Example: for a given volume tag ABC003L6, if the layout is set to LLLLLLTT, RobotManager will detect an LTO6 tape and report ABC003 to DIVA Core.

Configuring ACSLS Attached Libraries

DIVA Core can directly interface to most Oracle StorageTek libraries using the Robot_SCSI driver. Some library configurations require the use of the Oracle StorageTek ACSLS library management software for the Robot Manager to control the library.

You can only install ACSLS (*Automated Cartridge System Library Software*) on Solaris platforms. The Solaris host and ACSLS are sold and supported by Oracle. *See the Oracle ACSLS documentation at http://docs.oracle.com for detailed information*.

Telestream does not support DIVA Core installations under the Solaris operating system.

Configuring LibAttach

LibAttach is an intermediate Windows driver providing connectivity to the ACSLS host. LibAttach runs as a Windows service and is typically installed on the same computer running the DIVA Core Robot Manager. The DIVA Core Robot Manager communicates to the ACSLS host using the LibAttach driver.

You must enter the following settings on the LibAttach Configurator dialog box (*part of the ACSLS software*):

Library server host name
Host name or IP address of the ACSLS server. If you use a host name, it must be resolvable by the DIVA Core Robot Manager host.

Firewall support
These settings are only required if a firewall is installed between the Robot Manager host and the ACSLS server. If no firewall is present leave these parameters set to 0.

Testing the LibAttach Connectivity to ACSLS

You can verify connectivity from the Robot Manager host to the ACSLS server with the query_server.exe utility located in the LibAttach installation directory. When you launch the utility a Windows command prompt opens. Statistics from the library will be returned if the connection is successful.

Firewall Support

You must have a TCP or UDP port open (*to allow communication*) if there is a network firewall between your Robot Manager host and ACSLS server. If there is a firewall, enter the open port numbers into the ***Firewall Support*** settings in the LibAttach Configurator.

Early implementation of firewall support for LibAttach did not work correctly with the DIVA Core Robot Manager, even though the query_server utility returned a successful connection. Ensure that you have the latest release of LibAttach that incorporates the patch released to address this issue. Contact Telestream Support for additional information.

robotmanager.conf Common Options

The following table identifies common robotmanager.conf options:

Parameter	Parameter Type	Description	Default
RM_MODULE=ACSLS_Robot.dll		Uncomment only this line	Commented

Parameter	Parameter Type	Description	Default
RM_PORT	TCP Port Number	The TCP Port the Robot Manager will listen on for incoming requests. This value must be unique if there are multiple Robot Managers running on a single host. The assigned port is typically TCP Port 8500 and higher.	8500
RM_ACS	Number	ACSLS configurations ignore this value because the ACS number is supplied from ACSLS.	Ignored
SERVICE_NAME	Name	This is the display name of the Robot Manager Windows service. This variable must be set if multiple Robot Managers are installed on the same server. If this variable is used, the *Service Name* will be DivaRbt-SERVICE_NAME. The *Service Name* will revert to DivaRbtif this variable is not set.	Uncommented

The following table identifies the ACSLS parameters:

Parameter	Parameter Type	Description	Default
RM_ACSLS_SERVER	IP Address or Host Name	ACSLS ignores this parameter and it can be left blank.	
RM_ACSLS_SSI_SOCKET	TCP Port Number	ACSLS SSI socket is the UNIX domain socket used by SSI. If this value is left undefined, it defaults to TCP port 50004.	50004
RM_ACSLS_TIMEOUT	Time in milliseconds	This sets the timeout period for queries to ACSLS through LibAttach. If you leave this value set to 0, the timeout period used by the Robot Manager is 10 minutes. If you must alter this timeout period, replace 0 with your own value (*in milliseconds*).	0

Parameter	Parameter Type	Description	Default
RM_ACSLS_IE_TIMEOUT	Time in milliseconds	When an **Insert** or **Eject** tape command is issued you must open the CAP and insert or eject tapes within this timeout period. If you leave this value set to 0, the timeout period used by the Robot Manager is 10 minutes. If you must alter this timeout period, replace 0 with your own value (*in milliseconds*).	0
RM_ACSLS_MAX_DISMOUNT_RETRIES	Number of retries	The maximum number of retries when the dismounted drive is still in use. If the setting is 5, the initial delay is five seconds and then doubled after each retry.	5
RM_ACSLS_DISMOUNT_FORCE	0 (*disabled*) 1 (*enabled*)	Under normal circumstances, you must unload a tape first (*using an Actor*) before issuing a dismount command to the library. A forced dismount instructs the library to issue the unload command to the drive directly. *This option is not recommended because this may interfere with operations on the Actors*.	0

Configuring Sony PetaServe Libraries

Control of Sony PetaServe libraries from the DIVA Core Robot Manager is directed through the Sony PSC controller over an Ethernet connection. The PSC controller parameters for the Robot Manager configuration file must match those on the PetaSite Controller.

robotmanager.conf Common Options

The following table identifies common robotmanager.conf options:

Parameter	Parameter Type	Description	Default
RM_MODULE=SONY_Robot.dll		Uncomment only this line	Commented
RM_PORT	TCP Port Number	The TCP Port the Robot Manager will listen on for incoming requests. This value must be unique if there are multiple Robot Managers running on a single host. The assigned port is typically TCP Port 8500 and higher.	8500
RM_ACS	Number	ACS (*Automated Cartridge System*) controlled by the Robot Manager module.	0

The following table identifies common Sony PetaSite options:

Parameter	Parameter Type	Description	Default
RM_SONY_ENABLE_MEDIA_TYPE_TRIMMING	Number	*This parameter must not be modified during production. The database may need to be patched if it is changed during production*. Some tape labels contain and additional two or three characters identifying the type of media. For example, 004452L2 is an LTO2 tape and S1000052 is a SAIT1 tape. If this parameter is set to 1, the Sony Robot detects the tape using the label and filters out the two or three additional characters from the label.	1
RM_SONY_MEDIA_TYPE_TRIMMING_LEFT	Number	*This parameter must not be modified during production. The database may need to be patched if it is changed during production*. Depending on the label, the two characters may be on the right or on the left of the label. Set this parameter to 1 if the ***Media Type*** information is on the left, otherwise set it to 0.	0
RM_SONY_PSCSERVERNAME	IP Address or Host Name	This parameter specifies the Host Name or IP Address of the Sony PSC (*PetaSite controller*). If you specify a Host Name, this must be defined in the operating system's hosts file.	
RM_SONY_PSCUSERID	Number	This specifies the *User ID* that the Robot Manager uses when it connects to the Sony PetaSite Controller.	1
RM_SONY_PSCTIMEOUT	Time in milliseconds	Command time out to the PSC in milliseconds. This is only used for mount operations.	900000

Parameter	Parameter Type	Description	Default
RM_SONY_PSCDISMOUNTRETRIES	Number of retires	The maximum number of retries when the dismounted drive is still in use. If the setting is 5, the initial delay is five seconds. The delay is then doubled after each retry.	5

Configuring ADIC Libraries with SDLC

This interface is available on both Windows and Linux platforms. *Refer to* Appendix E *for setting up the SDLC server and client components for the DIVA Core Robot Manager interface*.

robotmanager.conf Common Options

The following table identifies common robotmanager.conf options:

Parameter	Parameter Type	Description	Default
RM_MODULE=ADIC_Robot.dll		Uncomment only this line	Commented
RM_PORT	TCP Port Number	The TCP Port the Robot Manager will listen on for incoming requests. This value must be unique if there are multiple Robot Managers running on a single host. The assigned port is typically TCP Port 8500 and higher.	8500
RM_ACS	Number	ACS (*Automated Cartridge System*) controlled by the Robot Manager module.	0

The following table identifies common ADIC parameters:

Parameter	Parameter Type	Description	Default
RM_ADIC_DAS_CLIENT	Host Name	Host Name of the computer running the ADIC DAS client.	
RM_ADIC_EJECT_AREA_NAME	Name	Symbolic name of the Cartridge Access Port.	E01
RM_ADIC_TIME_INSERT	Time in milliseconds	Number of milliseconds to wait to put away the tape after closing the CAP.	5000
RM_ADIC_MAX_DISMOUNT_RETRIES	Number of retries	Maximum number of retries when the dismounted drive is still in use. If the setting is 5, the initial delay is five seconds. The delay is then doubled after each retry.	5

Configuring Simulated Libraries (*for DIVA Core Simulators*)

Simulated robots are available on Windows and Linux platforms. The settings are shown here for reference only. *Refer to the DIVA Core Simulator Operations Guide (available to OPN partners only) for more information on installing and configuring a DIVA Core Simulator platform*.

robotmanager.conf Common Options

The following table identifies common robotmanager.conf options:

Parameter	Parameter Type	Description	Default
RM_MODULE=SIMULATOR_Robot.dll		Uncomment only this line	Commented
RM_PORT	TCP Port Number	The TCP Port the Robot Manager will listen on for incoming requests. This value must be unique if there are multiple Robot Managers running on a single host. The assigned port is typically TCP Port 8500 and higher.	8500
RM_ACS	Number	ACS (*Automated Cartridge System*) controlled by the Robot Manager module.	0

The following table identifies the DIVA Core Simulator parameters:

Parameter	Parameter Type	Description	Default
RM_SIMU_BASEDIR	Directory Path	The DIVA Core simulation files base directory path. This is typically C:\Diva\Simulation.	
RM_SIMU_OPERATION_SHORT_DELAY	Time in milliseconds	This setting simulates physical delays in mount, dismount, enter, and eject operations. The recommended setting is 10000 msec.	0
RM_SIMU_OPERATION_LONG_DELAY	Time in milliseconds	You can use this setting to simulate an operation that takes more time than expected for execution. The recommended setting is 120000 msec.	0
RM_SIMU_OPERATION_LONG_DELAY_FREQUENCY	Number	This setting specifies how often a long delay should occur. The recommended setting is 50.	0
RM_SIMU_LIST_SHORT_DELAY	Time in milliseconds	This setting introduces a simulated physical delay in list operations. The recommended setting is 500.	0

Parameter	Parameter Type	Description	Default
RM_SIMU_LIST_LONG_DELAY	Time in milliseconds	You can use this setting to simulate a list operation that takes more time than expected for execution. The recommended setting is 60000 msec.	0
RM_SIMU_LIST_LONG_DELAY_FREQUENCY	Number	This setting specifies how often a long delay should occur in list operations. The recommended setting is 100.	0

Robot Manager Command Options

You perform DIVA Core Robot Manager control and management functions using robotmanager.exe from a command prompt. On Windows servers the executable is located in the %DIVA_HOME%\Program\Robotmanager\bin folder. On Linux servers, robotmanager.sh is located in the /home/diva/DIVA/Program/RobotManager/bin directory.

Installing and Uninstalling the Robot Manager Services in Windows

You use the following command line options to install or uninstall the DIVA Core Robot Manager from a Windows command prompt:

robotmanager -i
Installs the Robot Manager Service as set by the *SERVICE_NAME* parameter defined in robotmanager.conf. If this parameter is undefined, the service is installed as DIVA Core Robot Manager - host_name.

robotmanager -u
Removes the Robot Manager Service set by the *SERVICE_NAME* parameter in robotmanager.conf. If this parameter is undefined the service to be removed is DIVA Core Robot Manager - host_name.

These Robot Manager command options default to the robotmanager.conf file located in the %DIVA_HOME%\Program\conf\robot_manager folder to define the Service Name (*if any*). If you are installing multiple Robot Managers on a single host (*see Appendix A for DIVA Core options and licensing information*), additional Robot Manager configuration files must be created and specified to the service during installation to create unique instances for each Robot Manager.

You can create additional configuration files for each Robot Manager by copying and renaming the original robotmanager.conf file. For example, robotmanager1.conf, robotmanager2.conf, and so on. Each configuration file must contain unique *SERVICE_NAME*, *RM_PORT*, and *RM_ACS* entries.

For example, robotmanager1.conf might have the following parameters for a SCSI interface:

```
RM_MODULE=SCSI_Robot.dll
SERVICE_NAME=Robot1
RM_PORT=8500
RM_ACS=0
```

While robotmanager2.conf might have the following parameters for an ACSLS interface:

```
RM_MODULE=ACSLS_Robot.dll
SERVICE_NAME=Robot2
```

```
RM_PORT=8501
RM_ACS=1
```

You must specify the path to each Robot Manager configuration file for each instance when installing additional Robot Manager Services on the same host. You identify the path by adding the -conf (*or -f*) command switches when installing the service. For example, robotmanager -i -conf ..\..\conf\robot_manager\robotmanager2.conf installs the Robot Manager service as defined by the *SERVICE_NAME* parameter from the robotmanager2.conf configuration file.

If you must uninstall one or more Robot Manager Services, the configuration file path must also be specified. For example, robotmanager -u -conf ..\..\conf\robot_manager\robotmanager2.conf removes the Robot Manager Service as defined by the *SERVICE_NAME* parameter in robotmanager2.conf configuration file.

After installing the services check the Windows Services applet to confirm that the Robot Manager Services were installed correctly. To change the *SERVICE_NAME*, you must uninstall the existing service before editing the robotmanager.conf file. Then reinstall the service after changing the *SERVICE_NAME* parameter.

Installing and Uninstalling the Robot Manager Services in Linux

You use the following command line options to install or uninstall the DIVA Core Robot Manager from a Linux terminal.

Use the following command sequence to install the Robot Manager service:

```
cd /home/diva/DIVA/Program

./divaservice install robotmanager /home/diva/DIVA/Program/conf/robot_manager/robotmanager.conf
```

Use the following command sequence to uninstall the Robot Manager service:

```
cd /home/diva/DIVA/Program

./divaservice uninstall robotmanager /home/diva/DIVA/Program/conf/robot_manager/robotmanager.conf
```

See Installing the DIVA Core Services for information on the divaservice command.

Robot Manager Service Management Functions

The following command options are also available for the Robot Manager Service:

robotmanager debug
Starts the DIVA Core Robot Manager in console mode. Console mode displays diagnostic messages and other information from the library in the console window.

robotmanager version
Displays the DIVA Core Robot Manager software release information. You can also use -v instead of version.

robotmanager help
This displays all command line options.

Testing the Robot Manager Library Interface

After configuring the Robot Manager configuration file, launch the DIVA Core Robot Manager and confirm that the library itself can be controlled.

Library interfaces that use ACSLS, SDLC, or PSC intermediate control software must be running before launching the DIVA Core Robot Manager. ACSLS controlled libraries should also be *varied online* (*for example,* vary lsm0 online).

Starting, Stopping, and Restarting the Robot Manager

Windows DIVA Core Robot Managers start automatically with Windows. You manage (*start, stop, restart, and so on*) the service through the Windows Services applet.

Note: If the library is offline when the service is started, the Robot Manager does not automatically reconnect after the library comes online. You must restart the service to connect.

You can also stop and then start (*restart*) a Robot Manager from a command window. The quotation marks in the commands must be used when specifying a service with spaces in the name. Use the following command sequence to stop and then start the service:

```
net stop "DIVA Core Robot Manager"
net start "DIVA Core RobotManager"
```

You use the following command sequence if the *SERVICE_NAME* is specified in the robotmanager.conf file:

```
net stop "DIVA Core Robot Manager SERVICE_NAME"
net start "DIVA Core RobotManager SERVICE_NAME"
```

Testing the Robot Manager Library Control

Caution: These utilities *must not* be used in a live DIVA Core system. You *must not* send commands to a Robot Manager using either of these utilities under any circumstances when the DIVA Core Manager is running. Telestream is not responsible for any complications arising from inappropriate use of these utilities.

You can use either the Robot Manager Client (*a command-line interface*) or GUI to establish basic control functionality of a Robot Manager to its controlled libraries. You can use either of these utilities to send manual commands to a DIVA Core Robot Manager to initiate simple operations, for example, drive mounting, dismounting, enter or eject operations from the CAP (*Cartridge Access Port*). Both utilities connect to a Robot Manager through TCP/IP and can be run from a remote computer. This feature enables the Robot Manager GUI to be used from a remote computer.

If you mount a tape with either of these utilities, you must first unload the tape before it can be dismounted, unless the library supports *Forced Dismount* commands and they are enabled in the DIVA Core Robot Manager configuration file.

Robot Manager Client

This command-line client is typically located with the Robot Manager executable files in the %DIVA_HOME%\Program\RobotManager\bin folder.

You must specify the IP address of the Robot Manager and its TCP port when launching the client as follows:

```
RobotManagerClient {IP_Address} {TCP_Port}
```

The IP_Address is the IP address of the Robot Manager computer, and the TCP_Port is the Robot Manager listening port. You can hard-code these two parameters in the Robot Manager Client batch file if there is only a single Robot Manager requiring access.

All of the client commands are self-explanatory after you start the program.

Robot Manager Client GUI

The Robot Manager Client GUI is typically located with the Robot Manager executable files located in the %DIVA_HOME%\Program\RobotManager\bin folder. The GUI provides the same functionality as the command line client. You execute RobotManagerGUI.bat to open the GUI interface.

The GUI interface includes the following buttons and functionality:

Connect Button
Click this button to connect to the DIVA Core Robot Manager. You must enter the IP address and TCP port of the DIVA Core Robot Manager to be tested in the ***Connect*** prompt.

Tape List Button
Click this button to load the tape list from the library.

Reload Config. Button
Click this button to reload the configuration.

Exit Button
Click this button to exit the program.

Tape List
To manually mount a tape, select a Barcode ID and drag and drop it on to one of the drives displayed in the LSM list.

LSM List
This area lists all of the available drives and the tapes in the drive. You right-click a tape and select **Dismount** from the menu to dismount a tape.

CAP List
To manually eject a tape from the library, select a Barcode ID and drag and drop it to one of the listed CAPs.

Status Area
The Status area is at the bottom of the screen and displays status messages from the Robot Manager.

Configuring the Robot Manager at the System Level

At the system level, each instance of the DIVA Core Robot Manager must be declared to the DIVA Core Manager in the *Robot Managers* frame of the **Robots** tab in the DIVA Core Configuration Utility.

You use frame buttons to add (**+**), edit (**Edit**), or delete (**-**) a Robot Manager. The **Update** frame button refreshes the displayed Robot Manager information from the database.

Clicking the **+** button adds a Robot Manager to the configuration. The Add new row in Robot Managers dialog box is displayed. Enter the following information in the appropriate fields and then click OK to add a Robot Manager:

Name
The name of the DIVA Core Robot Manager attached to this DIVA Core system.

Address
The IP address of the host running the DIVA Core Robot Manager installation.

Port
The Robot Manager TCP port. This must match the RM_PORT parameter specified in robotmanager.conf.

Site
The DIVA Core Manager uses this parameter to determine optimal use of resources in resource allocation. Use the menu list to select the appropriate site for this Robot Manager. *Site Selection* must be enabled in the DIVA Core Manager configuration file or all sites are considered equally.

Robot Manager-ACS Association

Each DIVA Core Robot Manager is logically referred to by the DIVA Core Manager using its ACS (*Automatic Cartridge System*) number. This value should be unique among all DIVA Core Robot Managers. Individual libraries (*or frames*) are typically referred to by their LSM (*Library Storage Module*) number.

Use the following procedure to associate a Robot Manager with an ACS:

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.
4. Only select the ***Synchronize Robot Manager ACS Associations*** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.
6. Confirm correct, successful, operation in the Status area at the bottom of the screen.
7. Enter the details for each library in the Library Data Entry dialog box when prompted, and then click **OK** to continue.
8. Click **Close** to exit the Database Synchronization dialog box.
9. Confirm the association in the *Robot Managers-ACS* frame.

Logging Robot Manager Activity

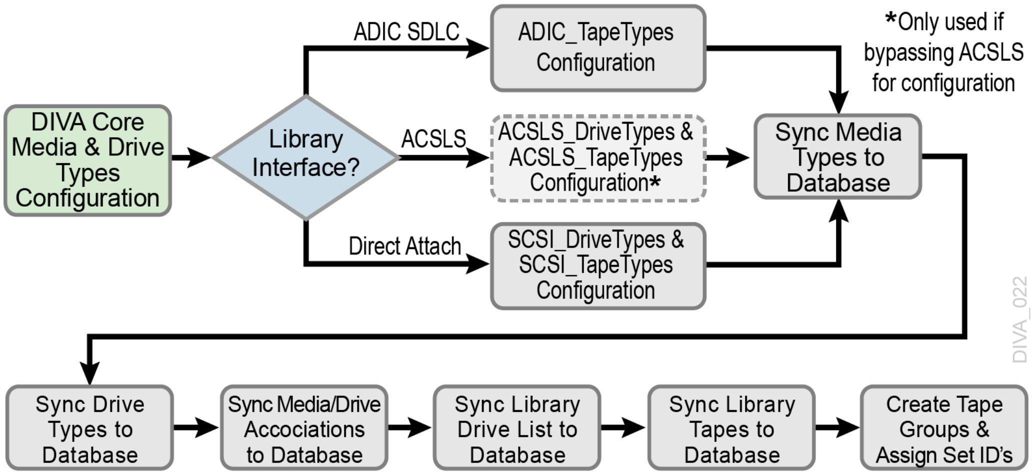
During normal operation, each DIVA Core Robot Manager logs its communications with the library and stores them in the %DIVA_HOME%\log\robot_manager folder. These logs are useful for troubleshooting issues. You may be asked to provide the log files when contacting Telestream Support.

The most recent log file is named robot_manager.log or robot_manager_SERVICE_NAME.log and is located in the ..\log\robot_manager folder. Older logs are renamed with the time it was saved as its file name and moved to dated subfolders under the name of each Robot Manager.

Configuring Media and Drive Types

After you have successfully configured the DIVA Core Robot Manager for your libraries, and the appropriate details for all DIVA Core Robot Managers entered into the **Robots** tab section of the Configuration Utility, the Tape Media, Drive Models, and the Drive Locations currently installed in each library must be entered.

The following flowchart lists the workflow of this portion of the configuration. All of the DIVA Core Robot Managers configured must be running and successfully connected to each library before commencing this portion of the configuration.


DIVA Core Media & Drive Types Configuration
Library Interface?
ADIC SDLC
ACSLS
Direct Attach
ADIC_TapeTypes Configuration
ACSLS_DriveTypes & ACSLS_TapeTypes Configuration*
SCSI_DriveTypes & SCSI_TapeTypes Configuration
*Only used if bypassing ACSLS for configuration
Sync Media Types to Database
DIVA_022
Sync Drive Types to Database
Sync Media/Drive Accociations to Database
Sync Library Drive List to Database
Sync Library Tapes to Database
Create Tape Groups & Assign Set ID's

Tape Drives and their associated media types that are installed in a particular library are initially configured in the DIVA Core Database using static configuration files. The files are located in the %DIVA_HOME%\Program\conf\robot_manager folder. The DIVA Core Robot Manager selects the appropriate files according to the RM_MODULE setting configured in robotmanager.conf.

The following list identifies the configuration file names and use:

scsi_drive_types.ini and scsi_tape_types.ini
Used for direct attached SCSI libraries. These files are only considered if the .ini extension is removed.

acsls_drive_types.ini and acsls_tape_types.ini
Used for libraries managed by ACSLS. Normally, tape and drive types are derived from ACSLS during library synchronization with the database. However, you can use these files to override the values returned from ACSLS. These files are only considered if the .ini extension is removed.

adic_media_types.ini
Used with ADIC libraries controlled by SDLC. Drive Types for this library are directly returned from the SDLC server. These files are only considered if the .ini extension is removed.

When a hardware audit is initiated on the specific library by the Configuration Utility (*through the DIVA Core Robot Managers, either directly or through intermediate library management software*), hexadecimal codes are returned to identify the model and order of the tape drives currently installed, and the media types present in the library.

These library hardware codes are mapped to drive and media IDs within the DIVA Core Database using the *Tape Types* and *Drive Types* configuration files.

It is only necessary to modify these files when Drive Types or Media Types are added to the library.

SCSI_drive_types and ACSLS_drive_types

You can edit these files using any plain text editor (*for example, Notepad or Notepad++*). No modification of these files is required other than to remove comment fields for the appropriate library and drive types for your installation.

Remove the # at the beginning of the line in the appropriate library section for the drives to be recognized in a **Synchronize Drive Types List** in the Configuration Utility. You must leave drive types in libraries not installed commented out.

The *Compatible Drive Types* column cross-references the *Tape Type ID* in SCSI_Tape_Types (*or ACSLS_Tape_Types if used*). These values are examined in the **Synchronize Media/Drive Compatibility List** procedure in the Configuration Utility.

SCSI_tape_types and ACSLS_tape_types

You can edit these files using any plain text editor (*for example, Notepad or Notepad++*). No modification of these files is required other than to remove comment fields for the tape types for your specific library.

Remove the # at the beginning of the line in the appropriate library section for the tapes or DVDs to be recognized in a **Synchronize Media Types List** in the Configuration Utility. You must leave tape types (*or DVDs*) in libraries not installed commented out.

The *Compatible Drive Types* column cross-references the *Drive Type ID* in SCSI_Drive_Types (*or ACSLS_Drive_Types if used*). These values are examined in the **Synchronize Media/Drive Compatibility List** procedure in the Configuration Utility.

ADIC_media_types

You can edit these files using any plain text editor (*for example, Notepad or Notepad++*). No modification of these files is required other than to remove comment fields for the tape types for your specific library.

Remove the # at the beginning of the line in the appropriate library section for the tapes to be recognized in a **Synchronize Media Types List** in the Configuration Utility. You must leave tape types in libraries not installed commented out.

The *Compatible Drive Types* column cross-references the *Drive Type ID* returned from the SDLC controller. These values are examined in the **Synchronize Media/Drive Compatibility List** procedure in the Configuration Utility.

Defining Tape Capacity and Block Sizes

The values in the following two tables must be used when entering adding a Drive Type or Media Type in the DIVA Core Database. The values have been tuned by Telestream to avoid tape spanning, and therefore may be lower than the theoretical capacity.

The following table identifies tape capacities to use when entering a Drive Type or Media Type in the database:

Media Type	Drive Type	Capacity
9840	STK 9840A	19 531 008
	STK 9840B	19 531 008
	STK 9840C	39 062 272
9940	STK T9940A	58 593 536
	STK T9940B	195 312 384
T10000T1	STK T10000A	488 281 008
	STK T10000B	976 562 176
T10000TS	STK T10000A	117 187 072
	STK T10000B	234 374 656
	STK T10000C	5 243 000 000
	STK T10000D	7 812 500 480
	STK T10000D (*maximum capacity enabled*)	8 300 781 056
DTF-2	GY-8240	195 312 448
SAIT1	S-AIT 1	488 281 088
SAIT2	S-AIT 2	781 249 536
AIT3	AIT 3	97 656 192
DLT-IV	Quantum DLT7000	34 179 648
LTO-100G	IBM, HP, Seagate LTO-1	97 656 192
LTO-200G	IBM LTO-2	195 312 128
LTO-400G LTO-400W	IBM or HP LTO-3	390 624 768
LTO-800G LTO-800W	IBM or HP LTO-4	781 249 536
LTO-1.5T LTO-1.5W	IBM or HP LTO-5	1 464 843 264
LTO-2.4T LTO-2.4W	IBM or HP LTO-6	2 441 405 952
LTO-6.4T LTO-6.4W	IBM LTO-7	5 859 374 592
LTO-9.0T	IBM LTO-8 (*M8*)	8 789 062 500
LTO-12.8T LTO-12.8W	IBM LTO-8	11 718 750 000
3592-JA 3592-JW	3592-J1A	292 968 750
	TS1120	488 281 250
	TS1130	625 000 000
3592-JB 3592-JX	TS1120	683 593 750
	TS1130	976 562 500
	TS1140	1 562 500 000
3592-JK	TS1140	488 281 250
	TS1150	878 906 250
3592-JC 3592-JY	TS1140	3 906 250 000
	TS1150	6 835 937 500

Media Type	Drive Type	Capacity
3592-JL	TS1150	1 953 125 000
	TS1155	2 929 687 500
3592-JD 3592-JZ	TS1150	9 765 625 000
	TS1155	14 648 437 500

The following table identifies tape block sizes to use when entering a Drive Type or Media Type in the database:

Manufacturer	Tape Drive Type	Block Size in Bytes
HP	LTO Ultrium 1	65536
	LTO Ultrium 2	524288
	LTO Ultrium 3	524288
	LTO Ultrium 4	524288
IBM	LTO Ultrium 1	65536
	LTO Ultrium 2	524288
	LTO Ultrium 3	524288
	LTO Ultrium 4	524288
	LTO-5	524288
	LTO-6	524288
	LTO-7	524288
	LTO-8	524288
Oracle StorageTek	T9840A	262144
	T9840B	262144
	T9840C	262144
	T9940A	262144
	T9940B	262144
	T10000A	524288
	T10000B	524288
	T10000C	524288
	T10000D	524288
Quantum	DLT 7000	65536
Seagate	LTO Ultrium 1	65536
Sony	GY-8240 (*DTF-2*)	65536
	AIT-3	65536
	S-AIT 1	524288
	S-AIT 2	262144

Synchronizing Media Types with the Database

You must import the values that have been uncommented in the Tape_Types configuration files into the DIVA Core Database. Each DIVA Core Robot Manager to be queried must be online to complete this procedure successfully.

Use the following procedure to import and synchronize the values from the Tape_Types files in the database:

Caution: Only perform this operation if you are adding Media Types to the library.

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.
4. Only select the ***Synchronize media types list*** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.

   The Configuration Utility will connect to the DIVA Core Robot Manager. The Robot Manager parses the SCSI_Tape_Types (*or ACSLS_Tape_Types if used*) configuration file.
6. If a Tape Type is not currently in the database, you will be prompted to enter it. Click **No** for any Tape Types not currently in use.

Note: If you report cleaning tapes in the following two steps, you must enter a ***Tape Size*** and ***Block Size*** of 1 KB for each cleaning tape added so they do not interfere with the total available size computation of all tapes in the Control GUI.

7. Enter the ***Total Size*** for this Media Type and click **OK**.
8. Enter the ***Block Size*** for this Media Type. Ensure you enter the ***Block Size*** correctly before clicking **OK** because you cannot change it later.
9. Click **Close** to exit the Database Synchronization dialog box.
10. Confirm the Tape Type has been correctly entered in the *Tape Properties* frame of the Configuration Utility **Tapes** tab.

Synchronizing Drive Types with the Database

You must also import the uncommented values in the Drive_Types configuration files into the DIVA Core Database. Each DIVA Core Robot Manager to be queried must be online to complete this procedure successfully.

Use the following procedure to import and synchronize the values from the Drive_Types files in the database:

Caution: Only perform this operation if you are adding Drive Types to the library.

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.

4. Only select the ***Synchronize drive types list*** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.

   The Configuration Utility will connect to the DIVA Core Robot Manager. The Robot Manager parses the SCSI_Drive_Types (*or ACSLS_Drive_Types if used*) configuration file.
6. If a Drive Type is not currently in the database, you will be prompted to enter it. Click **No** for any Drive Types not currently in use.
7. Enter the ***Block Size*** for this Drive Type. Ensure you enter the ***Block Size*** correctly before clicking **OK** because you cannot change it later.
8. Confirm there are no errors in the status window. If errors appear, recheck the Tape_Types and Drive_Types definition files.
9. Click **Close** to exit the Database Synchronization dialog box.
10. Confirm the Drive Type has been correctly entered in the *Drive Properties* frame of the Configuration Utility **Drives** tab.

Synchronizing Media and Drive Compatibility with the Database

This step cross-references the compatibility entries in the Tape_Types and Drive_Types definition files.

For libraries controlled by ACSLS Media and Drive Type, information is normally retrieved directly from ACSLS,. Therefore, an ACSLS software upgrade or a library firmware update may require the Media and Drive Type settings to be resynchronized.

Use the following procedure to synchronize the media and drive compatibility in the database:

Caution: Only perform this procedure is you are adding a Media or Drive Type, or updates are made to the Tape or Drive Types definition files in a DIVA Core software update.

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.
4. Only select the ***Synchronize media/drive compatibility list*** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.

   The Configuration Utility will connect to the DIVA Core Robot Manager. The Robot Manager parses the SCSI_Tape_Types (*or ACSLS_Tapes_Types if used*) configuration file.
6. Confirm there are no errors in the status window. If errors appear, recheck the Tape_Types and Drive_Types definition files.
7. Click **Close** to exit the Database Synchronization dialog box.
8. Confirm the Media Type and Drive Type associations have been correctly entered in the *Media Compatibility* frame of the Configuration Utility **Robots** tab.

Synchronizing the Library Drive List with the Database

If you add Drive Types or additional drives to a DIVA Core Managed Library, you must declare them in the DIVA Core Database. Drives that are added are initially set **Offline**, and therefore disabled. Before they can be used, you must set them **Online** and notify the Manager (*if running*). During DIVA Core operations, the Manager may automatically set a drive **Offline** if it encounters a problem with it.

When the **Used** field in the *Drives* frame is set to **N**, DIVA Core ignores the drive and it is not displayed in the Control GUI **Drives** tab. If you subsequently set a drive to **Y**, DIVA Core will not use it until you notify the Manager. This field restricts using drives in libraries that are shared with other backup or archive applications.

The Operations field in the Drives frame defines which operations are permitted on each drive. Operations can be one of the following:

R
The drive is dedicated to only **Repack** operations.

S
The drive will perform all standard operations only. That is, all operations except **Repack**.

A
The drive can perform all operations *including* **Repack**.

N
The drive will not be used for any operations. However, it can be enabled later without a Manager restart.

Use the following procedure to add the drives to the database:

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.
4. Only select the ***Synchronize drive list*** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.

   The Configuration Utility will connect to the DIVA Core Robot Manager. The Robot Manager obtains the current drive list and drive location for each drive from the library.
6. Confirm there are no errors in the status window. If the drives reported from the library do not match those declared in the *Drive Properties* frame, an error is displayed and no drives are entered into the database.
7. Click **Close** to exit the Database Synchronization dialog box.
8. Confirm the drives have been correctly entered in the *Drives* frame of the Configuration Utility **Drives** tab.

Manually Identifying Drive Serial Numbers

When using a tape library with DIVA Core there are two logical connections to each drive in that library. The first is the *Robotics Control* (*managed by the DIVA Core Robot Manager*) for mounting and dismounting the tapes from specific drives, and the *Data Interface* to the drive from the Actors.

Tape libraries identify their drives by the *Drive ID* (*typically 0, 1, 2, and so on*). DIVA Core needs to know the corresponding data path to that drive from each Actor when the Robot Manager instructs the library to mount a tape to a specific Drive ID. If the Actor-Library mapping is incorrect, DIVA Core attempts to read or write to the incorrect drive, resulting in possible data loss or corruption.

The host computer operating system presents each drive to applications using their SCSI ID. The SCSI ID for a drive can vary as hardware is added or removed. This is particularly true when shared among multiple hosts in a SAN based environment. This configuration requires statically configured SCSI IDs using persistent bindings. This configuration dramatically complicates drive replacement.

To simplify configuration and streamline future drive replacements, the data path mapping to each drive (*for its physical location in the library*) is achieved by using its unique serial number rather than its SCSI ID. When a DIVA Core Actor is launched it interrogates each drive's serial number and compares it to the values in the database. Then the Actor establishes the correct data path to the drive, irrespective of its SCSI ID.

Each drive's serial number is automatically identified by library synchronization with the database during initial installation or drive replacement. Some cases may require you to manually determine the serial number and enter it into, or verify it against, the database.

You can manually identify the drive serial number either using the library's front panel display, or using the Scandrive Utility and the Robot Manager Client or GUI.

The latter method involves mounting a tape into a specific drive number in the tape library, establishing which drive the Actor is reporting that has that tape mounted, and then recording its serial number and entering, or verifying, it with the corresponding library Drive ID in the database. You must only complete this process one time for each drive in the library.

Caution: The Robot Manager Client GUI utility issues direct commands to the Robot Managers and will interfere with DIVA Core operations. It interacts directly with both the Robot Managers and the Tape Drives in the libraries. *You must not use it while the DIVA Core Manager is running*.

You can use the Robot Manager Client GUI utility to send manual mount commands to a DIVA Core Robot Manager. *See the* Robot Manager Client GUI *section for information*.

The serial number of each drive can be discovered by using the scandrive.exe utility located in the %DIVA_HOME%\Program\Actor\bin folder. This utility automatically reports all SCSI devices installed in the host computer, and their corresponding port, bus, target and logical unit numbers. For tape devices, the utility also indicates the drive's firmware, serial number, and whether a tape is loaded into the drive.

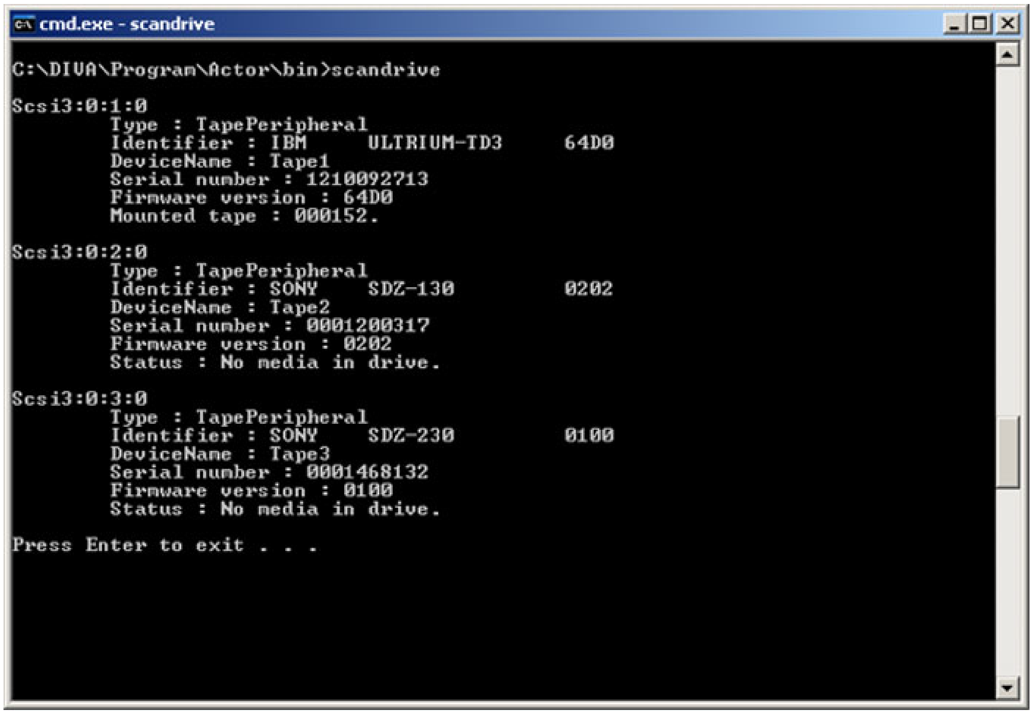
After a tape is mounted in a drive (*using the Robot Manager Client GUI*), run the scandrive.exe utility on an Actor host (*that will use the selected drive*) to determine which drive has the tape mounted and its corresponding serial number.

See Determining the SCSI Library Connection for information on using the Scandrive utility.

In the following figure the *Type* section refers to that peripheral's class (*HDD, CDROM and so on*). Each tape drive will be reported as a **TapePeripheral**, and the *Identifier* for each corresponding device should match the model number of the drive itself (*for example, IBM Ultrium TD2*).

Confirm the tape barcode is the correct one loaded through the Robot Manager Client GUI. You must then enter the serial number for the appropriate drive by highlighting it in the *Drives* section of the Configuration Utility, and then selecting **Edit**. Repeat the process by mounting a tape into the next library drive.

Remember to dismount the tape after determining the drive's serial number.



```
C:\DIVA\Program\Actor\bin>scandrive

Scsi3:0:1:0
        Type : TapePeripheral
        Identifier : IBM     ULTRIUM-TD3     64D0
        DeviceName : Tape1
        Serial number : 1210092713
        Firmware version : 64D0
        Mounted tape : 000152.

Scsi3:0:2:0
        Type : TapePeripheral
        Identifier : SONY    SDZ-130         0202
        DeviceName : Tape2
        Serial number : 0001200317
        Firmware version : 0202
        Status : No media in drive.

Scsi3:0:3:0
        Type : TapePeripheral
        Identifier : SONY    SDZ-230         0100
        DeviceName : Tape3
        Serial number : 0001468132
        Firmware version : 0100
        Status : No media in drive.

Press Enter to exit . . .
```

Synchronizing the Library Tapes with the Database

Each tape inserted into a library is initially identified by its barcode label. DIVA Core keeps track of tapes currently in the library and that have been externalized in its database.

The labels and status (*whether internalized or externalized*) are updated in the database by **Insert Tape** or **Eject Tape** commands issued to DIVA Core. The database can become out of sync with a library's contents when tapes are added or removed directly in the library rather than through DIVA Core.

Use the following procedure to re-synchronize the tape list in the database with the library contents:

Tip: This procedure is a quick way to populate the database with tapes from the library when tapes are initially loaded.

1. Open the Configuration Utility and connect to the database.
2. Select the **Synchronize DB** option from the **Tools** menu and acknowledge the warning message.
3. Select the individual Robot Manager to synchronize from the menu list in the Database Synchronization dialog box, or select **ALL** to synchronize all Robot Managers.
4. Only select the **Synchronize tape list (can be very long)** check box. Confirm that all other check boxes are unselected.
5. Click **Go** to update the selected associations.

   The Configuration Utility will connect to the DIVA Core Robot Manager. The Robot Manager obtains the current tape list from the library.

Tapes in the library are compared to the tape tables in the DIVA Core Database. New tapes are inserted into the table and existing tapes have their status updated (*internalized or externalized*).

6. If a Tape Type is reported that does not match the types configured in the *Tape Properties* frame, an error is reported and no update of the database occurs. This type of error can also occur if a library cannot correctly read a tape's barcode label. You must carefully check the Robot Manager logs in this case.
7. Click **Close** to exit the Database Synchronization dialog box.
8. New tapes discovered during the audit are added to the *Unused Tape Sets* frame in the **Sets, Groups, & Media Mapping** tab of the Configuration Utility, and assigned *Set ID 1*. Tapes currently tracked by DIVA Core that are missing from the audit will have their status updated to *externalized*. You can examine the status of all tapes in the DIVA Core Control GUI.

Creating Tape Groups

You use the **Sets, Groups, & Media Mapping** tab of the Configuration Utility to define Tape Groups within the archive. Groups segment material within the tape library, or associate content with a particular Media Type. The default group is present in all installations and cannot be removed. However, you can specify your own Group Names and not use the default group. Generally, the Group Name is descriptive of the function or content that is being stored.

A group is associated with a *Set ID* defining the pool of tapes it can draw upon to store DIVA Core objects. When DIVA Core writes an object to a tape from the pool, the tape is assigned to a group. It is released from the group when all objects have been deleted or the tape has been repacked.

The group concept in combination with the Set ID enables optimal use of tape resources. Some tape drives and media are extremely fast but typically have less storage than their larger capacity (*and slower*) counterparts. Content that is small, or required very quickly, should be archived to this group and should use the faster drives.

For example, the 9840C tape drive is small in capacity, but it provides extremely fast access times (*approximately fifteen seconds from mount to data retrieval*), and is better suited to storing large numbers of relatively small data files. This is particularly true related to tape repacking.

For example, if the *Commercials Group* is allocated *Set ID 3* and all 9840C tapes are assigned to that set. Short form commercial material written to tape will exclusively use the 9840C media. Longer (*and larger*) material, such as movies and interstitial programs are better suited to the larger capacity tape sets.

See Sets, Groups & Media Mapping Tab Frames for information displayed on the Groups frame.

Tape Group Encryption

DIVA Core 8.0 tape drive encryption securely supports bulk tape migration between DIVA Core systems. You enable, disable, or update tape group encryption in the Configuration Utility. Tape group encryption is disabled by default.

After enabling encryption on a tape group, all additional tapes added to the group will also be encrypted. However, any existing tapes in the group remain unencrypted if encryption was previously disabled.

Enabling encryption on a tape group generates an encryption key, which is also encrypted. You can change the encryption key at any time. Use the following procedure to enable, disable, or update the encryption key:

1. Navigate to the *Groups* view of the **Sets, Groups & Media Mapping** tab in the Configuration Utility.
2. Double-click the tape group from the list on the *Groups* view to display the *Edit Groups Entry* screen.
3. Select **Enable**, **Disable**, or **Update** from the ***Encryption*** options list.

   When you enable encryption any new tape added to the group will be encrypted. However, any tape already in the group at the time of this assignment is unaffected and remains unencrypted if encryption was previously disabled on the group. You will receive a warning that you are about to enable encryption on the group when you click **OK**.

   Disabling encryption (*after it is already enabled*) only affects additional tapes added to the group, and the existing tapes remain encrypted.

   Updating the encryption generates a new key. You will receive a warning notifying you that a new encryption key will be assigned to the group, and that any new tapes added will use the new encryption key. The existing tapes that were already encrypted will continue to use the original key. Therefore, tapes in the same tape group can have different encryption keys. You must notify the Manager of the change when updating the encryption key.
4. Click **OK** to save your changes.

DIVA Core generates an encoded 256-bit encryption key. For security reasons, the encryption key is also encrypted. If you disables and re-enable encryption on a group, the same encryption key is used.

You can view the encryption status of the tape on the **Home**, **Tapes** screen in the Control GUI.

See the DIVA Core Operations Guide for detailed information.

Creating Tape Sets

When a new tape is entered into a library, or DIVA Core clears a tape of its objects (*whether all objects on that tape have been deleted, migrated to another tape, or moved to another tape after a tape repack*), the tape is released back to the *Unused Tapes Sets* pool.

New tapes are automatically assigned a *Set ID1*, which is the default in all DIVA Core installations. Other *Set ID* numbers are typically used to distinguish between different types of media, but could be used to create restricted pools of tapes for particular applications. If this is the case in your installation, the *Set ID* must be updated for these tapes after they are inserted into the library.

See Sets, Groups & Media Mapping Tab Frames for information displayed on the Unused Tape Sets frame.

Remapping Media

You can put transformation rules in place for the specified groups on Archive requests on the *Media Mapping* frame in the Sets, Groups & Media Mapping Tab. The remapped destination media can be either a disk array, tape group, or a storage plan. This is not typically used during initial installation, but rather at a later time in the object's life cycle.

Transformation rules allow transparent redirection of objects from one media type to another without needing to alter the archive initiator. Some examples are migration of an existing group to a new drive or tape generation, or migration from tape to disk.

Note: 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.

The following events appear in the request details when an object's media is remapped to another media, a storage plan, or both:

- *Media Name Translation* has changed the ***Destination Media*** to **media**.
- *Media Name Translation* has changed the ***Destination Media*** to **storageplan**.
- *Media Name Translation* has changed the ***Destination Media*** to **media & storageplan**.

9

Actor Configuration

This chapter describes DIVA Core Actor configuration and operations, and includes the following information:

Configuration Overview

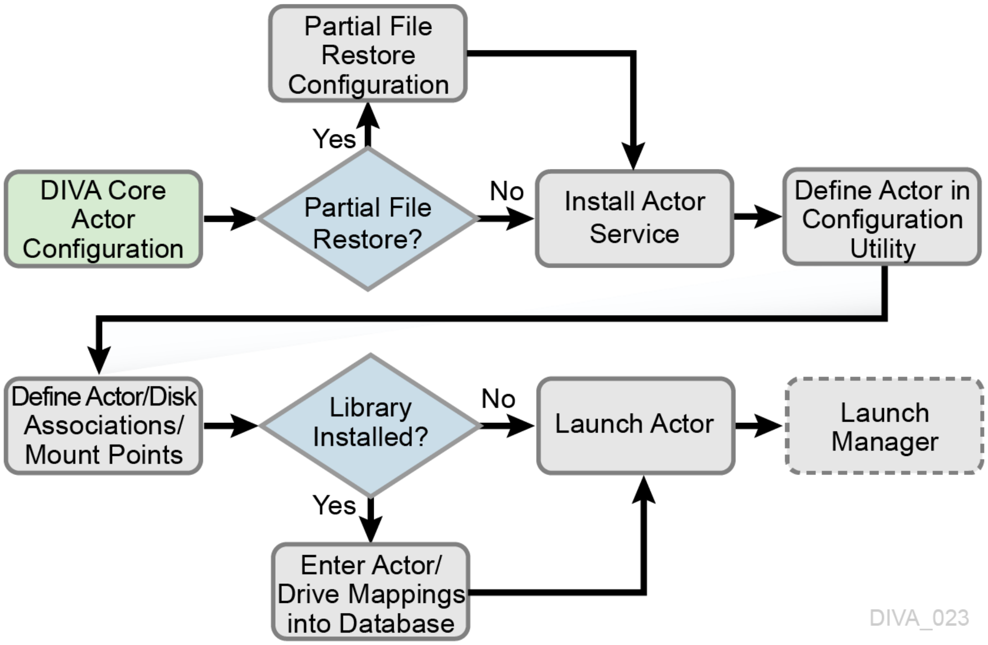
The DIVA Core Actor runs on both Windows and Linux platforms. Windows Actors no longer start automatically with Windows. The DIVA Core Actor runs as a standalone server application. The DIVA Core Manager connects to each Actor as a client application.

The Actor is installed in the %DIVA_HOME%\Program\Actor\bin\ folder in Windows, and in the /home/diva/DIVA/Program/actor/bin/ directory in Linux. The Actor's configuration files are located separately in the %DIVA_HOME%\Program\conf\Actor\ folder in Windows, and in the /home/diva/DIVA/Program/conf/actor/ directory in Linux. At the system level, the location and capabilities of each DIVA Core Actor are defined in the Configuration Utility.

The Actor configuration parameters are located the Configuration Utility, except for the *Service Name* and *Port*. These settings are located under **Actor Advanced** and **Partial Restore Settings** tabs of the *Actor* frame of the **System** tab. *Some settings are only available In Engineering Mode*.

You must notify the actors of any changes to the configuration by clicking on **Notification**, **Notify Actors** while connected to the Manager. The actors must be running and connected to the Manager to receive the notifications.

The following figure is the workflow for installing a DIVA Core Actor:


Partial File Restore Configuration
Yes
DIVA Core Actor Configuration
Partial File Restore?
No
Install Actor Service
Define Actor in Configuration Utility
Define Actor/Disk Associations/ Mount Points
Library Installed?
No
Launch Actor
Launch Manager
Yes
Enter Actor/ Drive Mappings into Database
DIVA_023

Configuring the Local Actor (*actor.conf*)

The Actor configuration file contains the *Service Name* and *Port* parameters. Remove the .ini extension from the actor.conf.ini file and edit the file with a plain text editor (*for example, Notepad or Notepad++*) to insert the *Service Name* and *Port* number as described in the following table.

Parameter	Parameter Type	Description	Default
DIVAACTOR_PORT	TCP Port Number	The TCP Port Number for the Actor to listen on for incoming requests. If running more than one Actor on the host, the TCP Port Number must be unique for each Actor.	9900

Parameter	Parameter Type	Description	Default
SERVICE_NAME	Name	The DIVAACTOR_SERVICE_NAME parameter specifies the name of the Actor and the service during installation. This is required if you install two or more Actors on a single Windows host computer because both cannot have the same Actor Service Name. If this parameter is not defined or commented out, the Service Name defaults to the Host Name of the Actor computer and will be DivaAct Host_Name.	

Configuring DIVA Core Partial File Restore

The Partial File Restore parameters are located on the **Partial Restore Settings** tab in the Configuration Utility *Actor* frame. These options provide additional parameters to the Actor for specific partial file restore formats.

To edit the parameters, double-click the Actor Name in the **Partial Restore Settings** tab to open the Edit Partial Restore Settings dialog box. The Partial File Restore options are defined on the **Partial Restore Settings** tab of the dialog box.

DIVA Core 7.5 and later MPEG2 Transport Stream supports HD MPEG video essences with AES3 audio tracks.

The following table describes the Partial File Restore parameters available on the Edit Partial Restore Settings Entry dialog box. There is a request option available as indicated in the table that can be used when creating the request.

Parameter	Value or Type	Request Option	Description	Default
Name	String		This is the name of the Actor associated with these Partial File Restore options. This value is automatically filled in from the Actor settings. If you modify the name here, or in the Actor settings screen, it will be modified in both places.	
QT Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrQtIgnoreStartTimecode	If this setting is enabled, Partial File Restore will ignore the SOM value of the original clip and process TCIN and TCOUT as if it starts from 00:00:00:00.	**N**
QT Omneon First Frame Handling	**IGNORE** **RESET** **UPDATE**	-PfrQtOmneonFistfrmHandling	This setting identifies how the Actor will handle the first frame of a QuickTime clip: • **IGNORE**: Partial Files Restore will ignore this field. The value found in the original clip will remain unchanged in the restored clip. n **RESET**: Partial File Restore will reset the value of this field to zero. n **UPDATE**: Partial File Restore will increment this value using the frame count from which the partially restored file begins.	**RESET**
AVI Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrAviIgnoreStartTimecode	If this setting is enabled, Partial File Restore will ignore the SOM value of the original clip and process TCIN and TCOUT as if it starts from 00:00:00:00.	**N**
EVS MXF Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrEvsMxfIgnStartTimecode	If this setting is enabled, Partial File Restore will ignore the SOM value of the original clip and process TCIN and TCOUT as if it starts from 00:00:00:00.	**N**

Parameter	Value or Type	Request Option	Description	Default
GXF Timecode Reference	Integer	-PfrGxfTimecodeRef	This setting specifies how the time code SOM reference is to be derived for a GXF Partial File Restore request. The options are defined by the following values: - The objects start time codes are ignored. TCIN and TCOUT must be relative to 00:00:00:00. - SOM is derived from the first field number of the MAP packet (*default*). - SOM is derived from the time code at **Mark In** from the UMF packet.	1
GXF Progressive Timecode Translation	**N** (*disabled*) **Y** (*enabled*)	-PfrGxfProgTimecodeTrans	Partial File Restore is expecting TCIN and TCOUT to be in conformance with the frame rate of the archived clip by default. For example, if the frame rate of the clip is 29.97fps NTSC (*or 25fps for PAL*), the frame count of TCIN and TCOUT can be comprised between 0 and 29 (*25 if it is PAL*). HD formats have progressive frame rates (*23.976, 24, 29.97, 30, 59.94, 60*). For automations, the actual frame rate of the clip can be unknown. When this parameter is set to **Y** (*enabled*), DIVA Core considers that TCIN and TCOUT are PAL or NTSC timecodes and translates these timecodes according to the actual frame rate of the archived clip.	**N**
LXF Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrLxfIgnoreStartTimecode	If this setting is enabled, Partial File Restore will ignore the SOM value of the original clip and process TCIN and TCOUT as if it starts from 00:00:00:00.	**N**
MXF Partial Restore Dictionary File	Path and File Name	-PfrMxfPrDictFile	This parameter must point to the name and location of the MXF dictionary file. The dictionary is normally distributed with the DIVA Core Actor installation in the %DIVA_HOME%\Program\Actor\bin folder. The default dictionary file name is mxf_file.bin. Set this parameter to %DIVA_HOME%\Program\Actor\bin\mxf_file.bin. Where %DIVA_HOME% is the root path of your DIVA Core installation for the Actor (*typically C:\Diva in Windows and home/diva/DIVA in Linux*).	
MXF Timecode From Source Package	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfTimecodeFrmSrcPkg	If you set this parameter **Y** (*enabled*), the time code track used to locate the in and out points will be the one from the source package. Otherwise, timecode will be sourced from the Material Package.	**N**
MXF Timecode Value To Switch Package	**-1** (*no switch*) **0** (*switch*)	-PfrMxfTCValuetoSwitchPkg	If the SOM value found in the MXF package specified by the parameter ***MXF Timecode From Source Package*** is equal to this value, the Actor will automatically look for the SOM in the other MXF Package. The default value of **-1** avoids switching from one package to the other.	**-1**
MXF Enforce Closed Header	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfEnforceClosedHeader	If this parameter is set to **Y** (*enabled*) the extraction will fail if the metadata in the header is not closed. If set to **N** (*disabled*), the Actor will attempt to find closed metadata in the footer partition.	**Y**

Parameter	Value or Type	Request Option	Description	Default
MXF Run In Processor	File Name	-PfrMxfRunInProcessor	If this parameter is defined it must contain the name of the RunInProcessor.dll. In this case, the run-in processor will be used to read and create run-ins. For example: RUN_IN_PROCESSOR=RunInProcessor.dll.	
MXF Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfIgnoreStartTimecode	If this parameter is set to **Y** (*enabled*), MXF Partial File Restore will ignore all start time code values of the original clip and TCIN and TCOUT (*SOM and EOM*) is processed as if the original clip starts at 00:00:00:00. This option overrides the ***MXF TIMECODE FROM SOURCE PACKAGE*** parameter.	**N**
MXF Use Omneon Dark Meta	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfUseOmneonDarkMeta	Certain Omneon MXF clips have their start time code located in a *Dark Metadata Set*. By default the MXF Partial File Restore does not pay attention to this field. Set this parameter to **Y** if you want the MXF Partial File Restore to manage this field.	**N**
MXF Use BMX Library (instead of MOG SDK)	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfUseBMXLibrary	The MOG SDK library has been replaced by BMX under Linux. Under Windows, the use of either MOG SDK or BMX can be selected from the Config Utility under Advanced Actor Settings, by setting the Use BMX Library parameter to Y. Under Linux, BMX will always be used.	**N**
MXF Serialize Depth First	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfSerializeDepthFirst	If this parameter is set to **Y** (*enabled*) the MXF Partial File Restore serializes the Metadata Sets of the partially restored clip using a depth-first approach. This option is recommended when the destination is a QUANTEL ISA gateway. If it is set to **N** (*disabled*), the MXF Partial File Restore serializes the Metadata Sets with no ordering.	**N**
MXF Generate Random Index Pack	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfGenerateRip	RIP (*Random Index Pack*) is an optional small structure located after an MXF file that contains file offset information for each partition in the file (*when present*). You can set this parameter to **N** (*disabled*), for incompatible servers (*for example, SONY XDCAM*).	**Y**
MXF Number of Frames Per Body Partition	Integer between **50** and **250**.	-PfrMxfFramesPerBodyPartition	This parameter defines the number of frames per partition in the output file. Only values between 50 and 250 are valid. If a value greater than 250 is entered, the MXF Partial File Restore will use 250. If the entered value is less than 50, it will use 50. *This parameter is rounded automatically by the Actor to align body partitions on GOP boundaries*.	**250**
MXF Update TC Track Origin	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfUpdateTctrackOrgin	When the video essence is MPEG2 LGOP, Partial File Restore will use the origin field of each track to be frame accurate. The origin specifies GOP precharge frames. Your video server may use a different implementation or interpretation of this field. If this parameter is set to **Y** (*enabled*), the *Origin* field is modified in *all* tracks. If this parameter is set to **N** (*disabled*), the *Origin* field is modified in all tracks *except* the timecode track.	**N**

Parameter	Value or Type	Request Option	Description	Default
MXF Tolerance on TCOUT	Integer between **0** and **250**.	-PfrMxfTcoutTolerance	This parameter can be set to indicate a tolerance on the TCOUT supplied to a Partial File Restore request. This tolerance value is 0 by default, but it you can set it to a specific number of frames. If the supplied TCOUT is beyond the end of the clip, but not too far out (*within the tolerance*), DIVA Core will perform the Partial File Restore until the end of the clip instead of reporting and invalid TCOUT.	**0**
MXF Duration From Footer	**N** (*disabled*) **Y** (*enabled*)	-PfrMxfDurationFromFooter	When the duration of the input clip is -1 in the header partition, the MXF Partial File Restore loads the footer partition in to obtain the correct value. Some older clips may not have a correct RIP after the file, and the footer partition may not be accessible. If you set this value to **N** (*disabled*), the MXF Partial File Restore does not load the footer partition and performs a blind Partial File Restore, if TCIN and TCOUT are valid.	**Y**
MXF Maximum Queue Size	Integer between **0** and **200**.	-PfrMxfMaxQueueSize	The maximum size (*in MB*) that the extractor can queue before producing an error (*to avoid running out of memory*).	**200**
Seachange Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrSeaIgnoreStartTimecode	If you set this parameter to **Y** (*enabled*), SeaChange Partial File Restore ignores the start time code value of the original clip and processes TCIN and TCOUT as if it starts from 00:00:00:00. The configuration of the MXF parser is also required for MXF. However, because this is a SeaChange clip, it ignores the ***MXF Ignore Start Timecode*** in this workflow.	**N**
MPEG2 Transport Stream Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrTsIgnoreStartTimecode	If you set this parameter to **Y** (*enabled*), the MPEG2 transport stream Partial File Restore ignores the start time code value of the original clip, and processes TCIN and TCOUT as if it starts from 00:00:00:00.	**N**
MPEG2 Program Stream Ignore Start Timecode	**N** (*disabled*) **Y** (*enabled*)	-PfrPSIgnoreStartTimecode	If you se this parameter to **Y** (*enabled*), MPEG2 transport stream Partial File Restore ignores the start timecode value of the original clip and processes TCIN and TCOUT as if it starts from 00:00:00:00.	**N**

Defining and Declaring Actors

Each DIVA Core Actor must be declared in the DIVA Core Database. You declare the Actors in the *Actors* frame in the Configuration Utility's **System** tab. The *Actors* frame has three tabs:

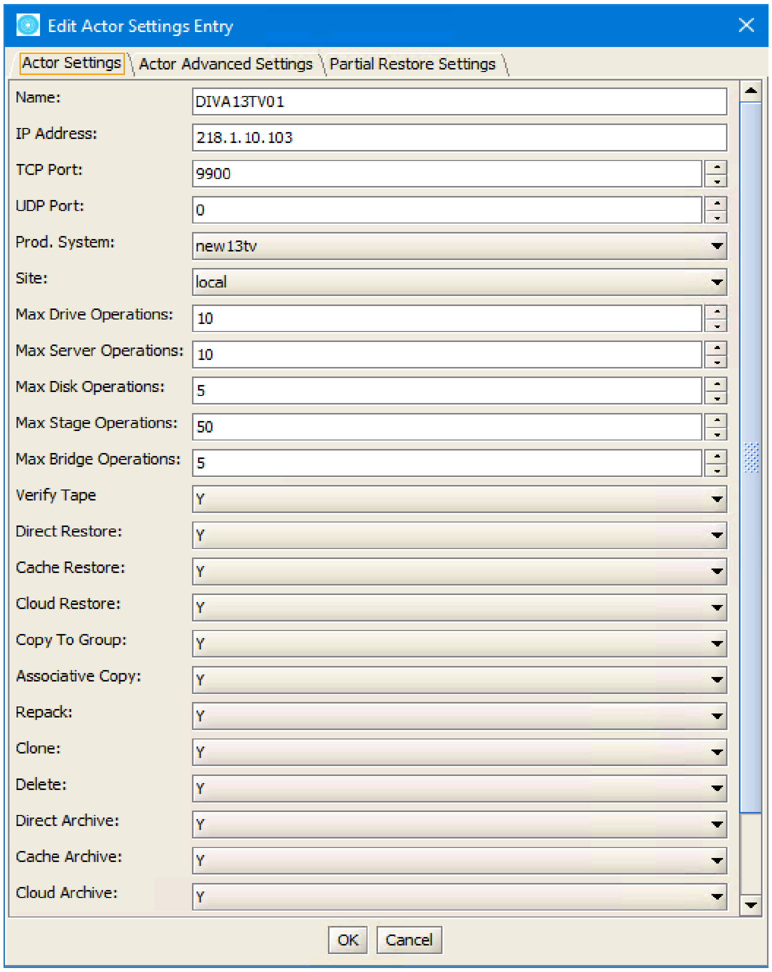
Actor Settings
This tab includes general Actor definition settings such as Actor name, IP address, port, production system, and so on.

Actor Advanced Settings
This tab includes advanced settings such as read and write block sizes, tape unit timeout, Quantel, QuickTime and FTP settings.

Partial Restore Settings
This tab includes Partial File Restore settings previously in the Partial File Restore configuration file.

Actor and Partial File Restore settings are configured and edited on the Actor Settings Entry screen. Click **+** on the top right of the *Actor Settings* frame to create and configure an Actor, or double-click the Actor you want to edit to access the settings screen.

The following list describes the maximum operations parameters on the Actor Settings Entry screen:



Name: DIVA13TV01
IP Address: 218.1.10.103
TCP Port: 9900
UDP Port: 0
Prod. System: new13tv
Site: local
Max Drive Operations: 10
Max Server Operations: 10
Max Disk Operations: 5
Max Stage Operations: 50
Max Bridge Operations: 5
Verify Tape Y
Direct Restore: Y
Cache Restore: Y
Cloud Restore: Y
Copy To Group: Y
Associative Copy: Y
Repack: Y
Clone: Y
Delete: Y
Direct Archive: Y
Cache Archive: Y
Cloud Archive: Y

Name
This is the name of the Actor associated with the *Partial File Restore* options. This value is automatically filled in from the Actor settings. If you modify the name here, or in the Actor Settings Screen, it will be modified in both places.

IP Address
This is the IP address of the Actor.

Port
This is the port number the Actor listens on for commands.

Prod. System
This parameter identifies the production system where the Actor is in use.

Site
This parameter identifies the physical location of the production system.

Max Drive Operations

This is the maximum number of simultaneous requests to and from drives that this Actor can perform. You can use this parameter to distribute requests and bandwidth among all Actors.

Max Server Operations

This is the maximum number of simultaneous requests to and from servers from the Sources and Destinations configuration that this Actor can perform. You can use this parameter to distribute requests and bandwidth among all Actors.

Max Disk Operations

This is the maximum number of simultaneous transfers to and from disks (*both read and write*) that this Actor can perform. You can use this parameter to distribute requests and bandwidth among all Actors.

Max Stage Operations

This is the maximum number of staging request that an Actor is allowed to run at the same time.

Max Bridge Operations

This is the maximum number of concurrent requests using DIVA Bridge that an Actor is allowed to run at the same time.

Verify Tape

This parameter defines whether tapes are verified.

Direct Restore

This parameter defines whether this Actor can be used for direct restores to a Source or Destination.

Cache Restore

The Actor is permitted to perform cache restores to a Source or Destination. You must disable this option if this Actor has no local cache storage for the temporary storage of the DIVA Core object during a transfer.

Copy To Group

This parameter defines whether this Actor can be used for Copy To Group requests. You can use this option to isolate specific Actors involved in critical operations from mass Copy To Group requests, such as those from the DIVA Core SPM option.

Associative Copy

This parameter defines whether this Actor can be used for Associative Copy requests.

Repack

This parameter defines whether this Actor can be used for tape repack requests. You must set this to **N** if the Actor has no local cache for temporary storage during the repack operation. Because tape repacking is a lengthy operation, you can also use this setting to dedicate an Actor solely to repack requests by disabling the other options (*except **Delete***) and disabling repack on the other Actors.

Delete

This parameter defines whether this Actor can be used for requests that involve deleting DIVA Core objects from a disk. You can use this option to isolate an Actor from mass deletion requests (*for example, requests issued from the SPM option*).

Direct Archive

This parameter defines whether this Actor can be used for direct Archive requests.

Cache Archive
This parameter defines whether this Actor can be used for cache Archive requests. You must disable this option if this Actor has no local cache storage for the temporary storage of the DIVA Core object during a transfer.

First Utilization Date
This is the date the Actor was first put into use.

Advanced Actor Settings

Advanced Actor parameters are displayed on the Actor Advanced Setting Tab in the Actors Panel of the Configuration Utility. Entries are configured and edited on the Actor Settings Entry screen's Actor Advanced Settings Tab. To configure or edit advanced actor parameters, double-click the actor you want to edit to access the settings screen.

The following list describes the parameters on the Actor Advanced Settings Entry screen:

Name
This is the name of the Actor associated with the *Partial File Restore* options. This value is automatically filled in from the Actor settings. If you modify the name here, or in the Actor Settings Screen, it will be modified in both places.

Tape Test Unit Ready Timeout (s)
The time in seconds to wait for a drive to become ready after a tape is mounted. If the drive is not ready within this period, the drive is considered to be not responding.

Linux SMB Mount Point
The root path for a Linux-based Actor to create a mount point to SMB shares. The default value is /mnt. When a Linux-based Actor connects to a CIFS Source/Destination, it will mount the share to a directory within the specified mount point.

For example, if the root path is /mnt, a Linux-based Actor connecting to a CIFS share of \\hostname\share_folder, will result in the share being accessible from /mnt/hostname/share_folder.

Profile Read Block Size (B)
The FTP block size used for transfers on profile video servers when reading. The default value (*1500*) is the best block size to use with GVG profile servers. This value may be different when using other servers. Possible values are between 1500 and 262,144 bytes.

Profile Write Block Size (B)
The FTP block size used for transfers on profile video servers when writing. The default value (*32,768*) is the best block size to use with GVG profile servers. This value may be different when using other servers. Possible values are between 1500 and 262,144 bytes.

Quantel Rename Clips
Automatically rename clips when restoring them to Quantel.

- Setting this to **N** disables this feature. This is the default setting.
- Setting this to **Y** renames files using the first part of the object name (*before the comma*) truncated. This is Omnibus renaming.

QT Self-contained Threshold (MB)
When preforming a QuickTime Partial File Restore, the Actor must determine if a clip is self-contained, or not based on the size of the input file. This parameter is a limit in MB. When this limit is exceeded, the Actor considers the clip to be self-contained. The unique objective of this parameter is to prevent the Actor from loading a large self-contained clip into memory. Values range from 10 MB through 100 MB.

Disk FTP Passive Mode
FTP data connections are, by default, created in *Active* mode. The DivaFTP client connects from a random unprivileged port (*greater than port 1023*). Then it immediately starts listening to the port and sends a PORT command to the FTP server.

When you set this parameter to **Y**, data connections are created in *Passive* mode rather than *Active* mode. In *Passive* mode the DivaFTP client sends a PASV command to the FTP server and the server creates socket, not the client.

Disk FTP Block Size (KB)
This parameter defines how much data the Actor attempts to send and receive using a single system call during FTP transfers.

For example, if the Actor internal buffer size is set to 2 MB, and this parameter is set to 32768 bytes, 64 system calls are required to write a single buffer to a data socket.

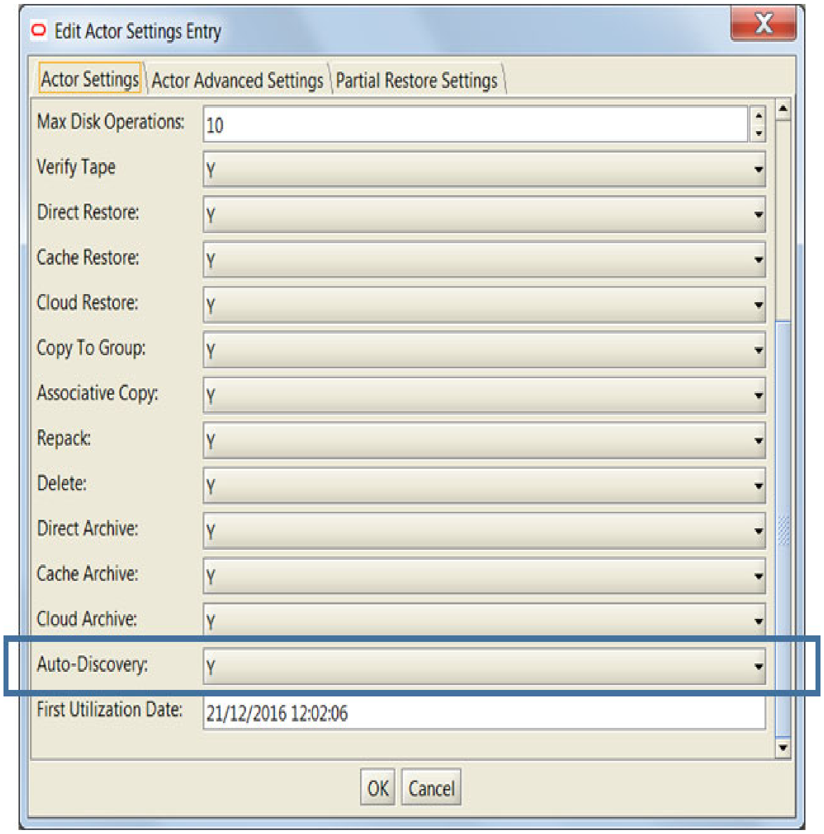
Disk FTP Socket Window Size (B)
This parameter adjusts the normal buffer size allocated for output and input buffers. This parameter is internally used to set the send and receive buffers for FTP-managed disk types.

Disk Auto-Discovery

DIVA Core now supports the retrieval of non-complex objects and instance metadata from an OCI/S3 cloud account to a DIVA Core database. This allows the user to update their on-premise DIVA Core system with content from the cloud. A new web-based GUI allows a user to start, resume, or stop a disk-discovery scan and to view the status of a scan. *Refer to the DIVA Core Operations Guide for detailed information on how to use Disk Discovery.*

Auto-Discovery Configuration

All Actors that can be used to discover metadata on disk must be enabled to do so by setting the **Auto-Discovery** flag for each Actor in the **Actor Settings** panel in the Configuration Utility. Only Actors enabled for Auto-Discovery will be used by one of the Publisher's Request State Machines to discover instances and objects during the scan of a container. Telestream recommends that multiple Actors are configured for Auto-Discovery to maximize performance.



Max Disk Operations: 10

Verify Tape: Y

Direct Restore: Y

Cache Restore: Y

Cloud Restore: Y

Copy To Group: Y

Associative Copy: Y

Repack: Y

Delete: Y

Direct Archive: Y

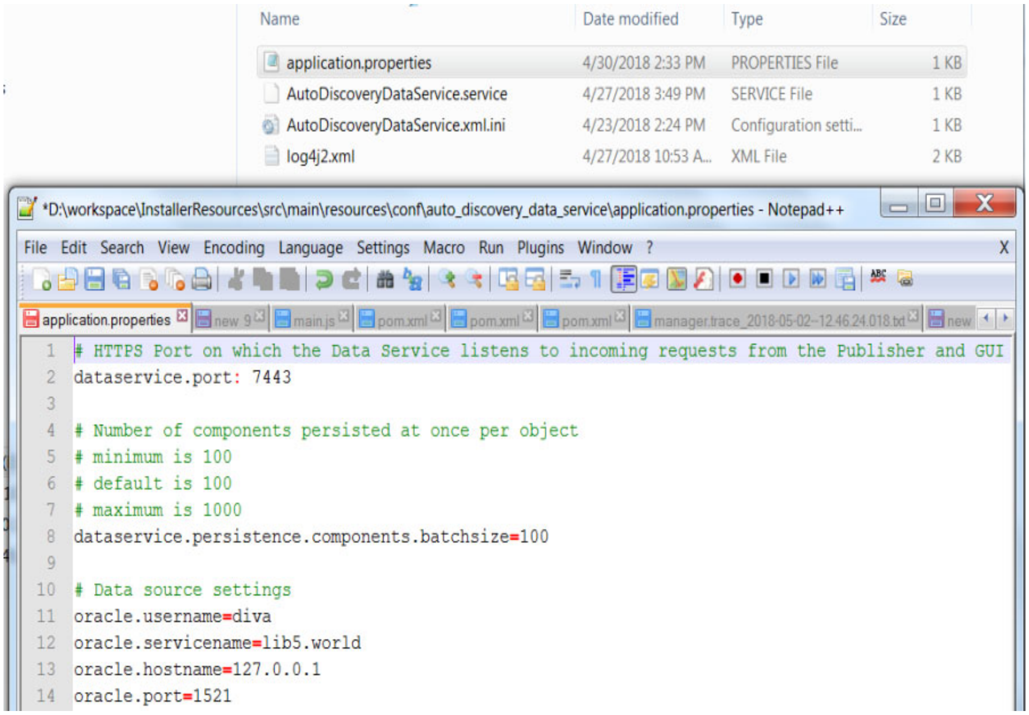
Cache Archive: Y

Cloud Archive: Y

Auto-Discovery: Y

First Utilization Date: 21/12/2016 12:02:06

Before to running the Data Service, the port and DIVA Core database settings must be configured by editing the application.properties file located in the DIVA Core installation's Program/conf/auto_discovery_data_service folder.

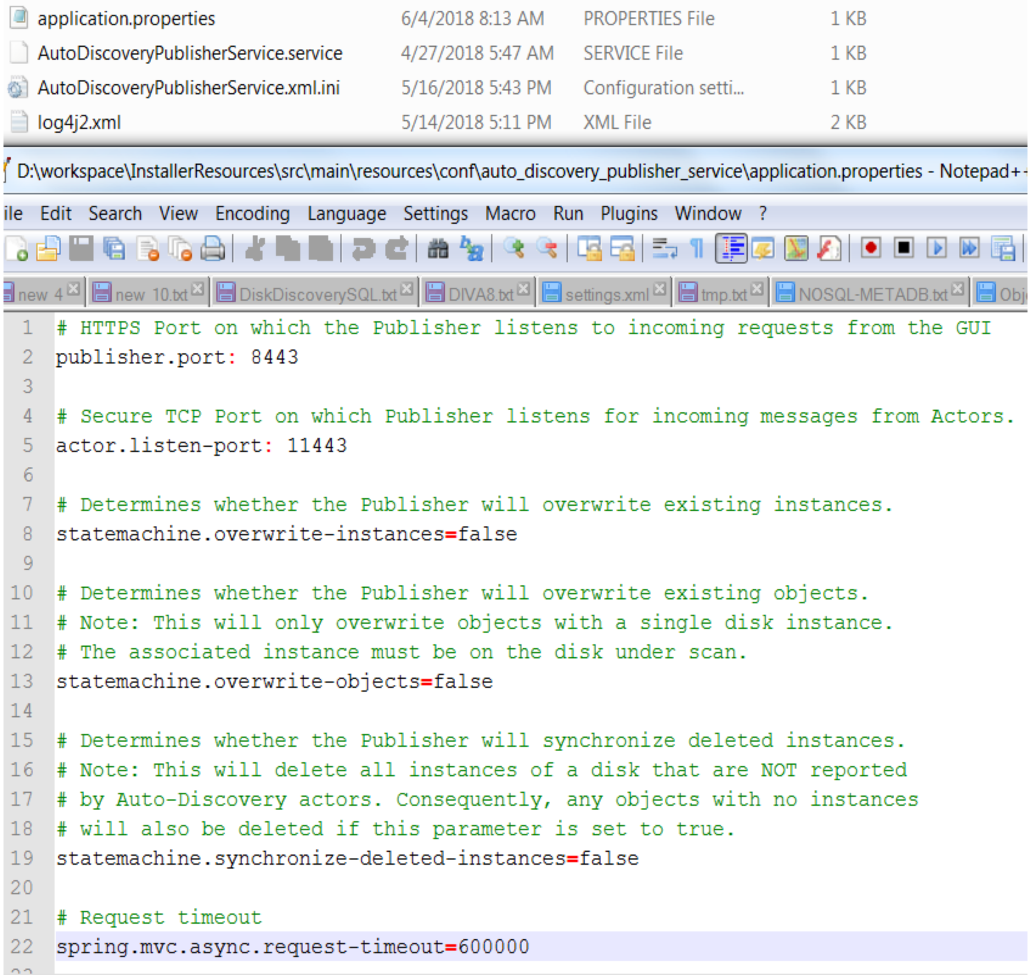


Name	Date modified	Type	Size
application.properties	4/30/2018 2:33 PM	PROPERTIES File	1 KB
AutoDiscoveryDataService.service	4/27/2018 3:49 PM	SERVICE File	1 KB
AutoDiscoveryDataService.xml.ini	4/23/2018 2:24 PM	Configuration setti...	1 KB
log4j2.xml	4/27/2018 10:53 A...	XML File	2 KB

*D:\workspace\InstallerResources\src\main\resources\conf\auto_discovery_data_service\application.properties - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
application.properties
new 9
main.js
pom.xml
pom.xml
pom.xml
manager.trace_2018-05-02-12.46.24.018.txt
new

```
# HTTPS Port on which the Data Service listens to incoming requests from the Publisher and GUI
dataservice.port: 7443

# Number of components persisted at once per object
# minimum is 100
# default is 100
# maximum is 1000
dataservice.persistence.components.batchsize=100

# Data source settings
oracle.username=diva
oracle.servicename=lib5.world
oracle.hostname=127.0.0.1
oracle.port=1521
```

Next, the Publisher's application.properties file is located in the DIVA Core installation’s Program/conf/auto_discovery_publisher_service folder must be modified to update the port the Publisher listens to for HTTPS requests (*GUI*) and TCP messages (*Actor*). Users can also specify whether the disk discovery process should overwrite instances and (*or*) objects. This process will delete any instances and (*or*) objects with the same name and category before writing the new metadata. Users can optionally synchronize deleted instances by deleting all metadata related to instances that are no longer on the corresponding OCI disk.

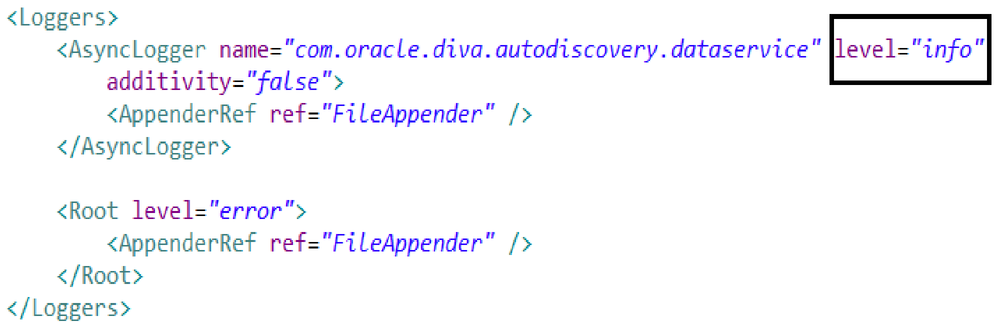


application.properties	6/4/2018 8:13 AM	PROPERTIES File	1 KB
AutoDiscoveryPublisherService.service	4/27/2018 5:47 AM	SERVICE File	1 KB
AutoDiscoveryPublisherService.xml.ini	5/16/2018 5:43 PM	Configuration setti...	1 KB
log4j2.xml	5/14/2018 5:11 PM	XML File	2 KB

D:\workspace\InstallerResources\src\main\resources\conf\auto_discovery_publisher_service\application.properties - Notepad++
ile Edit Search View Encoding Language Settings Macro Run Plugins Window ?
new 4
new 10.txt
DiskDiscoverySQL.txt
DIVA8.txt
settings.xml
tmp.txt
NOSQL-METADB.txt
Obj

```
# HTTPS Port on which the Publisher listens to incoming requests from the GUI
publisher.port: 8443

# Secure TCP Port on which Publisher listens for incoming messages from Actors.
actor.listen-port: 11443

# Determines whether the Publisher will overwrite existing instances.
statemachine.overwrite-instances=false

# Determines whether the Publisher will overwrite existing objects.
# Note: This will only overwrite objects with a single disk instance.
# The associated instance must be on the disk under scan.
statemachine.overwrite-objects=false

# Determines whether the Publisher will synchronize deleted instances.
# Note: This will delete all instances of a disk that are NOT reported
# by Auto-Discovery actors. Consequently, any objects with no instances
# will also be deleted if this parameter is set to true.
statemachine.synchronize-deleted-instances=false

# Request timeout
spring.mvc.async.request-timeout=600000
```

The log4j2.xml files located in both the Data Service and Publisher's configuration folders can be updated to one of the available log levels (*ERROR, WARN, INFO, or DEBUG*) by modifying the level attribute of the AsyncLogger element. It is info by default.

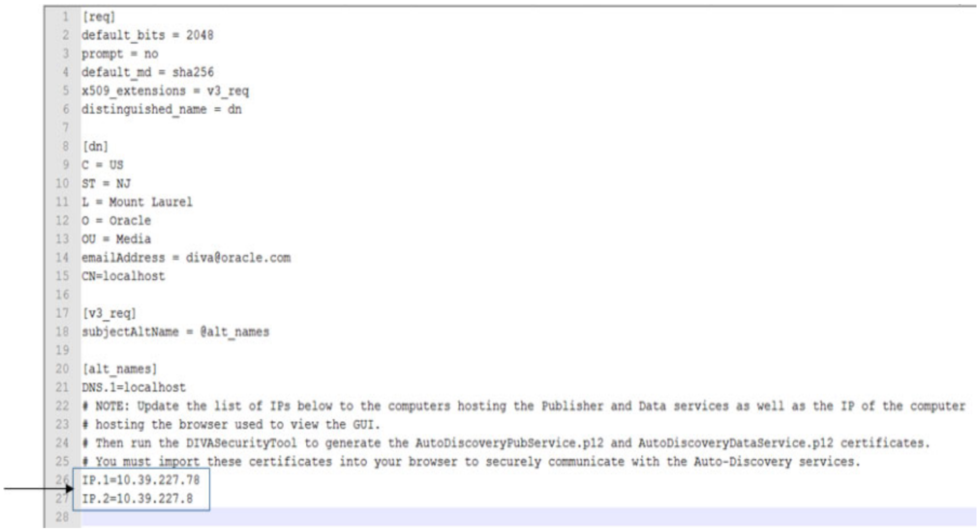


```
<Loggers>
    <AsyncLogger name="com.oracle.diva.autodiscovery.dataservice" level="info"
        additivity="false">
        <AppenderRef ref="FileAppender" />
    </AsyncLogger>

    <Root level="error">
        <AppenderRef ref="FileAppender" />
    </Root>
</Loggers>
```

Auto-Discovery Security

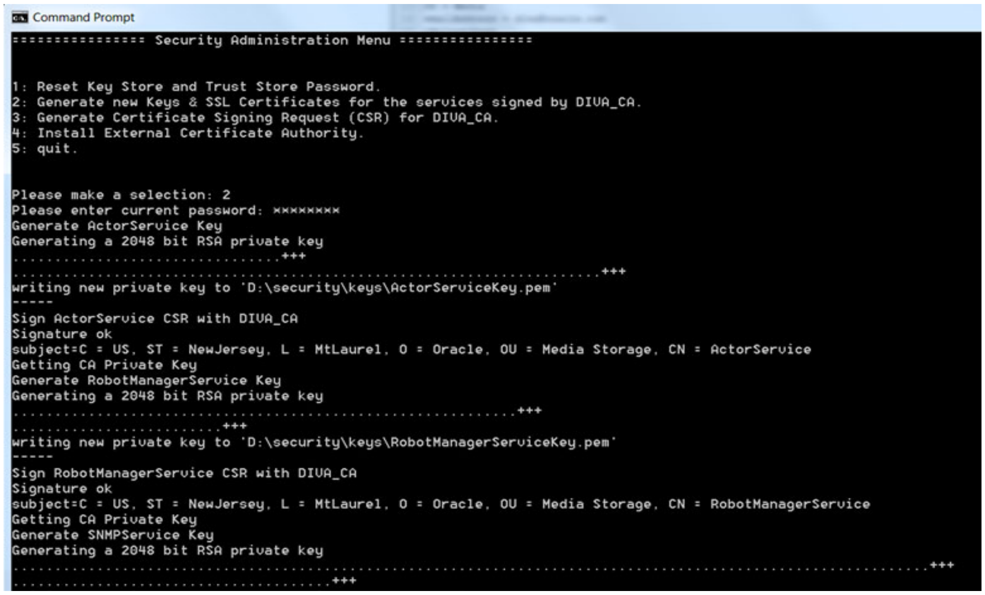
The Auto-Discovery GUI is accessible at the Auto-Discovery Publisher's address and port. To communicate securely with the Publisher and Data services, the browser hosting the GUI must import the AutoDiscoveryPubService.p12 and AutoDiscoveryDataService.p12 certificates from the usual %DIVA%/security/certificates folder as a Trusted Root Certificate Authority. The certificates must be generated by running the DIVASecurity Tool. However, before running the DIVASecurity Tool, the IPs in %DIVA%/security/conf/AutoDiscoveryHost.cnf file, and the browser running the GUI, must be updated to the IP addresses of the computers hosting the Publisher and Data services.

1. Insert or Update the IPs with IPs of the services and browser running GUI:



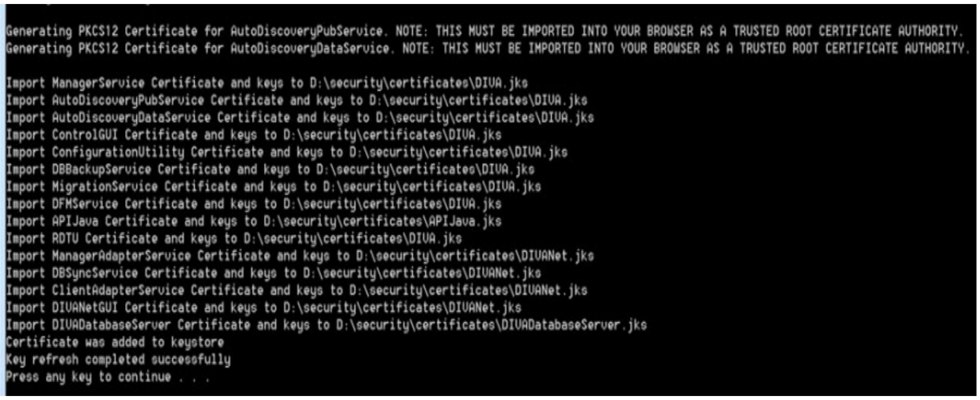
```
[req]
default_bits = 2048
prompt = no
default_md = sha256
x509_extensions = v3_req
distinguished_name = dn

[dn]
C = US
ST = NJ
L = Mount Laurel
O = Oracle
OU = Media
emailAddress = diva@oracle.com
CN=localhost

[v3_req]
subjectAltName = @alt_names

[alt_names]
DNS.1=localhost
# NOTE: Update the list of IPs below to the computers hosting the Publisher and Data services as well as the IP of the computer
# hosting the browser used to view the GUI.
# Then run the DIVASecurityTool to generate the AutoDiscoveryPubService.p12 and AutoDiscoveryDataService.p12 certificates.
# You must import these certificates into your browser to securely communicate with the Auto-Discovery services.
IP.1=10.39.227.78
IP.2=10.39.227.8

```

2. Run the DIVASecurity Tool:



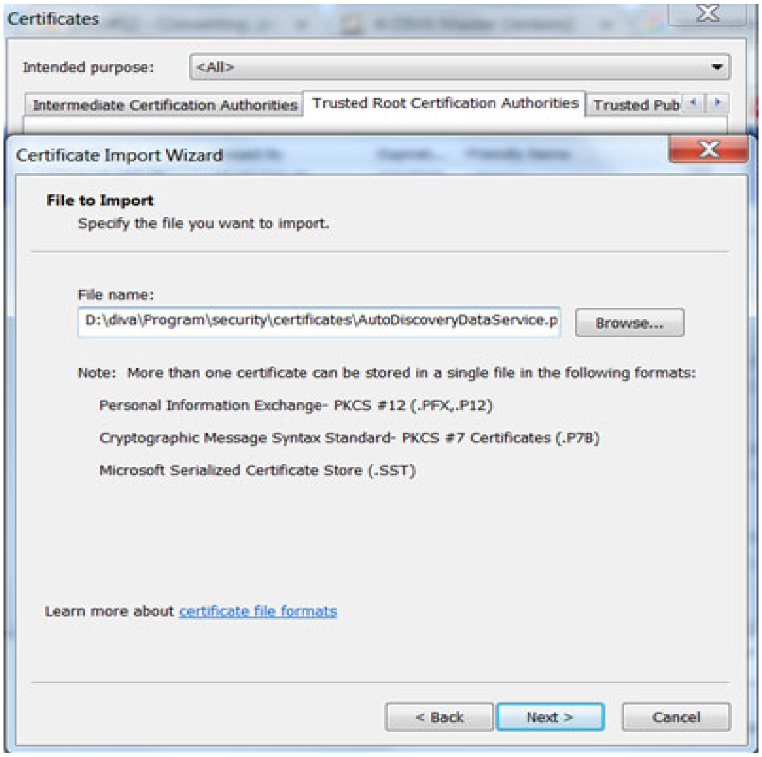
```
================ Security Administration Menu ================


1: Reset Key Store and Trust Store Password.
2: Generate new Keys & SSL Certificates for the services signed by DIVA_CA.
3: Generate Certificate Signing Request (CSR) for DIVA_CA.
4: Install External Certificate Authority.
5: quit.


Please make a selection: 2
Please enter current password: ********
Generate ActorService Key
Generating a 2048 bit RSA private key
................................+++
...........................................................................+++
writing new private key to 'D:\security\keys\ActorServiceKey.pem'
-----
Sign ActorService CSR with DIVA_CA
Signature ok
subject=C = US, ST = NewJersey, L = MtLaurel, O = Oracle, OU = Media Storage, CN = ActorService
Getting CA Private Key
Generate RobotManagerService Key
Generating a 2048 bit RSA private key
................................................................+++
.........................+++
writing new private key to 'D:\security\keys\RobotManagerServiceKey.pem'
-----
Sign RobotManagerService CSR with DIVA_CA
Signature ok
subject=C = US, ST = NewJersey, L = MtLaurel, O = Oracle, OU = Media Storage, CN = RobotManagerService
Getting CA Private Key
Generate SNMPService Key
Generating a 2048 bit RSA private key
................................................................................................................+++
......................................+++
```

3. The tool generates the required AutoDiscoveryDataService.p12 and AutoDiscoveryPubService.p12 certificates:



```
Generating PKCS12 Certificate for AutoDiscoveryPubService. NOTE: THIS MUST BE IMPORTED INTO YOUR BROWSER AS A TRUSTED ROOT CERTIFICATE AUTHORITY.
Generating PKCS12 Certificate for AutoDiscoveryDataService. NOTE: THIS MUST BE IMPORTED INTO YOUR BROWSER AS A TRUSTED ROOT CERTIFICATE AUTHORITY.

Import ManagerService Certificate and keys to D:\security\certificates\DIVA.jks
Import AutoDiscoveryPubService Certificate and keys to D:\security\certificates\DIVA.jks
Import AutoDiscoveryDataService Certificate and keys to D:\security\certificates\DIVA.jks
Import ControlGUI Certificate and keys to D:\security\certificates\DIVA.jks
Import ConfigurationUtility Certificate and keys to D:\security\certificates\DIVA.jks
Import DBBackupService Certificate and keys to D:\security\certificates\DIVA.jks
Import MigrationService Certificate and keys to D:\security\certificates\DIVA.jks
Import DFMService Certificate and keys to D:\security\certificates\DIVA.jks
Import APIJava Certificate and keys to D:\security\certificates\APIJava.jks
Import RDTU Certificate and keys to D:\security\certificates\DIVA.jks
Import ManagerAdapterService Certificate and keys to D:\security\certificates\DIVANet.jks
Import DBSyncService Certificate and keys to D:\security\certificates\DIVANet.jks
Import ClientAdapterService Certificate and keys to D:\security\certificates\DIVANet.jks
Import DIVANetGUI Certificate and keys to D:\security\certificates\DIVANet.jks
Import DIVADatabaseServer Certificate and keys to D:\security\certificates\DIVADatabaseServer.jks
Certificate was added to keystore
Key refresh completed successfully
Press any key to continue . . .
```

4. Import Both certificates into your browser as ***Trusted Root Certification Authorities***:



Certificates
Intermediate Certification Authorities
Trusted Root Certification Authorities
Trusted Pub
Certificate Import Wizard
Browse...
< Back
Next >
Cancel

Intended purpose: <All>

File to Import

Specify the file you want to import.

File name:
D:\diva\Program\security\certificates\AutoDiscoveryDataService.p

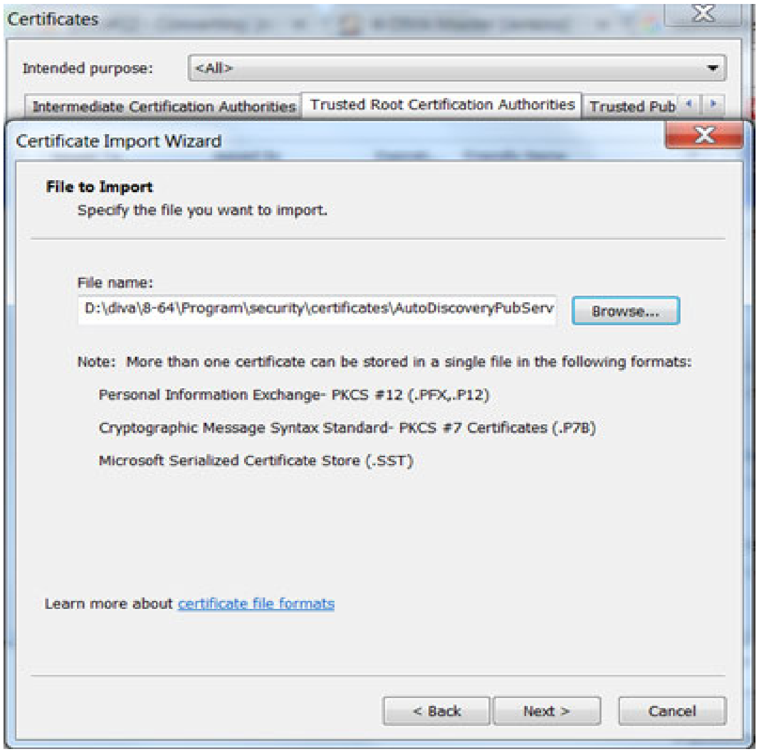
Note: More than one certificate can be stored in a single file in the following formats:

Personal Information Exchange- PKCS #12 (.PFX,.P12)

Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

Microsoft Serialized Certificate Store (.SST)

Learn more about certificate file formats


Certificates
Intended purpose: <All>
Intermediate Certification Authorities
Trusted Root Certification Authorities
Trusted Pub
Certificate Import Wizard

File to Import

Specify the file you want to import.

File name:

D:\diva\8-64\Program\security\certificates\AutoDiscoveryPubServ

Note: More than one certificate can be stored in a single file in the following formats:

Personal Information Exchange- PKCS #12 (.PFX,.P12)

Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)

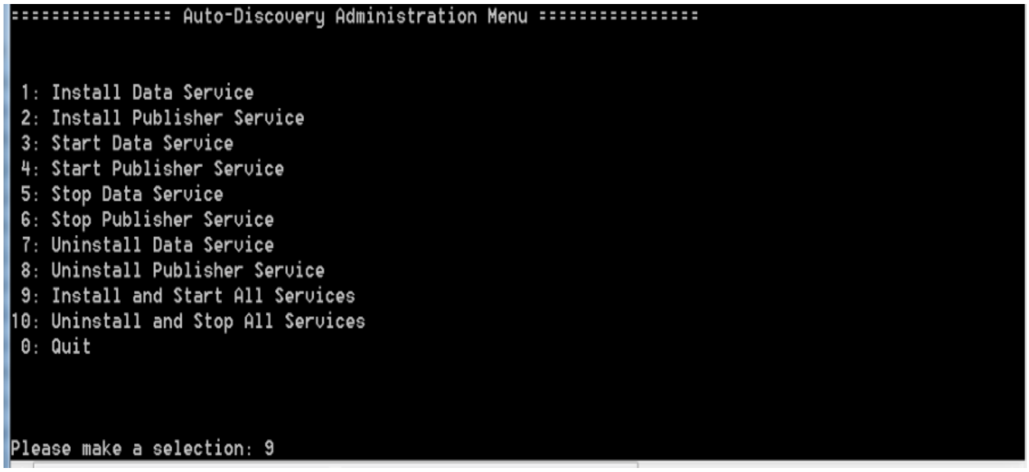
Microsoft Serialized Certificate Store (.SST)

Learn more about certificate file formats

Note: The Data and Publisher services must be restarted to use these certificates for secure communication after generating the new certificates.

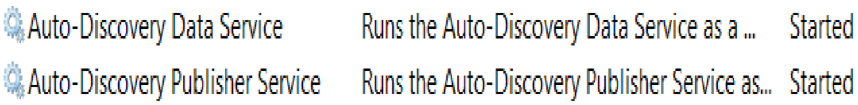
Auto-Discovery Install, Start, Stop and Uninstall

Run the menu script located in Program/AutoDiscovery folder as *Administrator* to install, start, stop, and uninstall the Data and Publisher Services.



```
================ Auto-Discovery Administration Menu ================


 1: Install Data Service
 2: Install Publisher Service
 3: Start Data Service
 4: Start Publisher Service
 5: Stop Data Service
 6: Stop Publisher Service
 7: Uninstall Data Service
 8: Uninstall Publisher Service
 9: Install and Start All Services
10: Uninstall and Stop All Services
 0: Quit



Please make a selection: 9
```

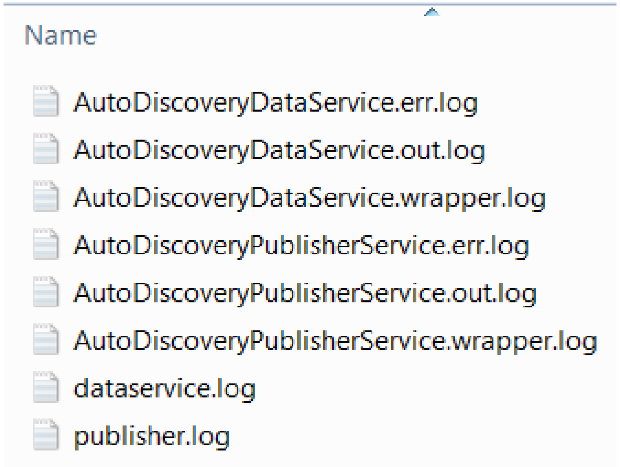
On Windows, the services can also be started and stopped from the Services window.



Auto-Discovery Data Service	Runs the Auto-Discovery Data Service as a ...	Started
Auto-Discovery Publisher Service	Runs the Auto-Discovery Publisher Service as...	Started

Auto-Discovery Logging

Both Service and Trace logs are generated and written to the Program/log/autodiscovery. The log file output is controlled by the log4j2.xml file in the corresponding service's configuration folder.



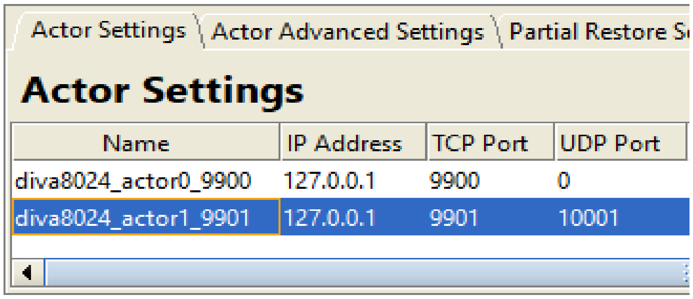
Name

- AutoDiscoveryDataService.err.log
- AutoDiscoveryDataService.out.log
- AutoDiscoveryDataService.wrapper.log
- AutoDiscoveryPublisherService.err.log
- AutoDiscoveryPublisherService.out.log
- AutoDiscoveryPublisherService.wrapper.log
- dataservice.log
- publisher.log

Defining DIVA Core Proxy Hubs

Note: This feature is only supported for disk and Source/Destination based requests.

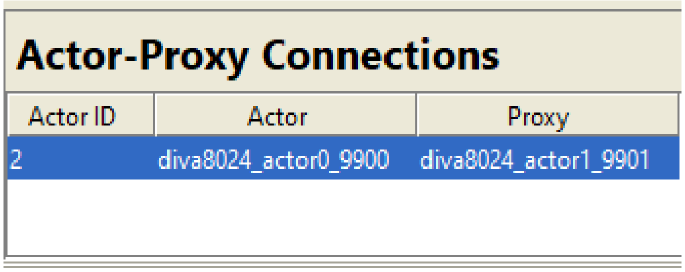
The user must first define an Actor with a UDP port to configure a Proxy Hub. The UDP port allows a regular Actor to message a Proxy Hub using the connection-less protocol. In the following figure Actor diva8024_actor1_9901 is configured as a Proxy Hub with UDP port 10001. The TCP port is irrelevant for a Proxy Hub.



Actor Settings

Name	IP Address	TCP Port	UDP Port
diva8024_actor0_9900	127.0.0.1	9900	0
diva8024_actor1_9901	127.0.0.1	9901	10001

You must configure the link between the Actor and Proxy Hub to notify DIVA Core that this Actor is a Proxy by adding an Actor-Proxy connection as shown in the following figure:



Actor-Proxy Connections

Actor ID	Actor	Proxy
2	diva8024_actor0_9900	diva8024_actor1_9901

After configuration, DIVA Core is now aware that Actor diva8024_actor0_9900 can see Proxy diva8024_actor1_9901. This means that any remote resources only visible to the Proxy Hub can now be accessed using the regular Actor.

The Actor configuration file corresponding to the proxy must also be updated with the UDP port. In this example, the Actor configuration file for diva8024_actor1_9901 (*the Proxy Hub*) only requires a UDP port.

```
DIVAACTOR_PORT=UDP/10001
```

If you want to specify both a TCP and UDP port, then you must use DIVAACTOR_PORT2 as shown here:

```
DIVAACTOR_PORT=9901

DIVAACTOR_PORT2=UDP/10001
```

You can now configure a remote disk that is **not** connected to a regular Actor and still archive to that disk if a Proxy Hub is connected to that disk.

Note: The Manager does **not** directly connect to a Proxy Hub. It can only directly communicate with a regular Actor. A Proxy Hub exclusively communicates with a regular Actor.

Resource Selection and Manager-Actor Communication

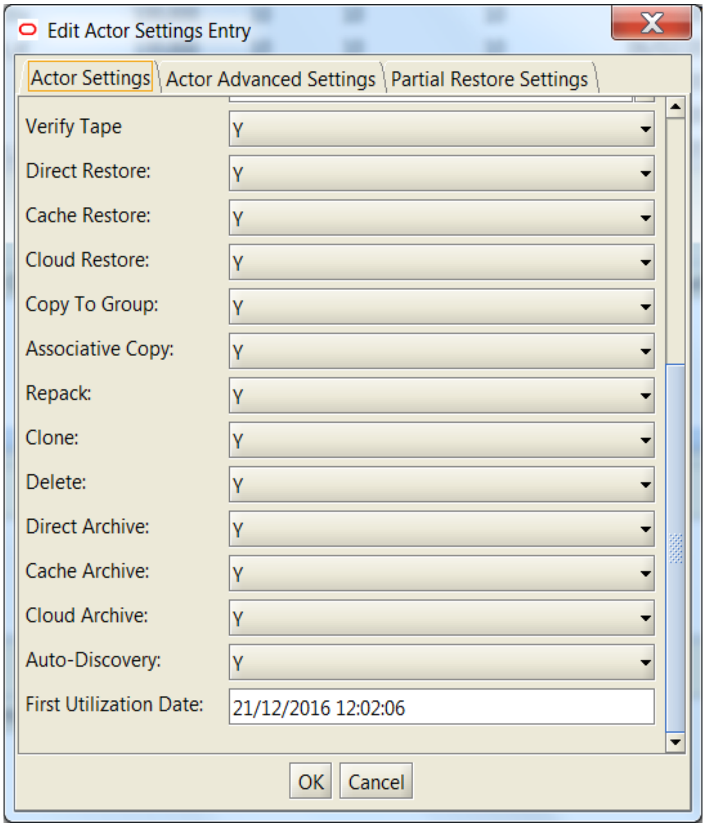
The Manager selects what regular actor to use to satisfy a request based on the resources that actor can directly or indirectly (*via a proxy*) access. If multiple proxies are configured for a single actor, the decision of which proxy to use is based primarily on the load on that actor.

The Manager does NOT directly connect to a proxy. It can only directly communicate with a regular actor. A proxy exclusively communicates with a regular actor.

Cloning Actors and Tapes

In addition to configuring Clone Groups, Actors and Source Tapes must be enabled for cloning. By default, all Source Tapes are enabled for cloning. However, a Source Tape will be disabled for automatic cloning if a read failure occurs during a clone request. The user will have to manually re-enable the Source Tape for automatic cloning by setting the corresponding **Tape State** in the Configuration Utility.

If a write error occurs during a clone request, the Source Tape is unaffected and can still be used for writing content. If the Clone Tape is bad and cannot be used, the existing clone link must be removed, and then either manually invoke the clone or use the automated clone scheduler to invoke it. On invocation, the clone request will select a new tape from the Clone Group.



Verify Tape: Y

Direct Restore: Y

Cache Restore: Y

Cloud Restore: Y

Copy To Group: Y

Associative Copy: Y

Repack: Y

Clone: Y

Delete: Y

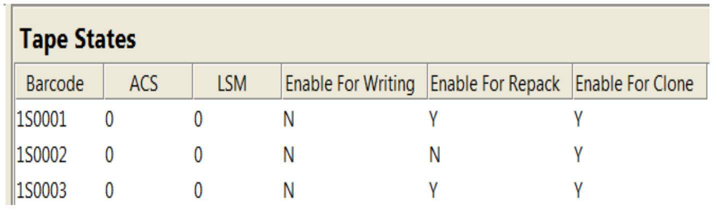
Direct Archive: Y

Cache Archive: Y

Cloud Archive: Y

Auto-Discovery: Y

First Utilization Date: 21/12/2016 12:02:06



Tape States

Barcode	ACS	LSM	Enable For Writing	Enable For Repack	Enable For Clone
1S0001	0	0	N	Y	Y
1S0002	0	0	N	N	Y
1S0003	0	0	N	Y	Y

See the DIVA Core Operations Guide for details on tape selection, manual cloning, and automatic cloning processes.

Defining Actor to Disk Connections

After you have configured the Actor definitions, you must define the logical connections (*mount points*) of the physical disks previously identified during the initial DIVA Core configuration.

If the same resource on a physical disk is to be shared between multiple Actors, and file sharing software has been installed, Telestream recommends that the drive letter or volume of the disk connection configured in each Actor host is identical (*for simplicity*). Actors retrieve these mount point definitions when the DIVA Core Manager first connects to each of them. Any modifications performed here require the relevant Actor to be restarted.

To edit the parameters, double-click the Actor Name in the *Actor-Disk Connections* frame to open the Add new row in Actor-Disk Connections dialog box. Click the **+** button on the top of the frame to add an Actor-Disk connection.

Note: Multiple selections are available in *Add* mode, but not in *Edit* mode. Nearline storage is used for disk instances created during a Restore or N-Restore request with a **Nearline** QOS when no other disk instances are available.

The following list describes the options on the Add new row in Actor-Disk Connections dialog box:

Disk
Select a physical disk in the drop-down menu for this Actor association. Only entries previously defined in the Disks frame will be displayed. Multiple disks may be selected using the check box next to each disk name.

Actor
Select the Actor for this disk association. Only Actors declared in the Actors frame of the System tab will be listed. The selected disk must be directly accessible by this Actor.

Interface
Select the access method the Actor will use to connect to the disk.

Mount Point
The Mount Point is used with the Interface selection.

Max. Throughput, MB/s
This allows bandwidth throttling of the transfers performed by the Actor. Typically used to load balance transfers with other Actors or non-DIVA Core applications.

When DIVA Core has multiple disks to choose from for object storage, this parameter is the first criteria for disk allocation (*that is, the disk with the highest throughput will be used first*). The second criterion is the percentage of used capacity of each disk considered.

Access
This defines this Actor's read/write access to the associated logical disk. This allows further granularity in load balancing with other Actors.

Used for
This defines how the associated disk is to be used by this Actor as follows:

Cache Only
DIVA Core will only use this disk for caching operations.

Storage Only
DIVA Core will only use this disk for object storage.

Cache and Storage
DIVA Core will use this disk for both cache and object storage.

Storage and Nearline
DIVA Core will use this disk for both object and Nearline storage.

Cache and Storage and Nearline
DIVA Core will use the disk for cache, object, and Nearline storage.

Actor to Disk Interfaces and Mount Points

The disk interface method and the corresponding mount point in an Actor-Disk connection are determined by how the drive is logically connected and presented to the Actor host computer's operating system. The following sections describe different interface methods and mount point configurations.

Local Interface

This option specifies that *unbuffered I/O* will be used with the disk to maximize transfer performance. Disks that use this option can reside within the Actor host itself (*for example, disks to be used for cache purposes*), disks connected to the host through either SCSI or Fiber Channel HBAs (*for example, in a SAN*), or those specified with a UNC (*Universal Naming Convention*) mount point. Some network drives may actually suffer with this type of interface. In these instances, use the *Remote* option instead.

Note: Windows-based Actors do not support network drives mapped to a Windows drive letter (*this is a Microsoft security restriction*). Networked disks in Windows must use the *Remote* option instead.

The *Mount Point* is the drive letter or volume of the drive as it appears to the host operating system, plus any additional directory path.

Remote Interface

This interface specifies that *buffered I/O* will be used with the disk and allows access to disks hosted by another computer using CIFS protocol. This option must be used for networked disks with the Windows Actor Service.

The mount point for a CIFS connection is a UNC path. For example, cifs://192.168.56.26\shared or cifs://user\domain:password@\\192.168.56.26\shared.

Appropriate permissions for any CIFS-based disk must be enabled for the Actor to access the network drive. Otherwise, the disk will be set **Offline**.

Note: Linux-based Actors support UNC paths for CIFS sources and destinations by automatically mounting/unmounting from the SMB share. UNC paths are supported for SMB Source/Destinations and Managed Disks if the UNC path is directly mounted on the Windows Actor.

Oracle Cloud Interfaces

This interface is used for Oracle Storage Cloud, Oracle Archive Cloud, and Oracle Cloud Infrastructure Storage accounts. *See* Configuring Oracle Archive Cloud for DIVA Core *and* Configuring Oracle Cloud Infrastructure *for configuration information*.

Amazon S3 Interface

This interface is used for Amazon S3 Storage Accounts. *See* **Configuring Amazon S3 Storage Accounts** *for configuration information.*

BML Interface

This interface enables the Actor to use a SeaChange BML (*non-Infiniband Media Libraries*) as disk storage. For regular disks, DIVA Core stores objects under multiple subdirectories. The BML however uses a flat file system (*that is, no directory structure*). DIVA Core automatically incorporates a directory structure into the file name when it is archived to the BML, and removes this addition from the file name as it is restored.

The mount point for the BML option is bml://IP_Address. For example, bml://10.201.10.124.

FTP Interface

This interface enables DIVA Core to use FTP servers as disk storage using the FTP protocol. Telestream only supports Linux-based FTP servers when operating in a Linux environment, not Windows-based FileZilla and IIS FTP servers. This is because Windows FTP servers cannot handle the large numbers of files.

The mount point must be in the format ftp://login:password@host/rootdir.

MetaSAN Interface

You must select this interface when MetaSAN manages the disk volume. By default, DIVA Core Actors preallocate storage on disks to prevent disk fragmentation. MetaSAN implements its own anti-fragmentation mechanisms. Selecting this option will disable preallocation when dealing with this volume.

Simulation Interface

You use this interface when setting up a DIVA Core Simulator. See the *DIVA Core Simulator Operations Guide* for details. This book is only available to OPN partners.

The mount point must be a real path name to a directory on a local disk. When used to store objects, only the file size is recorded to the disk (*that is, no content is actually saved*). You cannot use a simulated disk as cache for a repack request.

Configuring Actor to Drive Connections

The Data Transfer component of the drives must be configured for use with the Actors separate from the Tape Drive Control configuration for the Robot Manager. You must logically configure each drive in the Actor-Drive configuration in the database.

The *Actors-Drives* frame is located on the **Drives** tab. The frame displays the current Actor-Drive associations including the Actor Name, Drive Number, and Library location. If a drive is connected to multiple Actors through a SAN, the Actor-Drive mapping must be repeated for each Actor accessing this drive.

You can combine the *Drive Operations* settings and the *Actor Capability* settings to dedicate a drive to a particular set of Actors for specific operations. For example, tape repacking.

To edit the parameters, double-click the Actor Name in the *Actors-Drives* frame to open the Add new row in Actors-Drives Connections dialog box. Click the **+** button at the top of the frame to add an Actors-Drives connection.

Two options are available on the Add new row in Actors-Drives Connections dialog box as follows:

Actor
Select the Actor that the drive is connected to from the list. Only Actors already defined in the *Actors* frame of the **System** tab are listed.

Drives
Select the logical drive in the relevant library for this mapping. Only drives defined in the *Drives* frame of the **Drives** tab are listed. You can select one or more drives using the check boxes. *Multiple selections are only available when adding an association, not while editing an existing one*.

When you select a different Actor, the drives available for configuration are displayed. If all drives have already been configured for the selected Actor, the ***Drives*** list will not be available and will indicate that there are no drives available for the selected Actor.

Logging Actor Activity

DIVA Core Actors log all activities during normal operations. The log files are named actor.log, or actor_SERVICE_NAME.log. The files are stored in the %DIVA_HOME%\Program\log\actor folder.

Each DIVA Core Actor also provides additional logging functions for some specific server protocols (*for example, the Quantel QCP interface, FTP servers, and Partial File Restore*). DIVA Core enables logs by default, and they are unique for each server type. They provide detailed logging information from that protocol to the standard Actor log file.

These files are useful in diagnosing transfer errors with either drives or servers, and particularly for debugging the configuration when a Source or Destination has been added. Telestream Support may request these logs when providing assistance.

Installing and Uninstalling Actor Services in Windows

You use the actorservice.exe executable in the Actor bin directory to install (*or uninstall*) the DIVA Core Actor as a service from a Windows command-line prompt.

By default, the Actor Service uses the actor.conf file located in %DIVA_HOME%\Program\conf\actor folder to define the *Service Name*. If you are installing multiple Actors on a single host, you must create additional Actor configuration files and specify them to the service to create unique instances for each Actor (*see* Actor Service Management Functions *for more information*).

See Appendix A for DIVA Core options and licensing information.

Use the following commands to install or uninstall the Actor Service from the Windows command line:

actorservice -i
Installs the Actor Service using the *SERVICE_NAME* parameter defined in actor.conf. If this parameter is undefined, then the service is installed as DIVA Core Actor - Host_Name.

actorservice-u
Removes the Actor Service using the *SERVICE_NAME* parameter defined in actor.conf. If this parameter is undefined, then the service to be removed is DIVA Core Actor - Host_Name.

Installing and Uninstalling Actor Services in Linux

The divaservice executable in the Actor bin directory installs (*or uninstalls*) the DIVA Core Actor as a service from a Linux terminal.

Use the following command sequence to install Actor services:

```
cd/home/diva/DIVA/Program

./divaservice install actor /home/diva/DIVA/Program/conf/actor/actor.conf
```

Use the following command sequence to uninstall Actor services:

```
cd/home/diva/DIVA/Program

./divaservice uninstall actor /home/diva/DIVA/Program/conf/actor/actor.conf
```

See Installing the DIVA Core Services for more information on using the divaservice command.

Actor Service Management Functions

When installing or uninstalling additional Actor Services on the same host, you must specify the path to each Actor's configuration file for each instance. You add the -conf (*or -f*) command switches when installing the service as follows:

```
actorservice {-i|-u} {-conf|-f} {Path and file name}
```

The command syntax is the same for Windows and Linux. However the path and file name will be different. The following examples install the Actor services for two different Actors on the same host computer. You use the -u command switch (*instead of -i to install*) to uninstall these same Actor services.

Check the services applet after installation to verify that each Actor Service was installed correctly.

For example, use the following command in Windows to install the Actor defined by the *SERVICE_NAME* in the actor1.conf configuration file:

```
actorservice -i -conf C:\DIVA\Program\conf\actor\actor1.conf
```

Use the following command in Windows to install the Actor defined by the *SERVICE_NAME* in the actor2.conf configuration file:

```
actorservice -i -conf C:\DIVA\Program\conf\actor\actor2.conf
```

Use the following command in Linux to install the Actor defined by the *SERVICE_NAME* in the actor1.conf configuration file:

```
actorservice -i -conf ../../conf/actor/actor1.conf
```

Use the following command in Linux to install the Actor defined by the *SERVICE_NAME* in the actor2.conf configuration file:

```
actorservice -i -conf ../../conf/actor/actor2.conf
```

The following additional command options are also available for the Actor Service:

actorservice debug
Starts the Actor Service in console mode. This is used for troubleshooting.

actorservice version
Displays the DIVA Core Actor Service software release information. You can also use the -v switch instead of version.

actorservice help
Displays all command line options.

Launching the Actors

Windows DIVA Core Actors no longer start automatically with Windows. You can manage the Actor Services through the Windows Services applet, from a Windows command line, or from Linux terminal.

In Windows, you can locate the Actor Service in the Windows Services applet, right-click the name, and then select the desired management function (***Start***, ***Stop***, ***Restart***, *and so on*) from the context menu.

Note: The quotation marks in the following commands must be used when specifying a Windows service with spaces in the name.

You can restart an Actor from a Windows command line or Linux terminal using the following command sequence:

```
net stop "DIVA Core Actor"
net start "DIVA Core Actor"
```

If a *SERVICE_NAME* is specified in the actor.conf file (*for multiple Actors on a single computer*), then you can restart an Actor from a Windows command line or Linux terminal using the following command sequence:

```
net stop "DIVA Core Actor -SERVICE_NAME"
net start "DIVA Core Actor -SERVICE_NAME"
```

Tip: Create a Windows batch file containing these commands and place it on the desktop for easy access.

10

Manager Configuration

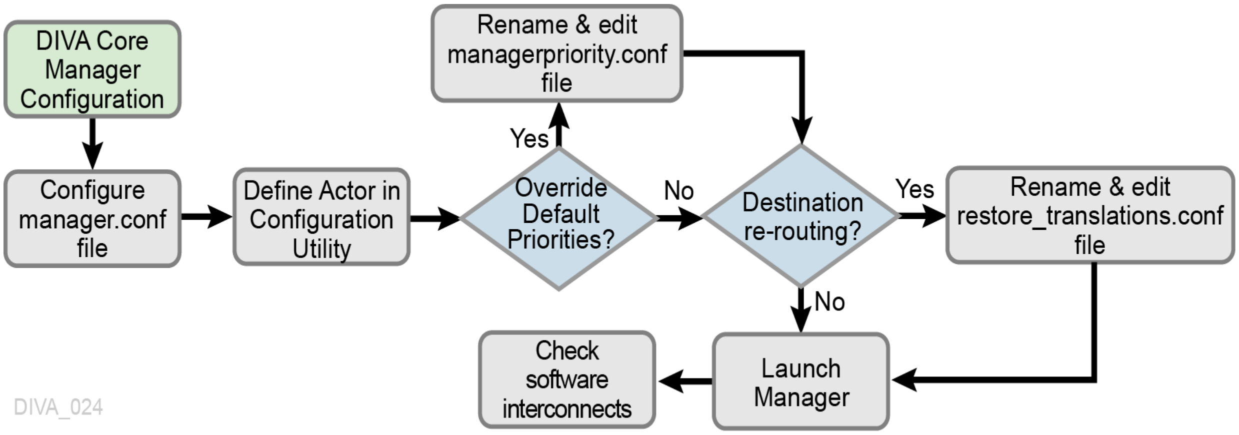
This chapter describes DIVA Core Manager configuration and includes the following information:

Configuration Overview

The Manager module is located in %DIVA_HOME%\Programs\Manager\bin in Windows, and in /home/diva/DIVA/Program/Manager/bin in Linux, and runs as a service. The static configuration file for the Manager is manager.conf. You can typically leave most settings in this file left at the default values. The settings that would normally require updating are highlighted in bold type.

See Appendix A for DIVA Core options and licensing information.

The following figure is the workflow for installing a DIVA Core Manager:


DIVA Core Manager Configuration
Configure manager.conf file
Define Actor in Configuration Utility
Override Default Priorities?
Yes
Rename & edit managerpriority.conf file
No
Destination re-routing?
Yes
Rename & edit restore_translations.conf file
No
Launch Manager
Check software interconnects
DIVA_024

Configuring the Local Manager

The static configuration file in new installations is initially named manager.conf.ini. You must remove the .ini extension for it to be recognized by the DIVA Core Manager.

The configuration file is divided into five distinct groups; *Basic*, *Database*, *Advanced*, *Logging*, and *Service* settings. You must not modify the *Service* settings section, and therefore, not covered in this manual. *Values defined in this section must only be altered with instruction from Telestream Support*.

Each parameter section in the configuration file contains information on defining that parameter. The information lines are commented out (*start with #*) and ignored by the Manager. Any parameter definition that is missing the equal sign is also ignored.

Spaces in the parameter settings are significant. Do not put extra spaces before or after the parameter names or their values. If you have trouble running the Manager after configuring the manager.conf file, confirm that spaces are not present in any of the parameter values you have defined.

Restarting the Manager can disrupt a live production system. You can make most of the customizations in the configuration file effective immediately using the restart command line switch.

If you intend to update your existing DIVA Core system with a newer software release, you must use the manager.conf.ini from the new release. You must update the *Basic* and *Database* settings with the values from the old configuration file. The new release configuration file may have additional settings or updates included; this applies to all DIVA Core software modules when installing a release updated.

Basic Settings

Except for the *SERVICE_NAME*, these parameters are always required and must be defined for the Manager to start successfully. These settings define how other DIVA Core software components and DIVA Core API clients connect to the Manager.

Note: These settings are not reloadable while the Manager is running. You must restart the Manager for them to take effect.

The following table describes the *Basic* settings in the manager.conf file:

Parameter	Parameter Type	Description	Default
SERVICE_NAME	Name	You can use this parameter to specify the name of the service. If not defined, the Service Name defaults to DIVA Core Manager.	
DIVAMANAGER_NAME	Name	This is the name this Manager instance uses to identify itself to other DIVA Core Managers sharing its resources. Otherwise, this is arbitrary. It must be unique in a system running multiple Managers except for Main and Backup Managers (*configured as a cold standby*). In this instance, the names should be identical.	DIVA
DIVAMANAGER_PORT	TCP Port Number: unsecure connections	The TCP port other DIVA Core applications, or third party applications using the DIVA Core Client API use to connect to this Manager. If using a Sony library and running the Manager on the same computer as the PSC (*PetaSite Controller*) software, the PSC Server also uses TCP port 9000, which cannot be modified. In this situation, you must specify another port for the Manager.	9000
DIVAMANAGER_SECURE_PORT	TCP Port Number: secure connections	The secure TCP port used by DIVA Core Services and the DIVA Core API.	8000

Database Settings

These parameters define the location and instance of the DIVA Core Database. Except for the DIVAMANAGER_TNSNAME parameter, you must define all settings in this section for the DIVA Core Manager to launch successfully.

The following table describes the *Database* settings in the manager.conf file:

Parameter	Parameter Type	Description	Default
DIVAMANAGER_TNSNAME	Name	The TNS Name of the DIVA Core Schema within the Oracle database. DIVA Core ignores this setting if the DIVAMANAGER_DBHOST and DIVAMANAGER_DBPORT settings are defined. This feature requires Oracle 11*g* or higher installed on the host running the Manager. If this setting is defined, the location of the Oracle OCI driver (*for example, ocijdbc11.dll*) must be added to the wrapper.java.library.path setting (*located in Service settings section of the file*); otherwise, the Manager will not start as a service. Example: wrapper.java.library.path=.;C:\app\oracle\product\11.1.0\BIN	
DIVAMANAGER_DBHOST	IP Address or Host Name	This specifies the Host Name or IP Address of the computer containing the DIVA Core Database. If using a host name, this must be present in the hosts file on the computer where the DIVA Core Manager is installed.	
DIVAMANAGER_DBPORT	TCP Port Number	The Oracle Listener port configured during the DIVA Core Database installation.	1521
DIVAMANAGER_DBSID	Name	The DIVA Core Database SID (*Instance System Identifier*) in Oracle where DIVA Core Manager connects.	
DIVAMANAGER_DBUSER	Name	The user name the DIVA Core Manager uses to connect to the DIVA Core Database. This is typically diva (*case sensitive*).	diva
DIVAMANAGER_DBSERVICENAME	Name	Oracle ServiceName setting. Either this value or DIVAMANAGER_DBSID must be set. If both are set, this takes precedence over the SID.	No default value, but lib5.world is recommended.
DIVAMANAGER_DBSID	Name	Oracle ServiceName setting. Either this value or DIVAMANAGER_DBSERVICENAME must be set. If both are set, DIVAMANAGER_DBSERVICENAME takes precedence over SID.	No default value, but lib5.world is recommended.

Advanced Settings

You typically leave the parameters in this section are typically left at their defaults. They customize DIVA Core's default behavior for task execution, resource allocation, and the number of connections it will accept from DIVA Core Applications and DIVA Core API Clients.

These parameters are normally adjusted or fine-tuned after completing the initial installation of DIVA Core.

Most (*but not all*) of these settings can be altered while the Manager is running by using the reload option.

The following table describes the *Advanced* settings in the manager.conf file:

Parameter	Parameter Type	Description	Default
DIVAMANAGER_TO_LOWER	**true** or **false**	Sets case sensitivity for DIVA Core. If set to **true**, then all object names, categories and groups will be set to lowercase.	**false**
DIVAMANAGER_REQUEST_ SCHEDULING_QUEUE_SIZE	Number of requests	The maximum number of requests that can be queued for processing by DIVAMANAGER_MAX_CONCURRENT_REQUESTS processors of the Request Scheduler.	500
DIVAMANAGER_MAX_CONNECTIONS	Number of Connections	Specifies the maximum number of simultaneous client connections the Manager will accept. This includes DIVA Core Actors, Control GUIs, API connections, and support tools.	200
DIVAMANAGER_MAX_SIMULTANEOUS_ REQUESTS	Number of Requests	The maximum number of requests processed by the DIVA Core Manager. When this limit is reached, any further requests will be rejected. *The maximum tested value for this setting is 2000*.	500
DIVAMANAGER_API_TASK_QUEUE_SIZE	Number of tasks	The number of tasks that will be accepted to the API command processing queue. If this queue is full, subsequent commands will be rejected. *The maximum tested value is 2000*.	
DIVAMANAGER_MAX_INACTIVE_ REQUESTS	Number of Requests	Maximum number of inactive requests that cannot find resources examined by the Request Scheduler each time it is activated.	0
DIVAMANAGER_TYPICAL_OBJECT_SIZE	Percentage	During operation a DIVA Core Actor retrieves the file size of an object before an archive transfer. This value determines the best location on the tape for the file. Some servers do not indicate the file size of an object before a Direct Archive. Therefore, DIVA Core will use this value as an estimate for tape selection. You must define this setting so that most objects to be archived in the DIVA Core system are below this size.	10 (*percent*)
DIVAMANAGER_MAX_CONCURRENT_ REQUESTS	Number of Requests	The maximum number of concurrent requests executed by the DIVA Core Manager. *The maximum tested value for this setting is 16*.	8
DIVAMANAGER_MAX_SPAN_SEGMENTS	Number	DIVA Core will attempt to span the file across two or more tapes if no more writable tapes with enough free space are available to archive a file. This setting defines the maximum number of tapes across which the object will be spanned.	2 (*segments*)
DIVAMANAGER_INITIAL_DB_ CONNECTION_LIMIT	Number of Connections	The initial number of database connections available to the DIVA Core Manager.	1
DIVAMANAGER_MIN_DB_ CONNECTION_LIMIT	Number of Connections	The minimum number of database connections available to the DIVA Core Manager.	1
DIVAMANAGER_MAX_DB_ CONNECTION_LIMIT	Number of Connections	The maximum number of database connections available to the DIVA Core Manager.	10
DIVAMANAGER_CAPACITY_LOW_ WATER_MARK	Percentage	When the percentage of the total used capacity reaches this amount, periodic warning messages are issued in the Control GUI.	90 (*percent*)
DIVAMANAGER_ENABLE_SPANNING_ LARGE_OBJECTS	**true** or **false**	Enables spanning of large objects. This parameter overrides SPAN_SEGMENTS if any object in the system is known to be too large.	**true**
DIVAMANAGER_INACTIVITY_TIMEOUT	Time in Seconds	The maximum time a physical connection can remain idle in a connection cache before it is terminated (*in seconds*).	3600
DIVAMANAGER_MAX_OBJECTS_FOR_ REPACK	Number	Repacking a tape with many objects can consume resources for a lengthy period without reclaiming a great deal of unused space in the process. This setting prevents this by limiting the selection of tapes in manual and automatic repacks based on the number of objects.	500

Parameter	Parameter Type	Description	Default
DIVAMANAGER_SIZE_OF_STATEMENT_CACHE	MB	The size of the database statement cache.	10
DIVAMANAGER_STOP_IMMEDIATELY_FOR_REPACK	**true** or **false**	This setting specifies whether to complete any repack requests still running or to terminate them after the Automatic Tape Repack period. If this is set to **true** then repack requests still in progress after the Automatic Repack period will be stopped.	**true**
DIVAMANAGER_DEFAULT_ROW_PREFETCH	Number of Rows	The default number of rows to prefetch from the database per query.	1000
DIVAMANAGER_DISMOUNT_AFTER	Time in Milliseconds	This specifies the time in milliseconds to automatically dismount a mounted tape no longer needed by any other request.	120000 (*two minutes*)
DIVAMANAGER_FAILOVER_ENABLED	Boolean	Whether to enable Fast Connection Failover. This feature introduces a slight performance penalty.	**false**
DIVAMANAGER_UPDATE_PRIORITIES_PERIOD	Time in Milliseconds	DIVA Core periodically examines all requests in its request queue and increments the request priority. This prevents a condition where low priority requests might be continually superseded by higher priority requests. This setting specifies the period between updates of the queue by the Manager. You set this value to 0 to disable priority updates.	60000 (*one minute*)
DIVAMANAGER_NUM_RS_SOLUTIONS_TO_EVALUATE	Boolean	The number of immediate solutions to evaluate per invocation of the Best Solution Finder during resource selection.Values are 0 (*disabled*) or 1 (*enabled*).	0 (*disabled*)
DIVAMANAGER_MAX_DELAY_BETWEEN_SCHEDULER	Time in Milliseconds	The maximum number of milliseconds between two Request Scheduler activations when the Manager is constantly busy.	5000 (*five seconds*)
DIVAMANAGER_SCHEDULER_AFTER_INACTIVITY	Time in Milliseconds	The number of milliseconds after which a requested Request Scheduler activation can be launched if the Manager is idle. This duration should be significantly lower than DIVAMANAGER_MAX_DELAY_BETWEEN_SCHEDULER. *You should not need to modify this value*.	500
DIVAMANAGER_PING_INTERVAL	Time in Milliseconds	This defines the interval in milliseconds between Manager checks to see if the connections to its clients and services are still active (*Actors, SPMs, Control GUIs, and so on*).	600000 (*ten minutes*)
DIVAMANAGER_EXPORT_ROOT_DIR	Directory Path	The **Export Tapes** command enables the sharing of tapes between two or more separate DIVA Core platforms. This setting defines the root folder for the exported tape's Metadata files. The folder must exist and have write permissions enabled on the host computer where the DIVA Core Manager is running.	Exported
DIVAMANAGER_MAX_RESTORE_SERVERS	Number between 2 and 200	The maximum number of servers allowed in an N-Restore request by a DIVA Core Actor.	5
TAPE_FULL_ON_SPAN_REJECTED	**true** or **false**	If **true**, and spanning is disabled, the Manager marks a tape *full* when spanning occurs.	**false**
DIVAMANAGER_MAX_EXPORT_TAPES	Number between 1 and 100	The maximum number of tapes allowed in an Export Tapes request.	10
DIVAMANAGER_MAX_EXPORT_ELEMENTS	Number between 1 and 10,000,000	The maximum number of elements that can be exported using the **Export** command.	1000000
DIVAMANAGER_MAX_FILES_IN_ARCHIVE	Number between 1 and 1,000,000	The maximum number of files allowed in an Archive request.	1000000
DIVAMANAGER_MAX_FILES_IN_PARTIAL_RESTORE	Number between 1 and 1,000,000	The maximum number of files allowed in a Partial File Restore request.	1000000
USE_IMPROVED_BEST_WORST_FIT_ALGORITHM	**true** or **false**	When a file was archived to tape in earlier DIVA Core releases, the ***Best/Worst Fit*** algorithm selected the tape with the largest remaining free size. This could result (*over time*) in a low number of blank tapes for tape repacking, and so on. The current algorithm selects the tape based on the smallest free space and then fills all tapes before using more free tapes.	**true**

Parameter	Parameter Type	Description	Default
DIVAMANAGER_SITE_SUPPORT_ENABLED	**true** or **false**	Resources within DIVA Core can be defined by their location. If you set this parameter to **true**, the Manager first tries to perform the request from the sites identified as **MAIN**. If unsuccessful, it retries the request with resources from all other sites. If you set this parameter to **false**, DIVA Core ignores site identification and all site resources are considered equally.	**false**
DIVAMANAGER_CACHE_QOS_USE_DISK	**true** or **false**	In earlier DIVA Core releases, a Restore request with a ***Quality of Service*** of **CACHE** or **CACHE and DIRECT** resulted in the tape instance being used as first priority, even if a disk instance existed. This setting instructs DIVA Core to use the disk instance regardless of the QOS method specified.	**true**
DIVAMANAGER_PRIORITY_TIER	Number between 0 and 100	DIVA Core bases the execution of requests in its request queue by the request priority number. However, there are instances where a request in the queue with lower priority uses a tape that is already mounted. Giving this request priority over others lower in the queue can save a substantial amount of time in tape mount and dismount operations, and help reduce wear and tear on the tape drives. If this setting is enabled, DIVA Core examines the request queue for lower priority requests involving a tape that is already mounted in a drive and adds the number specified here to the request priority. For example, if the request priority is 25, and the *Priority Tier* value is 50, the total request priority is 75. **Note** — This feature applies only to Restore and Copy Requests that read from tape. Archive and Copy requests that write to tape are not supported by this feature.	0 (*disabled*)
DIVAMANAGER_ETC_FEATURE	**true** or **false**	This parameter enables the Estimated Time to Complete feature. This function gathers statistics (*over time*) on the time for completion of all execution states of each DIVA Core request. Setting this value to **true** enables this feature.	**false**
DIVAMANAGER_ETC_CONFIDENCE_LEVEL	Number	The percentage of Slope Confidence Interval for the simple regression statistical function used in the Estimated Time to Complete feature. DIVA Core ignores this setting if the DIVAMANAGER_ETC_FEATURE is disabled.	50
DIVAMANAGER_OVERWRITE_POLICY	Number between 0 and 2	This value determines how DIVA Core handles files that already exist on a Destination server when executing a Restore, Partial File Restore, or N-Restore request as follows: 0 - If the file to be restored to the destination already exists no overwrite will occur. 1 - The Actor does not verify if the files with the same names exist before attempting to overwrite these files. If files with the same names do exist, a backup of the existing files is made before overwriting them. 2 - The Actor attempts to delete and then write to files with the same names.	1
DIVAMANAGER_OVERWRITE_OVERRIDE	**true** or **false**	Overrides the policy sent by the external application through a request with the policy set in DIVAMANAGER_OVERWRITE_POLICY.	**false**
LICENSE_EXPIRATION_NOTIFICATION_PERIOD	Number of Days	Number of days before a temporary license is to expire that a notification message will be displayed on the GUI. The range of possible values is 1 to 99.	15
LICENSE_EXPIRATION_TOD	Time of Day	The time of day the Manager will shut down if the license has expired. The Manager will stop at the designated time on the day after the license validity date. (*00-23:00-59*)	8:00
ATTEMPT_ACCESS_TO_OFFLINE_DISK	**true** or **false**	If a disk is offline or not visible to all available Actors, the Manager will automatically terminate a transfer request for objects residing on that disk. If this is set to **true**, the Manager attempts the transfer irrespective of disk status.	**false**
CHANGE_DISK_STATE_ON_ERROR	**true** or **false**	Defines whether the Manager will automatically vary a disk's status to **Offline** if a transfer error occurs.	**true**

Parameter	Parameter Type	Description	Default
MANAGER_ACTOR_DISK_RETRY_NUMBER	Number	If a disk I/O error occurs during a transfer, this sets the maximum number of transfer retry attempts with alternate Actors that also have access to the disk. Values are 0 to 7.	3
DISK_STATUS_POLLING_RATE	Number	This defines the rate in milliseconds in which each disk in the system is polled to obtain its total and remaining free space.	60000 (*one minute*)
DISK_BUFFER_SPACE	Number	This defines the percentage of the overall space of a disk to keep free.	0.05 (*percent*)
DISK_CONNECTION_STATE_RESET_DELAY	Time in Minutes	A disk connection will be reset from the **Out of Order** state when a successful access is completed and this amount of time has passed since the connection was set to **Out of Order**.	1.0 (*minute*)
COMPONENT_SIZE_CONVERSION_TO_KB_RULE	Number	When an element is successfully transferred to tape or disk, the Actor reports the size of the element in bytes. This value is then converted to KB before it is saved to the database. The conversion may be one of three possible values: 1 - KB = (bytes / 1024) + 1 2 - KB = bytes/1024, but if (*KB < 1*) then KB = 1 3 - KB = Math.ceil(bytes/1024)	3
DIVAMANAGER_MAX_EXCLUDED_INSTANCES	Number	The maximum number of instances excluded from a request that are logged as an event.	3
LOGGING_TRACE_LEVEL	**DEBUG**, **INFO**, **WARN**, **ERROR**, **FATAL**	Defines the level of information written to the respective log files as follows: - **DEBUG** - All messages within the Manager are logged. Log files grow rapidly. - **INFO** - Information, Warning, Error, and Fatal messages are logged. - **WARN** - Warning, Error, and Fatal messages are logged. - **ERROR** - Error and Fatal messages are logged. - **FATAL** - No messages are logged unless the Manager stops unexpectedly.	**INFO**
DIVAMANAGER_MAX_SPAN_SEGMENTS	Number	DIVA Core will attempt to span the file across 2 or more tapes if no more writable tapes with enough free space are available to archive a file. This setting defines the maximum number of tapes that the object will span. This setting will completely disable spanning if set to 1 or below. If a span case arises, the Manager retries the request with a new tape using the old Worst Fit algorithm, and the first tape in the attempted span will be marked full. If the second attempt fails, the request will terminate.	0 (*segments*)
DIVAMANAGER_MAX_DB_CONNECTION_ATTEMPTS	Number	The maximum number of allowable attempts to connect to the database.	10000
DIVAMANAGER_MIN_DB_CONNECTION_PERIOD	Number	The minimum period (*in milliseconds*) between connection attempts.	1000 (*milliseconds*)
DIVAMANAGER_MAX_FOLDERS_IN_ARCHIVE	Number	The maximum number of folders allowed in an Archive request. Performance degradation can occur for values greater than 10000. The maximum value is 10000.	10000
DIVAMANAGER_COMPLEX_OBJECT_THRESHOLD	Number	The maximum number of files allowed before an object is classified as a complex object. The maximum value is 10000.	1000
COPY_ONLY_FROM_DISK_INSTANCE_WHEN_POSSIBLE	Boolean	Controls instance selection for Copy and CopyAs requests when the destination is tape. Copy requests always check if a disk instance can be used as the source of a copy. If the required resources for a disk to tape transfer are not available, a tape to tape transfer may be used if this parameter is set to **false**. When set to **true** the request will wait for the resources to use the disk instance as the source. This parameter is reloadable in SERVICE mode.	**true**

Parameter	Parameter Type	Description	Default
COMPONENT_SIZE_CONVERSION_TO_KB_RULE	Number	This is the *Object Size Conversion Rule*. Use one of the following rules to convert an object component size from Bytes to Kilobytes: 1 - KB = (bytes/1024) + 1 2 - KB = bytes/1024, but if (KB < 1) then KB = 1 3 - KB = Math.ceil(bytes/1024)	3
COPY_ONLY_FROM_DISK_INSTANCE_TIMEOUT	Time in Minutes	Tape instance is available for a Tape to Tape transfer. After this time, either a disk or tape instance may be selected as the source of a copy to tape.	15 (*minutes*)
DIVAMANAGER_RESTORE_QOS	**CACHE_ONLY**, **DIRECT_ONLY**, **DIRECT_AND_CACHE**, **CACHE_AND_DIRECT**, **NEARLINE_ONLY**, **NEARLINE_AND_DIRECT**	This identifies the default ***Quality of Service*** for Restore requests.	**NEARLINE_AND_DIRECT**
NTH_PROGRESS_MESSAGE	Number	The number of progress messages sent to GUIs. Every *Nth* progress message will be sent. The N=100 progress message will always be sent.	5 - implies send every fifth progress message to all GUIs.
DIVAMANAGER_TIME_TO_WAIT_FOR_GRACEFUL_SHUTDOWN	Minutes	The time to allow for a graceful shutdown to complete.	1440 (*one day*)
ABORT_ARCHIVES_ON_EMPTY_FILES	**true** or **false**	If **true** the Manager terminates an Archive request if it contains an empty file or folder.	**false**
TAPE_FULL_ON_SPAN_REJECTED	Boolean	If true, the Manager will mark a tape full when a span occurs but spanning is disabled.	**false**
DIVAMANAGER_RETRY_ON_SPAN_REJECTED_ALGORITHM	1 = Prefer empty tapes 2 = Prefer used tapes with less remaining space 3 = Prefer tapes with more remaining space	The tape selection retry algorithm to use when a span is rejected. The Manager enables configuring the retry logic when spanning is disabled, but an object is too large to fit on the selected tape. By default, the Manager retries with an empty tape, but you can alternatively retry with a used tape with most or less remaining space.	1

Logging Settings

The following table describes the *Logging* settings in the manager.conf file:

Parameter	Parameter Type	Description	Default
LOGGING_TRACE_LEVEL	**DEBUG**, **INFO**, **WARN**, **ERROR**, **FATAL**	Defines the level of information written to the respective log files as follows: ▪ **DEBUG** - All messages within the Manager are logged. Log files grow rapidly. ▪ **INFO** - Information, Warning, Error, and Fatal messages are logged. ▪ **WARN** - Warning, Error, and Fatal messages are logged. ▪ **ERROR** - Error and Fatal messages are logged. ▪ **FATAL** - No messages are logged unless the Manager stops unexpectedly.	**INFO**
LOGGING_MAXFILESIZE	Kilobytes or Megabytes	When the log file reaches this size, a new file is generated and the old one renamed with appropriate time and date stamps. Older log files are subsequently compressed automatically into zip files at one hour intervals.	10 MB
LOGGING_LIFETIME	Hours	This setting defines how long to maintain trace service and zipped log files before deleting them.	50

Configuring Request Priorities

Each request submitted to the DIVA Core Manager is placed in the Manager transfer queue. Request priorities enable DIVA Core to differentiate between important requests, such as Restore requests, over less important events. For example, tape repacks, and so on.

The request priority is a number from zero to one hundred with zero being the lowest priority and one hundred being the highest. The request priority is typically specified when you submit the request (*either from the Control GUI or the DIVA Core Client API*). You can also alter the priority after you submit the request using the **Change Priority** command.

The default request priority for each request type is preset within DIVA Core. You can override the default priorities (*at your discretion*) using the following procedure:

1. Navigate to the %DIVA_HOME%\Program\conf\manager folder.
2. Rename the managerpriority.conf.ini file to managerpriority.conf.
3. Edit the managerpriority.conf file using a plain text editor (*for example, Notepad or Notepad++*) to set the desired values for each request type.
4. You must reload the Manager configuration using the **reload** option or restart the Manager for the new settings to take effect.

Regardless of the configured request priority, the Manager will (*by default*) periodically increment the priority of every request already the request queue. This prevents a condition where a low request priority can be continually overridden by higher priority requests and never executed.

You can disable this feature by setting the DIVAMANAGER_UPDATE_PRIORITIES_PERIOD parameter in the Manager configuration file to 0. You must then reload the Manager configuration or restart the Manager.

Rerouting Destinations (*restore_translations.conf*)

To simplify production workflows, you can configure DIVA Core to automatically override the original destination specified in a Restore, Partial File Restore, or N-restore request based on the object category and original destination. This is called *Destination Rerouting*. Typically, you use this function to enable selective transcoding based on an object category.

You configure *Destination Rerouting* by editing the restore_translations.conf file. The file is located in the %DIVA_HOME%\Program\conf\manager folder with the Manager configuration file.

The restore_translations.conf file is delivered with a .ini extension. You must remove the .ini extension for this file to be considered by the Manager.

All re-routing entries must be in the following format:

```
DT_Number=Destination_1;Category_1;TranslatedDestination_1
```

The following list describes these parameters:

DT_Number
This must be the first string in the line and start with DT_Number. The Number can be any value unique among all entries. For example, DT_0, DT_1, DT_2, and so on. Up to three hundred entries are supported.

Destination_1
The destination in a Restore request for this rule to apply.

Category_1
If the Object Category of the request also matches the destination will be re-routed.

TranslatedDestination_1
This is the new destination for the Restore request.

The following example describes how to configure rerouting a destination:

- A video server accepts clips with Format1
- The archive contains clips with both Format1 and Format2
- Format 1 objects are in Category 1 (*Cat1*)
- Format 2 objects are in Category 2 (*Cat2*)

You configure this example as follows:

1. Define a Source (*Source1*) that points to the video server with no restore transcode options.
2. Define another Source (*Source2*) that points to the video server with options to transcode to Format1.
3. Create a restore_translations.conf file containing the following line:

```
DT_0=Source1;Cat2;Source2
```

When an object with the category Cat2 is restored to destination Source1, re-route it to destination Source2 instead. In this manner, the automation can always use Source1 as the destination in the request.

Objects having a format of Format1, which are directly compatible with the video server, will be restored to Source1 without transcoding.

Objects having a format of Format2 and a category of Cat2 match the configuration line and are rerouted to Source2. Source2 has options to transcode them to Format1 when restoring.

Controlling the Manager

You perform DIVA Core Manager control and management functions from a command prompt on Windows platforms using the manager.bat batch file, and from a terminal window using the manager.sh script file on Linux platforms. The executable is located in the %DIVA_HOME%\Program\Manager\bin folder in Windows, and in the /home/diva/DIVA/Program/Manager/bin directory in Linux.

Installing and Removing the Manager Service in Windows

You must first install the DIVA Core Manager as a system service on new systems. You can accomplished this using the install (*or -i*) and uninstall (*or -u*) command line switches as follows:

manager install
This (*or manager -i*) installs the DIVA Core Manager service set by the *SERVICE_NAME* parameter defined in manager.conf. If this parameter is undefined, the service is installed as DIVA Core Manager.

manager uninstall
This (*or manager -u*) removes the DIVA Core Manager service set by the *SERVICE_NAME* parameter defined in manager.conf.

In the Windows Services applet, confirm that the DIVA Core Manager service is installed correctly. If you must change the service name, uninstall the existing service *before* editing the manager.conf file. Then reinstall the service after changing the service name.

The default path to the m,anager.conf file is %DIVA_HOME%\Program\conf\manager.

You can identify a specific configuration in the command line if you require using an alternate file using the -conf or -f switch as follows:

```
manager install -conf [configuration file]
manager uninstall -conf [configuration file]
```

Installing and Removing the Manager Service in Linux

The divaservice executable in the Manager /home/diva/DIVA/Program directory installs (*or uninstalls*) the DIVA Core Manager as a service from a Linux terminal. *See Installing the DIVA Core Services for more information about using the divaservice command*.

Use the following command sequence to install the Manager service:

```
cd/home/diva/DIVA/Program

./divaservice install manager /home/diva/DIVA/Program/conf/Manager/manager.conf
```

Use the following command sequence to uninstall the Manager service:

```
cd/home/diva/DIVA/Program

./divaservice uninstall manager /home/diva/DIVA/Program/conf/Manager/manager.conf
```

Managing the Manager Service

You can manage the Manager Service using the following command line switches after the service is installed:

manager start
This switch starts the Manager service (*if stopped*).

manager stop
This switch stops the Manager service (*if running*).

manager shutdown
This switch finishes currently running requests and stops accepting new requests, then it stops the DIVA Core Manager service (*if running*).

manager restart
This switch stops and subsequently starts the Manager service.

manager reload
Some changes in the Manager configuration files take effect after reloading the Manager. This switch reloads the manager.conf, managerpriority.conf, and restore_translations.conf files from the default path (*%DIVA_HOME%\Program\conf\manager*).

Use the following command to reload the Manager using a different configuration file:

```
manager reload -conf [configuration file]
```

manager status
This switch displays the current status of the Manager service (*running or not running*).

manager dump
This switch requests a system dump from the Manager service.

manager version
This switch (*or manager -v*) displays the Manager service release information and then exits.

manager help
This switch (*or manager -h*) display all command line options and then exits.

Logging Manager Activity

The DIVA Core Manager keeps detailed logs of its operations and stores them in the %DIVA_HOME%\Program\log\manager folder. The logs are used for troubleshooting and diagnostics purposes, and may be requested by Telestream Support.

The logging settings in manager.conf determine the level and quantity of information captured in each log file. If you must alter the settings, you can make the changes effective immediately using the manager reload command, or (*in DIVA Core 8.0*) change them dynamically from the Control GUI. See the *DIVA Core Operations Guide* for more details.

Class-level logging is supported through the manager.classLog.properties file. Any class set to one of the following values will log at the specified logging level:

- **TRACE**
- **DEBUG**
- **INFO**
- **WARN**
- **ERROR**
- **FATAL**

New statical data is generated every five minutes that lists various Manager performance related metrics, and collected in a statistics folder.

After logs have reached the size defined by *LOGGING_MAXFILESIZE* in manager.conf they are renamed with date and timestamps, compressed (*zipped*), and a new file is started (*named manager.trace*). The manager.trace file is the log file currently being written to by the Manager.

Confirming System Connectivity

After the DIVA Core Manager has been successfully configured and launched you must check that the Manager can successfully be connected to by other DIVA Core clients (*for example, the Control GUI*). Also, the Manager itself must be able to connect to the configured Actors and, if installed, Robot Managers.

Confirming Remote Client to Manager Connectivity

This short test establishes whether the Manager is configured correctly and accepting remote connections from clients:

1. Launch the DIVA Core Control GUI from a remote client (*that is, not on the same host computer as the DIVA Core Manager*).
2. Click the **Menu Orb** on the top left of the Control GUI.
3. Click **Connect**.
4. Enter the ***IP Address*** and ***TCP Port*** of the Manager in the Connect to the Manager dialog box.
5. Click **Connect**.
6. A successful connection will be indicated by a *Connected* status in the Control GUI notification area (*at the bottom of the screen*).

Confirming Manager to Actors Connectivity

This short test establishes whether the Manager can connect to all Actors in the system. This test assumes all Actors have been configured correctly and are online.

With the Control GUI still open, click the **Actors** icon in the **Home** tab on the icon bar to display the *Actors* view.

Confirm that the Manager has established a connection to all configured Actors, and troubleshoot if necessary.

Confirming Manager to Robot Manager Connectivity

This short test establishes whether the DIVA Core Manager can connected to each configured DIVA Core Robot Manager. This test assumes the following:

- All DIVA Core Robot Manager are configured correctly.
- Each DIVA Core Robot Manager is running.
- All libraries are loaded with tapes.
- Any library management software (*for example, ACSLS*) is running, and the library is set to **Online**.
- Manual operation has been confirmed successfully with the DIVA Core Robot Manager Client Tools.

Use the following procedure to confirm connectivity:

1. Click the **Tapes** icon on the **Home** tab to display the *Tapes* view.
2. Take note of the ***ACS*** and ***LSM*** number for each tape to test each particular library.
3. Right-click a tape for each ***ACS*** and ***LSM*** to test and click **Eject Tape** from the resulting menu.
4. Click the **Manager** icon on the **Home** tab to display the *Manager Current Requests* view.
5. Double-click the Eject Tape request entry to check if an error was encountered during request execution.

Manager Failover Procedures

Caution: The procedures in this section are critical and sensitive. They should only be performed under the control of Telestream Support.

You use the following procedures to switch to a Backup Manager (*if possible*) if a Manager failure occurs.

You perform the following sequence of steps on the *Main Manager*:

1. Attempt to stop the DIVA Core Manager service if it is still running.
2. Execute the **DIVA DB Full backup** scheduled task.
3. Execute the **DIVA DB Backup sync** scheduled task.
4. Shutdown the DIVA Manager server as cleanly as possible.

You perform the following sequence of steps on the *Backup Manager*:

1. Change the IP address to the *Main Manager* computer's address.

2. Restart the *Backup Manager* computer.
3. Use the following command sequence to recover the database:
   1. Execute `C:\app\oracle\admin\rman\bin\restore_lib5_from_mgr1_to_mgr2.bat`.
   2. Enter 0 for *Automatic Restore* and wait for completion.
   3. Enter 0 for *Full Backup*.
   4. Enter Q to quit.
4. Start the DIVA Core services; Manager, RobotManager, Storage Plan Manager, DFM, and so on depending on your system configuration.

If all steps completed successfully, the original *Backup Manager* computer is now the *Main Manager* computer, and running the DIVA Core Manager. You can now repair or replace the original *Main Manager* computer.

11

Checksum Support Configuration

This chapter describes configuring DIVA Core Checksum Support and includes the following information:

Configuration Overview

You configure the Checksum Support functions through the Configuration Utility using the *Engineer* account. The following sections describe how to adjust the settings for each option.

Global Checksum Parameters

You must use the *Engineer* account in the Configuration Utility to access and adjust the *Global Checksum Parameters* located under the **Manager Setting** tab. Each of the global parameters affects all Checksum Support settings throughout the system. The following options are available:

Manager: Checksum feature is enabled
This setting enables (*check box selected*) or disables (*check box unselected*) the Checksum Support features throughout DIVA Core. The default setting is enabled (*selected*).

Manager: Default Checksum Type
There are several checksum algorithms supported by the system including MD2, MD5, SHA, SHA1, MDC2, and RIPEMD160. DIVA Core uses MD5 as the default checksum.

Each checksum type is associated with an ID Number. you use the menu list to change the default type and select the type of checksum desired.

The ID Number identifies the Checksum Type requested in the configuration as follows:

- MD2 is ID Number 1

- MD5 is ID Number 2
- SHA is ID Number 3
- SHA-1 is ID Number 4
- MDC2 is ID Number 5
- RIPEMD160 is ID Number 6

Manager: Number of retries following failed checksum

This parameter sets the number of times the system will retry the operation after a failed checksum. The default setting is one retry. Enter the number of retries allowable for your data and system in the ***Manager: Number of retries following failed checksum*** field. *Telestream recommends leaving this setting at the default value*.

Manager: Select different drive per retry on failed checksum

This parameter distinguishes whether the retry (*after a failed checksum*) is attempted on the same drive (*check box unselected*), or if the system should attempt the operation using a different drive (*check box selected*). The default setting for this parameter uses the same drive (*check box unselected*).

Configuring Checksum Support for Sources and Destinations

You adjust the Checksum Support configuration for sources and destinations through the Configuration Utility **System** tab. In the *Sources and Destinations* frame, double-click the Source or Destination requiring Checksum Support configuration. The Edit Source and Destinations Entry dialog box appears with several Checksum Support configuration options. These options are mainly associated with the Genuine Checksum Type.

The following list describes the options available:

External Checksum Source

You must use the **External Checksum Source** (***Yes** option*) for the system to read the Checksum from the external source providing the file. This initiates an immediate checksum calculation to compare the checksums and verify the initial transfer. Selecting the **No** option disables Genuine Checksum support from external sources.

Checksum Type

You use the menu list to select the **Checksum Type**. All supported checksum types are listed. The **Checksum Type** and **GC Mode** (*see the following description*) must match the settings implemented at the Source.

The Genuine Checksum is only used for the first verification. Therefore, the checksum type selected is only used once and then discarded. Beyond the initial use of the selected checksum type (*after this transfer*), the default type is used.

GC Mode

You use the menu list to select the *Genuine Checksum Mode*. This notifies the Actor of the format of the files that contain the checksum data.

Verify Following Archive (VFA)

When **Verify Following Archive (VFA)** is turned on (*check box selected*), performing the initial transfer from the source results in a read-back operation. Therefore, the data is read twice for verification. After the data is read twice, the two checksums are compared. If they are the same then verification is complete. If they are not identical then verification has failed.

Verify Following Archive is not compatible with Genuine Checksum (GC) or complex objects. There is no need to use VFA when GC is being used because the checksum is already verified. The Genuine Checksum must be turned off to gain access to the VFA check box. If GC is turned on, the check box will be grayed out and not selectable.

Verify Following Restore (VFR)

When **Verify Following Restore (VFR)** is turned on (*check box selected*), performing the final transfer to the destination results in a read-back operation. Therefore, the data is read twice for verification. After the data is read twice, the two checksums are compared. If they are the same then verification is complete. If they are not identical then verification has failed. The setting of GC has no bearing on the VFR setting.

Verify Following Restore is not compatible with complex objects or the -axf option.Verify Following Restore was designed to read back the restored content from a video server to confirm that it is not corrupt. Using the **-axf** option does not create a checksum verifiable restore. It creates an object export that is encompassed in an AXF wrapper. *The VFR and -axf options are mutually exclusive and should not be part of the same workflow*.

Configuring Checksum Support for Arrays and Disks

You configure Checksum Support for Arrays and Disks through the Configuration Utility **Disks** tab. You can turned on or off Verify Write (VW) functionality either on an array basis or disk by disk.

VW applies when you write to the final storage location in DIVA Core. When turned **ON**, the system will perform a read-back of what was just written and compare the checksums for verification.

The *VW* column in both the *Arrays* frame and *Disks* frame indicates whether the Verify Write function is on or off for the particular array and disk. The default setting is **OFF**.

If there is nothing defined in the *VW* column on the *Disk* frame the system will use the setting defined in the *Array VW* column.

To override the setting defined in the *Array VW* column for a specific disk, you select the disk requiring configuration in the *Disks* frame and click **Edit** located at the top of the frame.

When the Edit Disks Entry dialog box appears, use the **Verify Write** menu list to select **ON**, **OFF**, or **NONE** (*blank selection*). If **NONE** is selected, Verify Write uses the setting identified in the array for this particular disk.

The selection made in the Edit Disk Entry dialog box is reflected in the *Disks VW* column.

Configuring Checksum Support for Groups

You can also configure Verify Write for Groups. The *VW* column displays in the *Groups* frame of the Configuration Utility. *This is the only place where configuration of Verify Write is available for the Groups*.

Similar to the configuration for disks, select the group requiring configuration. Click **Edit** and select **ON** or **OFF** using the ***Verify Write*** menu list. Your selection is reflected in the *Groups VW* column.

When DIVA Core writes a file to a particular group, the setting for that group is applied to the file. The default setting for groups is **OFF**.

Configuring Checksum Support for Actors

You can configure ***Verify Tape*** for Actors. Similar to the configuration for disks and groups, you select the Actor requiring configuration, click **Edit**, and then select **Yes** or **No** using the ***Verify Tape*** menu list.

This setting defines whether the Actor is automatically selected for the Verify Tape workflow. By default, all Actors are included, but you can exclude if necessary.

AXF and TEXT Genuine Checksum Modes

There are two additional Genuine Checksum modes as follows:

AXF Genuine Checksum Mode
This mode enables DIVA Core 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 workflow is typically combined with a Restore request with **-axf** in the ***Request Options***.

TEXT Genuine Checksum Mode
This mode enables DIVA Core to archive all files and subfolders in a specified folder while comparing their checksum values against known values stored in an external checksum file.

Configuring AXF Genuine Checksum Mode

There are specific requirements and limitations when using the AXF Genuine Checksum Mode as follows:

- The AXF file containing the files to be archived must contain checksum information for each file.
- The checksums must be the expected type as specified in the configuration.
- This workflow only works with AXF requests generated by DIVA Core.
- 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. Using the **-axf** option does not create a *real* restore, rather an object export in an AXF wrapper. *These options are mutually exclusive and should not be part of the same workflow*.

DIVA Core Configuration Utility Settings

Use the following procedure to configure AXF Genuine Checksum Mode in the DIVA Core Configuration utility:

1. Create a new Source/Destination entry with the **Source Type** set to either **DISK**, **FTP_STANDARD**, or **EXPEDAT** as appropriate.

   If you are required specify an appropriate **Root Path**, this path along with the input files specified during the Archive request, is used in determining the location of the checksum file.

   For example, if the **Source Type** is **DISK**, you can set the **Root Path** to D:\root. If the **Source Type** is **FTP_STANDARD**, you can set the **Root Path** to /root.
2. Set the **External Checksum Source** to **YES**.
3. Set the **Checksum Type** to the expected checksum type (*for example, **MD5***).
4. Set the **GC Mode** to **AXF**.
5. Click the **OK** button.

6. Notify the Manager of the configuration by selecting **Tools**, then **Notify Manager** from the menu.

Configuring TEXT Genuine Checksum Mode

There are specific requirements and limitations when using the TEXT Genuine Checksum Mode as follows:

- A checksum file must be present in the folder specified by the ***Root File Path***.
- Checksum files must end with a .md5 file extension.
- The checksum file name (*excluding the extension*) must be associated with the folder name that contains all files to be archived. This folder must exist.

  For example, if the checksum file is D:\Data\Video\NewTitle.md5, then all files located in the D:\Data\Video\NewTitle folder will be archived.
- The checksum file must be present in the folder parent to the folder specified by the ***Root File Path***.
- For a file to be archived with the Genuine Checksum value, the file must be referenced with a corresponding checksum within the checksum file.
- Absolute path names are supported on both Windows and Linux to a maximum of 4000 characters. Relative path names are limited to 256 characters on Windows systems (*only*).
- Linux paths, file names, and commands are case-sensitive.
- Only ASCII, non-UTF-8 encoded checksum files are supported.
- The format of the checksum file is that each line begins with an MD5 checksum, followed by 2 spaces, and then the file path to the referenced file.

DIVA Core Configuration Utility Settings

Use the following procedure to configure TEXT Genuine Checksum Mode in the DIVA Core Configuration utility:

1. Create a new Source/Destination entry with **Source Type** set to either **DISK** or **FTP_STANDARD**.
2. Specify an appropriate **Root Path**. This path, along with the input files, specified during the Archive request is used in determining the location of the checksum file (*see* Selecting the Root File Path *for further details*).

   For example, if the **Source Type** is **DISK**, you can set the **Root Path** to D:\Data. If the **Source Type** is **FTP_STANDARD**, you can set the **Root Path** to /Data.
3. Set the ***External Checksum Source*** to **YES**.
4. Set the ***Checksum Type*** to **MD5**.
5. Set the ***GC Mode*** to **TEXT**.
6. Click the **OK** button.
7. Notify the Manager of the configuration by selecting **Tools**, then **Notify Manager** from the menu.

Selecting the Root File Path

The **Root File Path** must point to the folder containing the checksum file. Therefore, you must set the correct file and folder paths in the Source/Destination and Archive request form so the checksum file can be located. For example, if the checksum file is located in

D:\Data\Video\NewTitle.md5 (*or /Data/Video/NewTitle.md5 for FTP type*), you set the appropriate file and folder paths as follows:

Source/Destination (*Root Path*)	Archive Request (*File Path Root*)	Archive Request (*Files*)
D:\	Data\Video\NewTitle	*
D:\Data	Video\NewTitle	*
D:\	Data\	Video\NewTitle\*
D:\		Data\Video\NewTitle\*

Source/Destination (*Root Path*)	Archive Request (*File Path Root*)	Archive Request (*Files*)
/	Data/Video/NewTitle	*
/Data	Video/NewTitle	*
/	Data/	Video/NewTitle/*
/		Data/Video/NewTitle/*

12

DIVAmigrate Installation and Configuration

This chapter describes an overview of the DIVA Core DIVAmigrate Embedded Utility, and installation and configuration of the tool.

DIVAmigrate Embedded Utility Overview

DIVAmigrate is installed as part of the DIVA Core Suite's standard installation. It is located in the %DIVA_HOME%\Program\ folder, and runs as a Windows Service.

You create migration jobs through the DIVA Core Control GUI connected to the DIVA Core Manager, or using the command-line interface through the client.bat file located in the %DIVA_HOME%\Program\Migrate\bin folder.

You control the utility using the migrate.bat file, also located in %DIVA_HOME%\Program\Migrate\bin folder. *See the DIVA Core Operations Guide in the DIVA Core Library for details*.

Migration Jobs are stored in the DIVA Core Manager Database. The DIVAmigrate Service monitors the DIVA Core Manager Database, runs new Migration Jobs, and also updates the status of existing Migration Jobs in the database so that the Control GUI displays the status to users.

Installing DIVAmigrate

The DIVAmigrate Utility is part of the standard DIVA Core installation, and is placed in the %DIVA_HOME%\Program\ folder. You can install DIVAmigrate on the DIVA Core Manager computer, or any other computer capable of communicating with the Manager using the TCP/IP protocol. You can confirm connectivity by successfully pinging the Manager from the client computer.

Windows Files and Folders

You will find the following new files and folders after you complete the initial DIVA Core installation in Windows:

```
%DIVA_HOME%\Program
  Migrate
    bin
      client.bat
      migrate.bat
    lib
      migrate.jar
  conf
    migrate
      migrate.conf.ini
  log
```

```
    migrate
```

Linux Files and Directories

You will find the following new files and directories after you complete the initial DIVA Core installation in Linux:

```
%DIVA_HOME%/Program
  Migrate
    bin
      client.sh
      migrate.sh
    lib
      migrate.jar
  conf
    migrate
      migrate.conf.ini
  log
    migrate
```

Configuring the DIVAmigrate Service

The DIVAmigrate Service requires a valid configuration file during install and start procedures. The default DIVAmigrate configuration file is named migrate.conf and is located in the %DIVA_HOME%\Program\conf\migrate\ folder.

The configuration file is a standard properties file similar to the Manager configuration file. The configuration file is not auto-reloadable, and therefore any changes made to the file do not take effect until the DIVAmigrate Service is restarted.

Notes: The *Windows Service Wrapper* configuration and the must not be modified.

The *DIVA Service Options* section also must not be modified unless instructed by Telestream Support.

Use the following procedure to modify the DIVAmigrate configuration file:

Caution: Do not use Word, WordPad, or any other word processor or editing tool that adds extra characters to a file. Always use a plain text editor such as Notepad, or Notepad++.

1. Create a copy of the migrate.conf.ini file.

   It is important to create a copy and keep the original file intact to refer back to in case the configuration you are working on either does not work, becomes corrupt, or has or creates errors.

2. Rename the copied file to migrate.conf.

3. Open the file with any plain text editor and populate the following parameters. These parameters are all mandatory unless otherwise noted in the description.

   SERVICE_NAME
   This parameter is the name for the Windows Service. The default value is DivaMigrate.

   DIVAMANAGER_HOST
   This parameter is the host name or IP address of the DIVA Core Manager. The default value is 127.0.0.1.

DIVAMANAGER_PORT
This parameter is the port number to connect to the DIVA Core Manager. The default value is 8000.

DIVA_MIGRATE_MANAGEMENT_PORT
This parameter is the management port number. The default value is 9191.

DIVAMANAGER_DBUSER
This parameter is the user name the Manager uses to connect to the DIVA Core Database. The default value is diva, and is case sensitive.

DIVAMANAGER_TNSNAME
This parameter is the *TNS Name* of the DIVA Core Schema within the Oracle Database. DIVAmigrate ignores this setting if the DIVAMNAGER_DBHOST and DIVAMANAGER_DBPORT settings are defined. There must be a corresponding entry in TNSNAMES.ORA found under the Oracle 11 Client installation. *This is not a mandatory parameter*.

DIVAMANAGER_DBHOST
This parameter specifies the host name or IP address of the computer containing the DIVA Core Database. If using a host name, this must be present in the hosts file on the computer where the DIVA Core Manager is installed. For example, you can use either 127.0.0.1 or localhost. *This is not a mandatory parameter*.

DIVAMANAGER_DBPORT
This parameter is the *Oracle Listener Port* you configured during the DIVA Core Database installation. The default value is port 1521. *This is not a mandatory parameter*.

DIVAMANAGER_DBSID
The DIVA Core Database instance SID (*System Identifier*) in the Oracle Database where the DIVA Core Manager connects. This value is typically lib5, which is the default value. Consult your location's System Configuration Plan for confirmation.

DIVAMANAGER_DBSERVICENAME
This parameter specifies one name for the database service to which this instance connects, and is listed in tnsnames.ora. Typically, lib5.world (*the default*), is used in most DIVA Core installations. Consult your delivery plan if you are unsure.

Note: You must set either this value, or DIVAMANAGER_DBSID, when you use DIVAMANAGER_DBHOST and DIVAMANAGER_DBPORT for database connections. If you set both parameters, then SERVICENAME takes precedence over SID.

MAX_SIMULTANEOUS_REQUESTS
This parameter is the maximum number of simultaneous Manager requests processed by DIVAmigrate. The default value is 30. *This is not a mandatory parameter*.

DB_SCAN_PERIODICITY
This parameter (in seconds) determines how often DIVAmigrate looks for new jobs in the database. The default value is 60 seconds. *This is not a mandatory parameter*.

DIVA_RECONNECT_PERIODICITY
This parameter (in seconds) determines the time between reconnection attempts if connectivity with the Manager is lost. The default value is 30 seconds.

MAX_FAILED_REQUESTS_PAUSE
This parameter identifies the maximum number of sequential failure requests that can occur before DIVAmigrate pauses the migration job. DIVAmigrate pauses the job if the configured number of requests fails sequentially. The default value is 10. *This is not a mandatory parameter*.

REQUEST_STATUS_CHECK_DELAY_SECS
This parameter (in seconds) determines how often DIVAmigrate scans manager for request status. The default value is 5 seconds. *This is not a mandatory parameter*.

JOB_MAX_INACTIVE_TIME
This parameter (in hours) determines the Migrations Plan's maximum inactivity time. If, after the service is restarted, it finds running jobs having the last access time greater than this value, the Migration Plan for those jobs are recreated. The default value is 24 hours. *This is not a mandatory parameter*.

MAX_SIMULTANEOUS_JOB
This parameter is the maximum number of simultaneous jobs or process request that can run at the same time. The default value is 15. This is not a mandatory parameter.

DIVAMANAGER_DB_SECURE_CONNECT
This parameter is for connecting securely to Oracle Database; it must be set to TRUE to connect securely. The value for the parameter DIVAMANAGER_DBPORT must be to the secure port number 1522 of the Oracle database. The default value is FALSE.

MAX_JOBS_TAPE_READ_PERMIT
This parameter restricts the number of jobs that are reading from tape. The default is 15.

MAX_JOBS_TAPE_WRITE_PERMIT
This parameter restricts the number of jobs that are writing to tape. The default is 15.

TAPE_READ_WRITE_LOCK_ACQUIRE_WAIT
This parameter identifies the acquired Read/Write permit timeout, before retrying. This parameter makes sure the job is not waiting on acquiring a permit indefinitely. If the timeout occurs, the job will check for any user actions on the job (for example, pause, stop, cancel, or delete) before retrying to acquire the permit again. The default 30 seconds.

CLEAN_BUFFER_DELETE_REQUEST_CHUNK_SIZE
This parameter optimizes buffer cleaning when a user is performing a migration job cancel or stop, and if a cache buffer being used has a lot of object instances. This parameter will allow the migration job to send a chunk of delete requests rather than sending one at time. The default is 20 requests per chunk.

Configuring the Logging Settings

DIVAmigrate uses the same logging methods used for the DIVA Core Manager. However, DIVAmigrate logs are located in the %DIVA_HOME%\Program\log\migrate folder. DIVAmigrate logs are automatically archived and divided into separate files each time the current log file reaches its size limit. You set the following DIVAmigrate logging parameters in the migrate.conf file:

LOGGING_DIRECTORY
This parameter identifies the DIVAmigrate log file storage directory. The default is ../../log/migrate.

LOGGING_TRACE_LEVEL
You can modify this parameter to suit the required level of activity logging. The default value is **INFO**.

> **Tip:** Only use the higher logging levels when instructed to do so by Telestream Support to avoid large log files being created.

Valid options for each parameter are:

- **DEBUG**
- **INFO**
- **WARN**
- **ERROR**

LOGGING_MAXFILESIZE
This parameter identifies the maximum size of the log file before it is archived. When the current log file is archive, a new file is created. You must specify the file size using KB or MB to indicate Kilobytes or Megabytes respectively. The default value is 10MB. For example, LOGGING_MAXFILESIZE=10MB.

LOGGING_LIFETIME
All files older than the value of this parameter are removed. This includes trace, service, and .zip files. The value for this parameter is in hours, and the default value is 50.

13

Transcoder Installation and Configuration

This chapter describes installing and configuring transcoders for DIVA Core and includes the following information:

Transcoder Overview

The following instructions are directed toward servers running the Windows Server 2012 R2 SP1 operating system. Linux-based Actors only support Telestream Vantage for transcoding operations.

Upgrading from Telestream Vantage 5.0 and Earlier

Upgrading from 5.0 or earlier releases of Vantage requires uninstalling and reinstalling the Vantage software. *Refer to the Vantage 6.3 Installation Guide for details on the uninstall procedure*.

Installing Telestream Vantage

Telestream recommends that no anti-virus software is installed on the Vantage servers. Use the following procedure to install Vantage 6.3:

1. Download the Vantage 6.3 release from Telestream.
2. If you are uncertain of how to install the software, refer to the *Quick Start Instructions* in the downloaded file.
3. Install .NET 3.5 SP1, if not already installed, on the host computer that will be running the Vantage Database server.
4. Install QuickTime 7.6.9 if not already installed.
5. Install the Desktop Experience option. This is located in the Server Manager under **Features**.
6. Install the VantageDatabaseSetup_SQL2008_4.2.286.100451.exe, accepting the default settings.
7. Execute the Vantage_6.3_Setup.exe.
8. Select the **Install Product(s)** option.
9. Ensure the following options are selected:
   - ***Transcode/Transcode Pro***
   - ***Web Applications***
   - ***Workflow Portal Application***
   - ***Vantage Domain Database***
10. Enable any other options required for your installation.
11. Complete the installation.

Installing the Telestream License

Use the following procedure to install the Telestream license after the software is installed:

1. Launch the Vantage Workflow Designer.
2. If you are prompted to select a **Domain**, select the local computer.
3. If you are prompted for a **Category** click **Cancel** (*for now*).
4. Click **File**, and then **Add/Update License**.

Vantage is now installed and you can continue with configuring it to work with DIVA Core.

Telestream recommends importing sample workflows in the Vantage Workflow Designer. You can view a demonstration at http://www.telestream.net/vantage/demos.htm.

Configuring DIVA Core and Transcoders

The following instructions identify the configuration of DIVA Core and transcoders to enable operation together. Starting with DIVA Core 7.3, it is no longer required to have Actor installed on the same computer as the transcode service.

A transcoder is no longer coupled to a single Actor. You select the transcoder after you select the Actor. Therefore, you no longer 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 you chose as part of resource selection. *The Actor column was removed from the Transcoders area in the Configuration Utility*.

The transcoder server and cache location are now embedded in the ***Working Directory*** on the Edit Transcoders Entry screen in the following format:

```
[actor:actor_name,actorPath:actor_transcoder_cache_path,transcoder:trancoder_ip_address],cifs://user_
name\domain:password@\\transcoder_cache_ip_address\transcoder_cache
```

For example:

```
[actor:actor_
001,actorPath:/tmp/vantagecache,transcoder:10.145.40.81],cifs://user:password@\\10.145.40.81\VantageCache
```

Parameters	Required / Optional	Description
actor	Optional	Specifies a list of one or more Actors that the Manager will select from to perform the transcoding. Multiple Actors are separated by a comma.
actorPath	Optional	Used for Linux-based Actors Specifies a fixed and existing mount point to the CIFS transcoder cache folder (*that is, /mnt/vantagecache*). If this parameter is not specified, the Actor will automatically create its own mount point to the transcoder cache share folder.
transcoder	Optional	The IP address to the transcoder. If parameter is not specified, 127.0.0.1 is assumed.

The following rules apply:

- The order of the actor, actorPath, and transcoder settings is important. The order of the parameters must be actor, followed by actorPath, and finally followed by transcoder.
- Multiple transcoders are not supported for Flip Factory. They are only supported for Vantage.
- Linux-based Actors only support Telestream Vantage for transcoding operations.
- If the transcoder parameter is not specified with the transcoder IP address, a local address of 127.0.0.1 is assumed.

  For example:

  ```
  [actor:actor_001_std,transcoder:127.0.0.1],d:\diva\local
  ```

- If the actor parameter is not specified with an Actor name, the transcoder is presumed to not be mapped to a specific Actor.
- The transcoder_cache folder is the location where both the Actor and Vantage use to perform the entire transcode operation. Because Vantage runs in the Windows platform, a CIFS formatted UNC path that is Windows compatible represents the transcoder_cache share folder. Vantage will use this path for transcoding.
- If the actorPath parameter is not specified, Actor will use the same CIFS formatted UNC path.
- The original method of configuring a transcoder to a local Actor is still supported for legacy purposes
- The original method of configuring *Local Sources/Destinations* tied to Actors is still supported so legacy configurations will continue to function.

Preparing a Fixed Mount Point for Linux-based Actors (*Optional*)

Linux-based Actors must have access to the transcoder cache folder through a local mount point. You can either let the Actor dynamically create a mount point on its own (*the path will be determined by the CIFS path of the transcoder cache*), or you can create your own fixed mount point for the Actor to use.

If you let Actor dynamically create a mount point automatically to a remote transcoder cache located at \\hostname\vantagecache, the Actor will create the mount point:

```
{root_mount_point)/hostname/vantagecache
```

{root_mount_point} is a mount point configurable in the DIVA Configuration Utility. By default, the Actor will use /mnt if the root mount point is not configured. *See* Advanced Actor Settings *for more information on where to configure this*.

If you wish to use your own mount point instead of having Actor dynamically create one, you can use the following procedure to create a mount point to the remote transcoder cache:

1. Open a terminal window and execute the id command to confirm that you are logged in under the same user account that runs the Actor (*typically diva*) as follows:

   ```
   [diva@Linux018 actor]$ id
   ```

   The response will look similar to the following. Confirm the uid (*User ID*) and gid (*Group ID*), and use these values in the mounting operation. In this example they are both 1000.

   ```
   uid=1000(diva)gid=1000(diva) groups=1000(diva),10(wheel),30(tape),54321(oinstall),54322(dba)
   context=unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
   ```

2. Execute the following command to create your local mount point directory (*for example, /mnt/vantagecache*). You may need to log in as the root user depending on where the directory is located.

   ```
   mkdir /mnt/vantagecache
   ```

3. Execute the following command to create a local mount point (*for example, /tmp/vantagecache*) to the network share of the transcoder cache. Enter the appropriate share authentication information including the user_id#, group_id#, remote_transcoder_cache_ip_address, and remote_transcoder_cache_path.

   ```
   mount -t cifs -o username={user_name},password={password},uid={user_id#},gid={group_id#} //transcoder_cache_
   ip_address/remote_transcoder_cache_path /mnt/vantagecache
   ```

4. Set the actorPath parameter to /mnt/vantagecache when configuring the transcoder settings.

Configuring the Transcoder and Actor on a Single Computer

Use the following procedure to configure Vantage transcoders when the Actor is on the same computer as the transcode service:

1. Create a cache folder on the Actor computer. For a Vantage transcoder you could use M:\VantageCache.
2. Add the transcoder in the DIVA Core Configuration Utility. with the following settings:
   - ***Transcoder Type***: vantage
   - ***Working directory***: M:\VantageCache
   - Leave the remaining options at the default settings.
3. Open the DIVA Core Configuration Utility.
4. Navigate to the *Transcoders* frame on the **System** tab.
5. Ensure that the DIVA Core Transcoder configuration's ***Simula Transcodes*** value is less than or equal to the corresponding ***Vantage Session Limit*** value.
6. Open the Vantage Management Console.
7. Click **Services** in the left navigation tree.

8. Locate the transcoder you are configuring in the right frame and then right-click the transcoder name.
9. Select **Enter Maintenance Mode** from the context menu.
10. Click **Service Limits** on the **Setup** tab in the bottom frame.
11. Confirm the ***Session Limit*** and the ***Target Resource Usage*** parameters are set correctly for your environment and adjust as necessary.

Configuring the Transcoder and Actor on Separate Computers

Use the following procedure to configure Vantage when the Actor is on a different computer than the Vantage Transcode service:

Caution: The cache folder must be located on a computer accessible by the Vantage SDK computer through a shared Windows path.

1. Create a cache folder on the remote computer. In the example M:\VantageCache is used.
2. In Windows, share this folder on the network and set the required access credentials.
3. Authorize the Vantage transcoder to access the shared Vantage Cache folder.
4. Open the Vantage Management Console on the Vantage SDK computer.
5. Navigate to the **Settings & Options** screen using the left navigation tree.
6. Click the **Authorization** tab.
7. Add a new entry with the ***Username***, ***Password***, and ***Folder***. For example, \\10.145.50.81\VantageCache is the Windows UNC path for the shared Vantage Cache folder.
8. Open the DIVA Core Configuration Utility.
9. Navigate to the *Transcoders* frame on the **System** tab.
10. Add the transcoder to the DIVA Core Configuration Utility with the following settings:
    - ***Transcoder Type***: vantage
    - Set the ***Working Directory*** as follows:
        - Use a CIFS UNC path pointing to the IP address of the Vantage Cache computer. Include the required authentication information for the shared Vantage Cache folder.
        - Include the path to the shared Vantage Cache folder.
        - If the Actor is Linux-based, you can have the Actor automatically create the mount point to the Vantage Cache, or you can set your own fixed mount point by setting the actorPath parameter. *See the section* Preparing a Fixed Mount Point for Linux-based Actors (Optional) *for more information*.
        - If the Vantage Cache is located on a different computer than the Vantage SDK service (*different IP address*), you must tell the Actor the IP address where the transcoder service is located. Set the transcoder parameter to point to the address of the Vantage SDK service computer.
    - Leave the remaining options set to the defaults. The following is an example Working Directory entry with a fixed mount point:

```
[actorPath:/mnt/vantagecache,transcoder:10.145.40.81],cifs://user:pass@\\10.145.40.81\VantageCache
```

Configuring Telestream Vantage

The following sections describe only the configuration for the Vantage transcoder.

Creating the Output Path

Use the following procedure to create the output path in Vantage:

1. Open the Vantage Management Console and connect to the local computer.
2. In the left navigation tree, navigate to **Workflow Design Items**, **Variables**, **Create New Variable**.
3. Use the menu list to set the ***Select the variable type*** parameter to **Path**.
4. Click **OK**.
5. At the bottom of the screen, update the ***Name*** field to OutputPath.
6. Click the **Save** icon to save the variable.

Creating a Minimum Vantage Workflow

Use the following procedure to create the minimum Vantage workflow. First, you create the workflow and link the **Receive** and **Flip** together as follows:

1. Open the Vantage Workflow Designer.
2. Create a **New Category**.

   In the example the ***Name*** is TESTMINWorkflow.

   Note: No spaces or special characters are allowed in the category name.

3. Create a **New Workflow** and enter a name for it in the ***Enter a name*** field.
4. Select the ***Category*** for the workflow from the ***Select a category for the new workflow*** list.
5. Optionally, you can enter a description in the ***Enter a description*** field if desired.
6. If desired, set the number of hours for the workflow to expire, and select the ***Expire after*** check box.
7. Click **OK** to save the workflow.
8. Click the **Common** icon, and the click **Receive**.
9. Click the **Transcode** icon, and then click **Flip**.
10. To link the *Receive* and *Flip* together, click the **Receive yellow dot** and drag it to the **Flip yellow dot**.

Next, you configure the **Flip** options as follows:

1. Right-click **Flip** to configure the Flip options. For this example a media file is being configured using the following settings:
   - ***Encoder***: **Apple 3GP**
   - ***Input media file nickname***: Original
   - ***Output media file nickname***: Mobile
2. Expand the **Output Location** section.

3. Select the ***Path*** option, and then enter, or browse, to select the output path (*for example, E:\VantageStore*).
4. Use the menu list to select the ***Collision Resolution***. This identifies what the software will do if there is an existing file in the output path with the same file name. Initially set the ***Collision Resolution*** field to **Overwrite**.
5. Click **Save** to save the configuration.

Next, you configure the Receive options as follows:

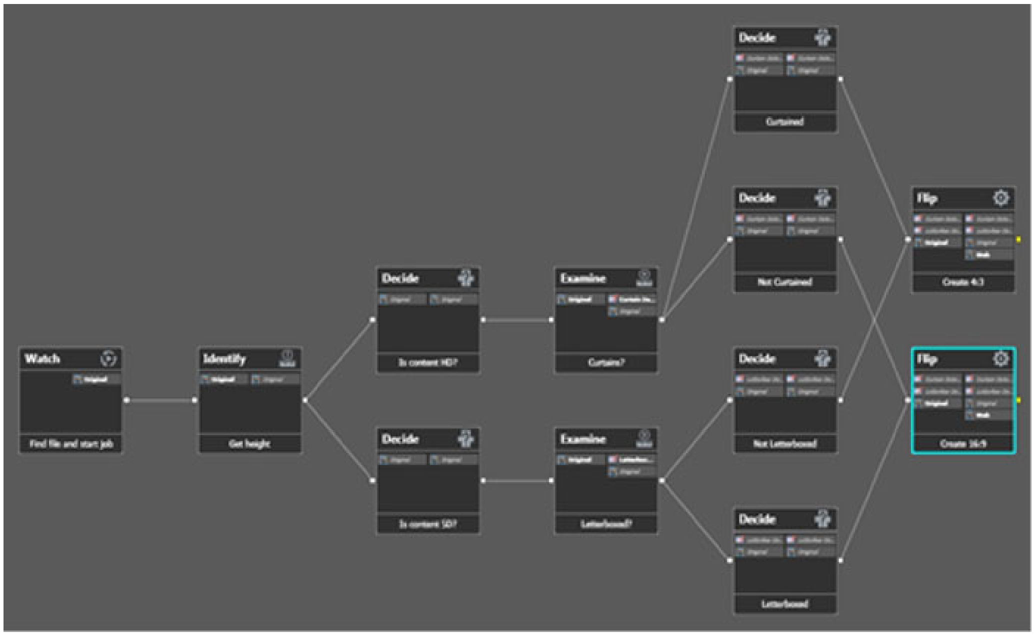
1. Right-click *Receive* to configure the Receive options.
2. Click the ***Media Files*** list and choose **Vantage Proxy**.
3. Click **Save** to save the changes.

When you are finished, click **Release** to enable DIVA Core to use the workflow.

Creating a Complex Vantage Workflow

This Vantage complex workflow example was created for documentation purposes; however it has not been tested with actual media files. Use the following procedure to create the complex Vantage workflow:

1. Open the Vantage Workflow Designer.
2. Navigate to **File**, and then create a **New Category**. For this example the ***Category*** created is named TESTComplex.
3. Navigate to **File**, and then **Import Workflow**.
4. Browse and select C:\Program Files (x86)\Telestream\Vantage\Samples\Analysis\Smart SD and HD Transcoding.xml.
5. Specify the category created in Step 2.
6. Telestream recommends changing the ***Workflow Name*** to match the ***Category***. *No spaces or special characters are allowed*.
7. Delete the *Watch* and replace it with *Receive*.
8. Configure *Receive* and set ***MediaFiles*** to **Original**.
9. Link *Receive* with *Identity*.
10. Delete *Deploy*.
11. Configure both Flip Factories.
    - Change the ***Output Location*** to **Path** and then enter, or browse, to select the output path.
    - Change the ***Collision Resolution*** to **Overwrite**.
12. Click Release to enable DIVA Core to use the workflow. In this example, the workflow should look like the following figure.



Configuring Transcoders

Create a new Vantage transcoder as described in previous section.

Set the ***Working Directory*** to either a local folder, or a path on a remote system. *You can only set a remote path for Vantage*. If you are setting a path to a remote system, a CIFS UNC path with the appropriate authentication credentials must be specified. The IP address specified in the UNC path must point to the remote computer running the Vantage SDK service.

Configuring Sources and Destinations

Use the following procedure to configure a source or destination for use with transcoders:

1. Open the DIVA Core Configuration Utility.
2. Navigate to the *Sources and Destinations* frame on the **System** tab.
3. Create a **LOCAL** Source/Destination for the Actor using the following parameters:
   - ***Source Name***: use the same name as the Actor name
   - ***IP Address***: leave this field empty
   - ***Source Type***: **LOCAL**
4. Configure the destination to include the following transcode options along with any other required ***Connect Options***:
   - **-tr_names** {TRANSCODER_NAME}
   - **-tr_restore_format** {WORKFLOW_NAME}

Note: The auto format option is only valid for Telestream and BitScream.

For this example the ***Connect Options*** field is populated similar to the following:

```
-login diva -pass diva -tr_names vantage_001 -tr_restore_format TESTMINWorkflow
```

14

Frequently Asked Questions

This chapter contains questions frequently asked during installation and configuration of the DIVA Core system and includes the answers to the questions. Contact Telestream Support for any additional questions not covered here.

- General DIVA Core Questions
- DIVA Core Database and Backup Service Questions

General DIVA Core Questions

What if the Customer Information Collection Tool does not work?

Confirm that CygWin and the 7z archive programs are installed correctly. If the CygWin or the 7z programs are not installed, the Customer Information Collection Tool will stop running and display one of the following error messages:

```
Error: Cygwin environment could not be located at "...". Please check the configuration or reinstall Cygwin environment if necessary.

Error: 7Z archiver could not be located at "...". Please check the configuration or reinstall 7Z archiver if necessary.
```

Should all operating systems be kept up to date with critical updates?

Telestream recommends applying all critical updates to all computers.

Should all operating systems be kept up to date with optional updates?

Optional operating system updates are not necessary in the DIVA Core environment. However the decision to apply optional updates is left to your System Administrator.

Are there any operating system updates that should not be installed?

Telestream is not currently aware of any operating system updates that impact DIVA Core functionality or operations.

Should the servers be restarted with any frequency?

No, restarting the servers will cause downtime for the system and possibly cause data corruption if a process is executing when the server is restarted. Only restart a server when absolutely necessary and perform a normal system shutdown (do not just turn off the computer unless absolutely necessary).

Should any services be restarted with any frequency?

No, restarting the services will cause downtime for the system and possibly cause data corruption if a process is executing when the service is restarted. Only restart a service when absolutely necessary.

Should any vendor applications be restarted with any frequency?

No, only restart a vendor application when absolutely necessary.

Should vendor applications always be updated to the latest version?

No, only update vendor applications to benefit from new functionality or for bug fixes.

What is the recommended frequency of database backups?

The DIVA Core database automatically backs up every fifteen minutes.

Does Telestream recommend any particular database backup application?

A database backup service is provided in the DIVA Core package. You are welcome to use your own backup software as an additional security under the condition that you only backup the DIVA Core database backup files (*in H:\oraback*) and not the database itself.

Backing up the database directly is forbidden. For example, using Oracle RMAN or other non-DIVA Core database backup applications. Backing up the database directly with another program may interfere with the DIVA Core database backup service. This may render database restoration impossible using the embedded DIVA Core restore utility, and could possibly result in data losses for which Telestream will accept no responsibility.

Where are the backup files located?

The database backup files are located on the Main Manager computer in the H:\oraback folder. The files are synced to the Backup Manager and an Actor in the H:\oraback\mgr1 folder.

Are there iterated versions of the database backup, and if so, how many are retained?

The backup files are retained for the previous ten days. The retention period is configurable for the database backup files in the DIVA Core Backup Service configuration file. Contact Telestream Support for assistance.

Where are vendor-specific logs located?

The vendor-specific log files are located in the %DIVA_HOME%\Program\log folder in Windows and in the /home/diva/DIVA/Program/log directory in Linux.

How far back in time do the logs go?

The log file retention period is configurable in the DIVA Core configuration file. Contact Telestream Support for more information. The log files are retained as follows by default:

- Manager, DIVA Connect: fifty hours
- Actor, Robot Manager, Storage Plan Manager, Avid Transfer Manager Communicator, Avid Archive Manager Communicator: ten days

- Drop Folder Monitor: variable based on size

What is the suggested log backup frequency?

The log files do not require backup.

Are there any special considerations regarding maintenance and backup of vendor servers and systems?

Telestream only supports the DIVA Core software. You must contact the server supplier for any hardware issue. You must keep Telestream in the loop for any issues on the DIVA Core solution (for example, loss of a RAID disk, failover to the backup manager, and so on).

Are there any special considerations related to recovering from a server failure when the server is part of the vendor solution?

As previously mentioned, you must keep Telestream in the loop if issues are encountered.

DIVA Core Database and Backup Service Questions

How do I check the status of the DIVA Core Backup Service?

Check the DIVA Core Backup Service status using the dbbackup status command from the command-line interface. *See DIVA Core Backup Service Status Command for detailed information*.

How do I failover to a *Backup System* when the *Main Manager System* has failed?

See Failure Scenarios and Recovery Procedures for the complete procedure.

How do I recover when a complex object's Metadata file is corrupted in the *Main Manager System*?

The DIVA Core Backup Service backs up the Metadata Database file by file. After the file is backed up to the backup systems, any corruption to, or modifications of, the Metadata files *are not* propagated to the backup systems.

If a complex object Metadata file is corrupted, restore the Metadata file from one of the backup systems.

In the unlikely event of disk corruption due to hardware failure occurring before the Backup Service has backed up the Metadata files, the non-backed up Metadata files can *only* be restored from a tape or disk. *The feature to restore Metadata files from tape or disk is not currently available in this DIVA Core release*. Contact Telestream Support for assistance.

How do I recover a complex object's Metadata file when it is corrupted in the *Backup Manager System*?

Telestream recommends always making backup copies to two separate backup systems to handle these scenarios. Restore the Metadata file from the *Secondary Backup System* or *Main Manager System*.

When a Metadata file is manually deleted from *Main Manager System*, is it also deleted from all backup systems?

Manually deleted Metadata files are not propagated to any backup systems.

How do I recover when a complex object's Metadata file is manually deleted in *Main Manager System*?

Execute the `dbbackup.bat reconcile` command to identify which complex object is missing the Metadata file. Restore the Metadata file from one of the backup systems.

How do I recover when a complex object's Metadata File is lost on the *Main Manager System* and all backup systems?

You can restore Metadata files from tape or disk. *The feature to restore Metadata files from tape or disk is not currently available in this DIVA Core release*. *Contact Telestream Support for assistance*.

How do I recover when the backup disk fails, or gets corrupted, on the *Main Manager System*?

Disk failures, or corruption, requires a failover to the *Backup Manager*. *See Failure Scenarios and Recovery Procedures for the complete procedure*.

How do I configure a full backup to start when the Backup Service starts?

The DIVA Core Backup Service automatically determines if a full backup is required when it starts. There is no configuration required.

How do I locate a complex object's Metadata inside the Metadata Database?

Contact Telestream Support for assistance.

How does the Metadata Database maintain its recovery window when a complex object is deleted?

See Database Backup Recovery Window for detailed information.

How do I turn off GUI Backup Service Notifications?

You can turn off notifications by unselecting the check box for the ***Database Backup Notification*** parameter under the *Manager Setting* panel in Configuration Utility.

Can the DIVA Core Manager and Oracle Database be installed on separate servers?

No, they must be installed on the same server because the DIVA Core Backup Service does not support Manager and Oracle installations on separate servers in this DIVA Core release.

Does the recovery window apply to both Oracle Secure Backups and Metadata Backups?

Yes, the recovery window setting applies to both backups.

How do I estimate the size for the Metadata Database location?

See Sizing the Metadata Database for detailed information.

Where do I configure the location of the Metadata Database?

You configure the location of the Metadata Database using the ***Complex Objects Metadata Location*** parameter in the *Manager Setting* panel in Configuration Utility.

What information is stored in the Metadata Database file?

All file details including file names, folder names, location, size, checksums, and so on.

Is the information stored in the Metadata Database irreplaceable or mission critical?

Telestream always recommends having at least two backup copies of the Metadata Database. You use the DIVA Core Backup Service to back up the Metadata Database. In a worst case scenario, use the *Telestream Archive eXchange Format Explorer* to recover the object from tape if the Metadata Database file of a particular object is lost.

Why is this information not being stored in the existing Oracle Database?

The amount of Metadata information is huge. Complex objects are supported up to 1,000,000 files. Currently, the Oracle Database in use does not have any scalability features to support complex object workflows.

What are the space requirements for the Metadata Database and data? Does it depend on the quantity of objects, the complexity of those objects, or something else?

See Sizing the Metadata Database for detailed information.

What if a customer has, for example, 1,000,000 objects, each with 100,000 files?

The Metadata Database is very scalable and can handle this amount with no issues.

What are the consequences of the Metadata Database becoming inoperable, corrupt, or missing? Will data loss, performance loss, or something else occur?

You will not be able to process complex object requests if the database becomes inoperable. You can restore from one of the backup copies if the database becomes corrupt, or is missing.

What are the consequences of the Metadata Database running out of available storage space? Will data loss, performance loss, or something else occur?

In this case you will not be able to process any complex object requests. *See Sizing the Metadata Database for detailed information*.

What tools exist for testing or verifying the integrity of the Metadata Database? Are the tools automatic, invoked manually, or can either method be used?

Currently there are no tools that exist to check the database integrity. Contact Telestream Support if you need assistance.

What tools exist for backing up the Metadata Database? Are the tools automatic, invoked manually, or can either method be used?

Always use the DIVA Core Backup Manager Service to back up the Metadata Database.

What tools exist for recovering the Metadata Database if loss or corruption occurs? What is the procedure to execute recovery, and is any of the recovery automatic?

See Failure Scenarios and Recovery Procedures for the complete procedure.

Does the storage location of the live database affect performance or space, and is it critical?

Yes, it is both performance and space critical. *See Chapter 3 for installation and configuration procedures*.

Can the location of the Metadata Database backups be configured?

Yes, you can configure the backup location. *See Chapter 3 for DIVA Core Backup Service installation and configuration procedures*.

A

DIVA Core Options and Licensing

The following table identifies DIVA Core options and licensing metrics.

Part Number	Description	Licensing Metric
LIC0002	DIVA Core	Per Server
LIC0003	DIVA Core Data Hub	Per Server (*up to 20 TB of content transferred per day, per server*)
LIC0004	DIVA Core Analytics	Per Server
LIC0005	DIVA Core Link	Per Connection
LIC0006	DIVA Core Partial File Restore	Per Video Wrapper
LIC0007	DIVA Core Avid Connector	Per Server
LIC0008	DIVA Core Storage Policy Manager	Per Server
LIC0009	DIVA Connect	Per Server
LIC0010	DIVA View	Per Concurrent User
LIC0011	Tape Slots	Per Tape Slot

B

Secure Deployment Checklist

1. Set strong passwords for Administrator (*or root*) and any other operating system accounts that have any DIVA Core administrator or service roles assigned to them, including:
   - DIVA, Oracle User IDs (*if being used*)
   - Any disk array administrative accounts
2. Do not use a local administrator operating system account. Assign roles as needed to other user accounts.
3. Set a strong password for Administrator and Operator for the Control GUI. You must assign a password for these profiles in the Configuration Utility before use.
4. Set a strong password for the Oracle database login.
5. Install a firewall on every system and apply the default DIVA Core port rules. Restrict access to DIVA Core API (*tcp/9000*) to IPs that need access using firewall rules.
6. Install operating system and DIVA Core updates on a periodic basis since they include security updates.
7. Install Anti-virus and exclude the DIVA Core processes and storage (*for performance reasons*).
8. It is best practice to segregate FC disks and FC tape drives either physically or through FC Zoning so that disks and tape devices do not share the same HBA port. For Managed disks, only DIVA Core Actors should have access to disk and the tape drives. This security practice helps prevent loss-of-data accidents resulting from accidental overwriting of tape or disk.
9. Set up an appropriate set of backups of the DIVA Core configuration and database. Backups are part of security and provide a way of restoring data lost either accidentally, or through some type of breach. Your backup should include some policy while being transported to an off-site location. Backups need to be protected to the same degree as DIVA Core tapes and disk.
10. Telestream strongly recommends using an external CA for additional security.

C

Sources and Destinations Guide

This appendix describes Source and Destination configuration guidelines for each type of DIVA Core supported content server. *See the DIVA Core Supported Environments Guide for detailed and up-to-date lists of supported content servers, formats, and related DIVA Core platforms*.

See Object Storage Destinations and EMC ECS (Elastic Cloud Storage) Integration for information on configuring Oracle Cloud Source/Destinations.

The following information is included:

General Parameters

this section introduces general items that may apply to any, or most, Sources or Destinations including features, configuration attributes, and connection options.

Files Path Root Parameter

The **Files Path Root (FPR)** parameter is for Archive and Restore requests. This parameter specifies the root folder for data transfers and applies to any type of Source/Destination.

You can enter an absolute or relative path in the **Files Path Root** field. This parameter is limited to 260 characters.

Each content server section of this appendix specifies the expected format of the **Files Path Root** and related **File Names** parameters for Archive requests.

For Partial File Restore requests, the file names on the destination are those specified when archiving. If no ***Files Path Root*** is entered, DIVA Core uses the one specified during archiving.

Root Path Parameter

The ***Root Path*** is a Source/Destination attribute you can use as a default path for FTP-like Sources/Destinations, or as a disk mount point for disk and local sources. This applies to any type of Source/Destination. The path is appended before any ***Files Path Root*** specified in requests, unless the path specified in a request is an absolute path.

This approach provides better Source/Destination abstraction. You specify the server directories used by DIVA Core at the configuration level, not at the request level. They can be changed at any time without requiring a change to DIVA Core clients.

The **Root Path** value is always an absolute path defined by the operating system. An Omneon Path is the player name and always considered an absolute path.

Absolute path names are supported on both Windows and Linux to a maximum of 4000 characters. Relative path names are limited to 256 characters on Windows systems (*only*).

If you leave the **Root Path** field empty, DIVA Core ignores the parameter. However, if you do specify a **Root Path** its value is combined with the **Files Path Root** you specified in a request to give the final Source/Destination path. This process is performed according to the following rules:

- Relative paths are added to the absolute path, absolute paths override preceding absolute paths (*standard Path Arithmetic*).
- If the **Root Path** and **Files Path Root** have different operating system types, the second path (***Files Path Root***) is converted to the operating system type specified by the first path (***Root Path***) by replacing \ with / (*and vice versa*). The converted path is then considered the relative path.
- If the ***Root Path*** ends with a > character, the ***Files Path Root*** is always considered to be a relative path, and the > character is omitted during concatenation.

Source/Destination ROOT_PATH	**Object:** Original_FPR **recorded in database & metadata**	**Request Type**	**Files Path Root (FPR)**	**Resulting rule applied to create actual path for the transfer**	**Resulting path considered for the transfer**	**Resulting original *Files Path Root* (FPR) recorded in database and metadata**
Null		Archive	Null	ROOT_PATH+FPR	Null	Null
Null		Archive	Set	ROOT_PATH+FPR	FPR	FPR
Set		Archive	Null	ROOT_PATH+FPR	ROOT_PATH	Null
Set		Archive	Set	ROOT_PATH+FPR	ROOT_PATH+FPR	FPR
Null		Archive with tr_ arch format	Null	ROOT_PATH+FPR	Null	Null
Null		Archive with tr_ arch format	Set	ROOT_PATH+FPR	FPR	Null
Set		Archive with tr_ arch format	Null	ROOT_PATH+FPR	ROOT_PATH	Null
Set		Archive with tr_ arch format	Set	ROOT_PATH+FPR	ROOT_PATH+FPR	Null
Null	Null	Restore	Null	(ROOT_PATH+FPR) | Original_FPR	Null	
Null	Null	Restore	Set	(ROOT_PATH+FPR) | Original_FPR	FPR	

Source/Destination ROOT_PATH	Object: Original_FPR recorded in database & metadata	Request Type	Files Path Root (FPR)	Resulting rule applied to create actual path for the transfer	Resulting path considered for the transfer	Resulting original *Files Path Root* (FPR) recorded in database and metadata
Set	Null	Restore	Null	(ROOT_PATH+FPR) | Original_FPR	ROOT_PATH	
Set	Null		Set		ROOT_PATH+FPR	
Null	Set		Null		Original FPR	
Null	Set		Set		FPR	
Set	Set		Null		ROOT_PATH	
Set	Set		Set		ROOT_PATH+FPR	
	Null	Transcode Archive				Null
	Set	Transcode Archive				Null

UNIX Style Paths

The following table describes UNIX style paths for the ***Root Path***, ***File Path Root***, and the actual path to the files.

Root Path (*Source/Destination*)	File Path Root (*Request*)	Actual Path to Files
/diva/upload	tmp	/diva/upload/tmp
/diva/upload	/tmp	/tmp
/diva/upload		/diva/upload
/diva/upload	C:\tmp	/diva/upload/C:/tmp (*!!!*)
/diva/upload>	/tmp	/diva/upload/tmp
/diva/upload>	\tmp	/diva/upload/tmp
/diva/upload>		/diva/upload

Windows Style Paths

The following table describes Windows style paths for the ***Root Path***, ***File Path Root***, and the actual path to the files.

Root Path (*Source/Destination*)	File Path Root (*Request*)	Actual Path to Files
D:\diva\upload	tmp	D:\diva\upload\tmp
D:\diva\upload	C:\tmp	C:\tmp
D:\diva\upload		D:\diva\upload
D:\diva\upload>	/tmp	D:\diva\upload\tmp
D:\diva\upload>	C:\tmp	D:\diva\upload\tmp
D:\diva\upload>	C:/tmp	D:\diva\upload\C:\tmp
D:\diva\upload>		D:\diva\upload

Metasource Parameter

The ***Metasource*** parameter is a specific type of Source/Destination to manage several Sources/Destinations sharing the same online storage as one (*or multiple Drop Folder Monitors*) with failover and load-balancing features. This applies to any type of Source/Destination. See Metasources for more information on the Metasource Source/Destination types.

Connect Options Parameter

Connect Options are a Source/Destination parameter used to specify the communication protocol with the Source/Destination or to modify the protocol's defaults.

Some options exclusively apply to a specific Source/Destination type, and are documented as part of that specific Source/Destination type later in this appendix. Others options are for general use and are documented in this section.

Some **Connect Options** (*explicitly or implicitly*) specified for the Source/Destination may be superseded by those specified in requests. This section also specifies, for each **Connect Option**, whether it can be superseded at the request level.

Quality of Service (qos=)

This option specifies the transfer mode used when transferring from this specific Source/Destination when the archive initiator sets the QualityOfService parameter in Archive or Restore parameters to **DEFAULT**.

This parameter applies to any type of Source/Destination, and cannot be superseded by the request option.

If the archive initiator sets the QualityOfService to something other than **DEFAULT**, DIVA Core ignores the qos= ***Connect Option***.

The format for the parameter is qos=[**DIRECT_AND_CACHE**|**CACHE_AND_DIRECT**].

Note: This option must be the first one in place in the ***Source/Destination Connect Options*** field, and must *always* be specified in lowercase.

The valid values for Quality of Service are as follows:

DIRECT_AND_CACHE

Direct transfers from (*or to*) a Source/Destination to (*or from*) DIVA Core are preferred, but cache transfers will occur if processing the request in direct mode is not possible.

CACHE_AND_DIRECT

Cache transfers from (*or to*) a Source/Destination to (*or from*) DIVA Core are preferred, but direct transfers will occur if processing the request in cache mode is not possible.

The following table describes sample Quality of Service connections:

QOS Connect Option	QOS Set by the Archive Initiator	Actual Transfer Mode Applied by the DIVA Core Manager
DIRECT_AND_CACHE	DEFAULT	DIRECT_AND_CACHE
DIRECT_AND_CACHE	DIRECT_ONLY	DIRECT_ONLY
DIRECT_AND_CACHE	CACHE_ONLY	CACHE_ONLY
CACHE_AND_DIRECT	DEFAULT	CACHE_AND_DIRECT

QOS Connect Option	QOS Set by the Archive Initiator	Actual Transfer Mode Applied by the DIVA Core Manager
CACHE_AND_DIRECT	**DIRECT_ONLY**	**DIRECT_ONLY**
CACHE_AND_DIRECT	**CACHE_ONLY**	**CACHE_ONLY**
	DEFAULT	**DEFAULT** (*that is, **DIRECT_AND_CACHE***)
	DIRECT_ONLY	**DIRECT_ONLY**
	CACHE_ONLY	**CACHE_ONLY**

Source/Destination FTP User Log In (*-login*)

This option is generally used to specify a user name to connect to a Source/Destination when the transfer protocol is FTP or FTP-like, and is in the format -login {user_name}.

This option applies when specified in Source/Destination type description, and can be superseded by the request option.

Possible values applicable to a specific Source/Destination type are detailed in the related section later in this appendix.

Source/Destination Swift (*-oracle_storage_class*)

This option is generally used to specify the class of storage to connect to a SWIFT Source/Destination and is in the format oracle_storage_class={ARCHIVE|STANDARD}.

Source/Destination CIFS User Log In (*-user*)

This option is generally used to specify a user name to connect to a CIFS Source/Destination, and is in the format -user {user_name@domain}.

This option applies when specified in Source/Destination type description, and can be superseded by the request option.

Possible values applicable to a specific Source/Destination type are detailed in the related section later in this appendix.

Source/Destination Password (*-pass*)

This option is generally used in combination with the -login option, and is in the format -pass [password].

This option applies when specified in Source/Destination type description, and can be superseded by the request option.

Possible values applicable to a specific Source/Destination type are detailed in the related section later in this appendix.

Source/Destination Connection Port (*-port*)

This option is used when a port parameter is required to connect to a Source/Destination, and specifies the port number in the format -port [port_number].

This is an integer value that applies when specified in Source/Destination type description, and can be superseded by the request option.

Possible values applicable to a specific Source/Destination type are detailed in the related section later in this appendix.

Deleting Source Content after Archiving (*-allow_delete_on_source*)

This parameter specifies if an Archive request can use the *Delete on Source* QOS option, and is in the format -allow_delete_on_source.

The Archive request optional parameter delete_on_source instructs DIVA Core to delete the original asset on the source after the archive of the object is successfully completed.

If this option is specified in an Archive request and the ***Source Type*** is not **LOCAL**, **DISK** or **CIFS**, DIVA Core automatically terminates the request.

This parameter applies to the **FTP_STANDARD** ***Source Type***. you can change this behavior so that requests will not fail when delete_on_source is specified in an Archive request.

If the -allow_delete_on_source option is specified, and the delete_on_source parameter is specified in an Archive request, DIVA Core will attempt to delete the asset from the source after the archive has been completed successfully.

This option cannot be superseded by the request option.

Archiving and Restoring Filename and Path Renaming Rules (*-arch_renaming, -rest_renaming, -arch_path_renaming, -rest_path_renaming*)

This feature is available for Archive and Restore requests. There are no pre-defined set of values for these options. Option values are based on regular expressions. Possible values for these options are infinite and fully customizable.

Renaming rules are associated with Source/Destination. You configure filename or path renaming during archive or restore using the Configuration Utility. The configuration can be superseded by the request option.

You can use these parameters when a workflow implementation requires automatic filename or path renaming during object archiving, when the object is (partially) restored, or when a transcoded object is re-archived or restored.

Rename files at archive time (*-arch_renaming*) or at restore time (*-rest_renaming*). Rename relative path at archive time (*-arch_path_renaming*) or at restore time (*-rest_path_renaming*).The format for these parameters are as follows:

```
-arch_renaming [renaming_rule]+
-rest_renaming [renaming_rule]+

-arch_path_renaming [renaming_rule]+
-rest_path_ renaming  [renaming_rule]+

renaming_rule = [activation_format:expression_patterns:output_format]
```

The -arch_renaming option enables renaming files during the archive process. You typically use this option for the following example cases:

- You must add a file extension to archived files.
- When associated to a transcoder cache (Local Source/Destination), you can set archive renaming rules to rename the files of a transcoded clip. This is useful when files created by the transcoder do not have the expected names.

The -rest_renaming option enables renaming of files during the restore process. You typically use it when the Source/Destination requires strict naming of files, and the files being transferred do not follow these rules.

This option is available for **Restore**, **Partial File Restore** (this is an alternate way to rename partially restored files), and **N-Restore**. If multiple renaming rules are defined, DIVA Core will process the rule for each Source/Destination independently.

The -arch_path_renaming and -rest_path_renaming options enable renaming relative paths for files at archive and restore time. The relative path to be renamed is not the *Path Root*, it is the relative path between the *Path Root* and the files.

You must specify at least one renaming_rule for the option. All renaming rules are located in the Configuration Utility except the ***Service Name*** and ***Port*** parameters. DIVA Core goes through each renaming_rule for each file on the list to be transferred starting with the first one:

- The rule is applied if the file name matches this rule's activation_format.
- The condition is satisfied if the beginning of a file name matches the evaluation condition of the first rule.

  For example, a condition such as .*\.track will be satisfied by all of the following file names - audio.track1, audio.track2, video.track.
- As soon as a rule is applied for a given file, other rules from the list are no longer considered.

If none of the rules can be applied, the file is not renamed. An activation_format is a regular expression (*regexp*) to check whether the renaming rule must apply. This is useful when renaming paths because the relative path of each file is checked using the activation format. For example, DIVA could rename the path of some files depending on file extensions.

The expression_patterns parse the file name. It is a regular expression, which will include up to nine special symbols to identify different parts of the file name: \1 \2 \3 \4 \5 \6 \7 \8 \9.

The output_format is an expression that qualifies the format of a renamed file, based on atomic items (\1 through \9) previously identified when applying expression_patterns to the original file name. Two additional specific symbols can be used:

- \o indicates the object name
- \c indicates the object category

Note: Describing how regular expression pattern matching works is beyond the scope of this document. There are many web sites on this subject such as http://www.regular-expressions.info/.

The following examples describe different possible scenarios and their associated outcomes using these parameters.

Example One

To add the .gxf extension to all files archived from GVG Profile (by default, these files do not have an extension). If a file does have an extension, the .gxf extension will not be added. To achieve this you use the following statement:

```
-arch_renaming <.*\..*:(.*)\.(.*):\1.\2><.*:(.*):\1.gxf>
```

This statement will process the file names as follows:

Input file Name	Output File Name
Star Wars	Star Wars.gxf
Readme.txt	Readme.txt
Jaws.gxf	Jaws.gxf

Example Two

To remove the .gxf extension (if any) at archive time you use the following statement:

```
-arch_renaming <.*\.gxf:(.*)\.(.*):\1>
```

This statement will process the file names as follows:

Input File Name	Output File Name
Star Wars.gxf	Star Wars
Readme.txt	Readme.txt
Jaws.avi	Jaws.avi

Example Three

When Flip Factory transcodes clip FOO to Pinnacle MSS, the resulting files are named FOO.MSS.header, FOO.MSS.ft, FOO.MSS.info, and FOO.MSS. These names are not those expected by Pinnacle MSS Servers, and this option fixes these discrepancies. You use the following statement:

```
-arch_renaming <.*\.header:(.*):header><.*\.ft:(.*):ft><.*\.info:(.*):info><.*MSS:(.*):std>
```

This option will process the file names as follows:

Input File Name	Output File Name
FOO.MSS.header	header
FOO.MSS.ft	ft
FOO.MSS.info	info
FOO.MSS	std

Example Four

You can use a variation of the following statement to re-parent some files under a different relative directory:

```
arch_path_renaming <media:(.*):media.dir>
```

With this option all the files under media will be moved to media.dir.

To help regular expression development, regular expression exercisers are available online at http://regexone.com/ and http://www.lornajane.net/posts/2011/simple-regular-expressions-by-example.

To use this feature, you must know the basic regular expression syntax. You can find Regular Expression introductory information online at http://www.hathitrust.org/, http://books.google.com/, and http://www.gutenberg.org/.

Skipping Files During Restore (*-rest_ignoring*)

This option is available for Restore, Partial File Restore, and N-Restore requests. It ignores some files during restore based on one or more regular expression rules. The possibilities offered by regular expressions are versatile and enable many different types of filtering.

Files matching one of the regular expressions are ignored by the Source/Destination. The rule supports Unicode characters to offer maximum flexibility. You use the following statement to ignore files during restore:

```
-rest_ignoring {<rule>} [<rule>|<rule>|<rule>]
```

You can continue to add <rules> as necessary in the previous statement.

There are no predefined set of values for these options. Possible values for this option are infinite and fully customizable.

The files being ignored are still read from the disk or tape instance. If the set of rules is designed to ignore all the files of an object, then no file is restored and the request will be complete.

During an **N-Restore**, if multiple renaming rules are defined, DIVA Core will process the rule for each Source/Destination independently.

Example

A typical use case is restoring a SeaChange clip to a destination that does not support SeaChange special files (*private data and video index files*). The following statement prevents a Source/Destination from restoring files with .pd or .vix extension:

```
-rest_ignoring <.*\.pd><.*\.vix>
```

The results if the previous statement are as follows:

DIVA Core Object	Destination Server
Clipname.pd	
Clipname.vix	
Clipname	Clipname

Archiving Files in a Specific Order (*-file_order*)

You use this option archiving or restoring files that are MSS files (*Omneon QuickTime files*), but the source of archiving is not an AVID (*Pinnacle*) MSS Server (*an Omneon server*).

This option is not limited to specific Source/Destination types, but it is only meaningful for **LOCAL**, **DISK**, **CIFS**, and **FTP_STANDARD** Source/Destinations. This option can be superseded by the request option.

You specify the file sequence during archiving or restoring using the following statement:

```
-file_order {MSS|OMNEON|DIFWAV|SEACHANGE DIRS_FIRST|FILES_FIRST}
```

The following list identifies the archive sequence for specific formats:

MSS

The sequence is header, ft, info, and then std.

OMNEON

The sequence is clip.mov, and then essence files (*.wav, .aiff, .m2v, .mpeg, .diff, and so on*).

DIFWAV

The sequence is clip.dif, and then .wav files.

SEACHANGE

The sequence is clip.pd, clip.vix, and then clip.

DIRS_FIRST

The sequence places directories first and is as follows:

```
Folder test_1;
Folder test_1\test_2;
```

```
File test_1\test_2\1.txt;
File test_1\test_2\_A2.txt;
File test_1\test_2\test.txt;
File test_1\test_2\test1.txt;
File test_1\test_2\test2.txt;
File test_1\1.txt;
File test_1\_A2.txt;
File test_1\test.txt;
File test_1\test1.txt;
File test_1\test2.txt;
File 1.txt;
File _A2.txt;
File test.txt;
File test1.txt;
File test2.txt;
```

FILES_FIRST

The sequence places files first and is as follows:

```
File 1.txt;
File _A2.txt;
File test.txt;
File test1.txt;
File test2.txt;
Folder test_1;
File test_1\1.txt;
File test_1\_A2.txt;
File test_1\test.txt;
File test_1\test1.txt;
File test_1\test2.txt;
Folder test_1\test_2;
File test_1\test_2\1.txt;
File test_1\test_2\_A2.txt;
File test_1\test_2\test.txt;
File test_1\test_2\test1.txt;
File test_1\test_2\test2.txt;
```

This ensures that files are archived in the correct sequence so that they are restored in the correct sequence when restoring them to a real Pinnacle MSS Server (*a real Omneon server*).

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 sequence in which the .dpx files appear within the archive. By default this sequence is based on ordering established by the source, and is typically alphanumeric. For example, NTFS **DISK** Source/Destinations order files and folders are not case-sensitive as a general rule (*but not where diacritical marks, such as ', `, ^, and so on are applied*). By default, when DIVA Core 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.

However, this can create some issues. You may 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. In DIVA Core 7.0 and later, the Actor allows the archive options -file_order DIRS_FIRST or -file_order FILES_FIRST to address these issues as previously described.

Example

An archive contains SeaChange SAF files. These files must be transcoded, and then restored to a Pinnacle MSS Server. In this case, the **LOCAL** source used by the transcoding process is defined with the -file_order MSS option (*among others*).

This ensures the files coming out of the transcoder are archived and restored in the correct sequence. That is, header, ft, info and then std.

Specifying the Transcode Format (*-tr_archive_format*, *-tr_restore_format*)

Each factory in a transcoder determines the format of the output file. These options allow you to define the factory and output format.

They apply to any Source/Destination type, and have no fixed list of values. This option cannot be superseded by the request option unless used in a TranscodeArchived request.

These options specify the transcode operation to apply to essence files during archive (*-tr_archive_format*) or restore (*-tr_restore_format*).

```
-tr_archive_format {factory_name}
-tr_restore_format {factory_name}
```

The {factory_name} is the name of a Flip Factory factory, or the name of a BitScream output format.

Specifying a Transcoder Name (*-tr_names*)

You use this option to specify the transcoder to use for transcode operations. It applies to any Source/Destination type and cannot be superseded by the request option, unless used in a TranscodeArchived request.

You must always use either the -tr_archive_format or the -tr_restore_format option with -tr_names. When transcoding is applied, one of the transcoders defined by -tr_names is selected by DIVA Core according to the transcoders defined in the DIVA Core configuration based on the availability, configured queue size, and configured performance of the transcoder.

The format for this option is as follows:

```
-tr_names {transcoder_name} [transcoder_name]
```

The {transcoder_name} is the name of a DIVA Core Transcoder defined in the *Transcoders* frame of the **Systems** tab of the Configuration Utility.

If this option is not present, DIVA Core will select one of the transcoders defined in the DIVA Core Configuration based on the availability, configured queue size, and configured performance of the transcoder.

Restoring Metadata (*-rest_metadata*, *-rm*)

This option specifies that a metadata file must be generated and restored on every Restore request. This option applies to any Source/Destination type. Because video servers may reject the metadata file, this option actually applies mainly to **LOCAL**, **DISK** and **FTP_STANDARD** types.

Either form of the option can be used as follows:

```
-rest_metadata
-rm
```

When and object is restored, the object is first restored normally. After the regular restore has completed, a metadata file is generated and restored on the specified destination in the specified (*or implicit*) **FilePathRoot** of the related Restore request.

The metadata file format is compliant with the *DIVA Core File Set Drop Folder Metadata File* specification. The metadata file name is objectname.mdf.

Restricting the Number of Actors to Retry (*-num_actors_to_retry*)

You use this option to limit the number of Actors that an Archive, Restore, or Partial File Restore request will be retried on. By default, this option is not specified and there is no limit. Therefore, all Actors will be tried in case the request constantly fails.

This option applies to any Source/Destination type and cannot be superseded by the request option.

This option uses the following statement:

```
-num_actors_to_retry {number}
```

The {number} is the number of retries to attempt and can include zero.

Example

The option -num_actors_to_retry 3 means that the DIVA Core Manager will perform no more than four operations (*total*) with different Actors, even if there are more than four Actors configured. That is, the initial request plus three retries for a total of four attempts.

MSS Source/Destination in MXF Mode (*-mxf*)

This option specifically applies only to MSS Source/Destination types, otherwise DIVA Core ignores it. You use this option to indicate when a MSS Source/Destination is configured to import and export MXF wrapped clips.

There are no additional parameters for this option and you include it in the following format:

```
-mxf
```

FTP Socket Window Size (*-socket_window_size*)

This option specifies the total buffer space per data socket reserved for send and receive. This option applies to some Source/Destination types using FTP protocol, such as **FTP_STANDARD**, **OMNEON**, **PDR**, **MSS**, and so on.

This parameter has a direct effect on transfer performance. Its value depends on the operating system and is usually set between 2048 and 65536 bytes. When this option is not set DIVA Core uses the default value set at the operating system level. Telestream recommends increasing this value to 32768 or more on fast networks. You must run some performance tests to identify the best setting.

*The **TCP Window Scale** option increases the TCP receive window size above its maximum 65536 bytes value. This option is recommended when dealing with Long-Fat Networks, or LFN*.

You use the following statement for this option:

```
-socket_window_size {number}
-socket_bufsize {number}
```

The {number} is the buffer size in bytes.

Note: The -socket_bufsize syntax deprecated but still available. Telestream recommends not using it in DIVA Core releases later than 6.2.2 because it may conflict with the -socket_block_size parameter.

FTP Socket Block Size (*-socket_block_size*)

This option defines how much data (*in kilobytes*) the Actor tries to send and receive in a single system call during FTP transfers. For example, if the internal buffer size of the Actor is set to 2 Mb and -socket_block_size is set to 64 KB, 32 system calls are required to write a single buffer to a data socket.

This option applies to some Source/Destination types using FTP, such as **FTP_STANDARD**, **OMNEON**, **PDR**, **MSS**, and so on.

You use the following statement for this option:

```
-socket_block_size {number}
```

The {number} is the buffer size in kilobytes, ranging from 32 to 2048 kilobytes.

FTP Passive Mode Transfers (*-pasv*)

This option specifies that the FTP data connection must be opened in passive mode (*as opposed to active mode*) for the associated Source/Destination. This may be necessary if a firewall is between the Actor and the Source/Destination.

This option applies to some Source/Destination types using FTP, such as **FTP_STANDARD**, **OMNEON**, **PDR**, **MSS**, and so on.

You use one of the following statements for this option (*not case-sensitive*):

```
-pasv
-PASV
```

Restoring in AXF Mode (*-axf*)

The -axf parameter is optional for Restore requests and instructs DIVA Core to restore the original asset into an AXF File. Instead of purely restoring the content of an object to the destination, DIVA Core restores the content into a new AXF File.

Combined with the -rm or -rmxl parameters, you can use this option to export an object with metadata information and then drop it into a DFM Watch Folder.

This option applies to **FTP_STANDARD**, **SFTP**, **LOCAL**, **DISK**, and **EXPEDAT** Source/Destination types.

You use the following statement to restore an asset in AXF mode:

```
-axf
```

Specifying Connection Timeouts (*-list_timeout*, *-transfer_timeout*, *-control_timeout*)

These options specify the maximum timeout values allowed for different FTP connection operations, and override the default timeout settings. You can set the timeout value for directory and file listings (-*list_timeout*), file transfers (-*transfer_timeout*), and control port connections (-*control_timeout*).

If an operation exceeds the set timeout value the operation is terminated.

The default value is used if a timeout parameter is not specified, or if the timeout value is set to zero.

You use the following statement for each of these options:

```
-list_timeout {number}
-transfer_timeout {number}
-control_timeout {number}
```

The {number} is the maximum allowed timeout in seconds.

The default timeout values for each FTP connect operation are as follows:

Statement	Default Timeout
-list_timeout	120 seconds
-transfer_timeout	180 seconds
-control_timeout	120 second

Avid MSS (*Program Stream*) Servers

Avid (*previously Pinnacle*) MSS Video Servers can be installed in one of the following configurations:

Independent Storage

The video server (*itself*) includes its own fault tolerant disk storage.

Shared Storage

The video servers are connected to a SAN where the fault tolerant disk storage is based.

In both cases, external connectivity is provided by one (*or several*) Connect+ gateways supporting the FTP protocol over a Gigabit Ethernet Network. A clip on the MSS storage is always comprised of three files as listed below (*or four if the optional information file is present*). They are always archived and restored in the following sequence:

header
This is the first file and the clip's header.

ft
This is the second file and the frame table.

std
This is the third file and the video and audio essence.

info
When present, this is the fourth file. It is an optional information file.

All files are located in a folder that matches the name of the clip (*that is, if the clip name is FOO, the files are located in a folder also named FOO*).

Newer MediaStream servers can export and import clips with a MXF wrapper. When configured for MXF, the server generates a single file (*std*) which is the MXF file. DIVA Core only archives one file (*std*) in MXF Mode. The file is automatically renamed to {clipname}.mxf. This mode is not supported by independent storage servers.

See Appendix A for DIVA Core options and licensing information.

MSS with Independent Storage

One record is created for each MSS that DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	MSS IP address	10.80.114.21
Source Type	MSS	**MSS**

Attribute	Value	Example
Connect Options for Systems with One Gateway	-login {gw_host_name} -pass .video_fs	-login fcgate1 -pass .video_fs
Connect Options for Systems with Two Gateways	-login {gw1_host_name}[, gw2_host_name] -pass .video_fs	-login fcgate1,fcgate2 -pass .video_fs

In a system with two gateways, fcgate1 and fcgate2, DIVA Core manages failover between the two when a connect option such as -login fcgate1, fcgate2 is specified. If the initial FTP connection fails with fcgate1, it will be retried on fcgate2.

This feature has been deprecated and is now implemented using the **METASOURCE *Source Type***.

MSS with Shared Storage

One record is created for each gateway connected to the storage network that DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP Address of the gateway through which DIVA Core accesses the shared storage.	10.80.114.28
Source Type	MSS	**MSS**
Connect Options	-login video_fs -pass .video_fs	-login video_fs -pass .video_fs

MSS with Shared Storage in MXF Mode

One record is created for each gateway connected to the storage network DIVA Core has to move data to and from.

Attribute	Value	Example
IP Address	IP Address of the gateway through which DIVA Core accesses the shared storage.	10.80.114.28
Source Type	MSS	**MSS**
Connect Options	-login video_fs (or -login mxf_fs) -pass .video_fs (or -pass .mxf_fs) -mxf	-login video_fs -pass .video_fs

Using MSS with DIVA_archiveObject

The following table describes typical Source/Destination example parameters.

Parameter	Value	Example
FilesPathRoot	The name of the clip.	CITIZENKANE
FileNames	*	*

Avid Airspace Servers

Avid Airspace (*previously known as Pluto*) is a video server with independent storage. Each clip deals with a single essence file located on the storage root. Airspace uses standard FTP protocol to transfer files to and from the video server internal storage over a Gigabit Ethernet Network.

One record is created for each video server DIVA Core has to move data to and from.

Attribute	Value	Example
IP Address	IP address of the video server.	10.80.114.28
Source Type	**FTP_STANDARD**	**FTP_STANDARD**
Connect Options	-login {FTP_user_name} -pass {FTP_password} -port {FTP_port_number}	-login ftpuser -pass Pa$$word -port 6530

The following table describes an Avid Airspace Source/Destination use example:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the name of the clip in this field.	TRAFFIC

Avid Transfer Manager DHM Interface

The Avid Transfer Manager is the Avid Unity Outer Gateway, which you can address using two different interfaces. One interface is called the DHM (*Data Handler Module*) and the other called DET (*Dynamically Extensible Transfer*). Each interface has a specific purpose.

For this ***Source Type*** the DHM interface is used for transfer of video and audio content to and from external devices (*for example, an archive system*).

See the DIVA Core Avid Connectivity User's Guide for detailed information.

One record is created for each video server DIVA Core has to move data to and from.

Attributes	Value	Example
IP Address	PI address of the Avid Transfer Manager	10.80.114.28
Source Type	**AVID_DHM**	**AVID_DHM**
Connect Options	-port {FTP_port_number} -login {FTP_user_name} -pass {FTP_password}	-port 6021 -login diva -pass diva

The ***Connect Option*** values indicated in the previous table are as follows:

-port
This is the TM Communicator FTP service port number.

-login
This is the TM Communicator FTP service user log in.

-pass
This is the TM Communicator FTP service user password associated with the log in.

Archive requests are initiated from Avid Edit Stations using **Send to Playback**. The TM Communicator supports setting custom titles for ingested (*restored*) clips. If the -title option is specified with a title name in a DIVA Core Restore or Partial File Restore request, this option's value is used as the clip title, otherwise the original clip name is used. The original clip name is stored in the *Video ID* field of the Avid metadata.

The following rules apply to custom title settings:

- Custom titles can consist of one or more words separated by spaces and (*or*) tabulation characters.
- Telestream strongly recommends single word titles, and absolutely requires that multiple word titles are enclosed in double quotes to ensure proper processing.
- New line (*\x0A*) and carriage return (*\x0D*) characters are not allowed in titles.
- Single quote, ampersand, dash, slash, asterisk, and other special characters are supported.
- Double quote characters must be escaped with a backslash to be included in the title.
- Titles composed of one or more spaces enclosed in double quotes are not considered empty.

The following table describes a Source/Destination use example:

Restore Option Values	Ingested Clip Title
-title Clip	Clip
-title "Clip"	Clip
-title "My clip"	My clip
-title "My \"special\" clip"	My "special" clip

Avid Transfer Manager DET Interface

Avid Transfer Manager is the Avid Unity Outer Gateway. It can be addressed through two different interfaces called the DHM (*Data Handler Module*) and DET (*Dynamically Extensible Transfer*). Each interface has a specific purpose.

For this source type, the DET interface is used for transfer of Metadata and Media Files to Unity Workgroups (*or an archive system, seen as an external workgroup / Unity storage extender*).

See the DIVA Core Avid Connectivity User's Guide for detailed information.

One record is created for each video server DIVA Core has to move data to and from.

Attributes	Value	Example
IP Address	IP address of the Avid Transfer Manager	10.80.114.28
Source Type	**AVID_DET**	**AVID_DET**
Connect Options	-port {FTP_port_number} -login {FTP_user_name} -pass {FTP_password}	-port 6021 -login det -pass diva

The ***Connect Option*** values indicated in the previous table are as follows:

-port
This is the TM Communicator FTP service port number.

-login
This is the TM Communicator FTP service user log in.

-pass
This is the TM Communicator FTP service user password associated with the log in.

Archive requests are initiated from Avid Edit Stations using **Send to Workgroup**.

SeaChange BMS and BMC Servers

A SeaChange BMS (*Broadcast Media Server*) is a standalone video server equipped with a fast-Ethernet Interface and its own storage.

A SeaChange BMC (*Broadcast Media Cluster*) is a cluster of video servers providing unified storage based on SeaChange RAID^2 technology. Each server of the BMC can deliver files stored on RAID^2 to DIVA Core using the FTP protocol. The file transfer format is SAF (*SeaChange Archive Format*) only.

Note: The SeaChange FTP servers do not support directories. All files must be listed under the FTP root directory.

By default, a SeaChange BMC node offers Automatic Load Balancing management for data transfer across all nodes of the cluster.

If you want to use this feature, you must only declare the last node of the BMC in the DIVA Core configuration. In this case, DIVA Core will always connect to the same node of the cluster. This node will transparently redirect transfers to other nodes as required.

This feature can be disabled by using a special IP address setting in the DIVA Core configuration (*see the following table*). In this case, *all* nodes of the BMC must be declared in the DIVA Core configuration.

You can also add a Metasource that encompasses all nodes of the cluster to enable load balancing and failover from within DIVA Core.

Attribute	Value	Example
IP Address	IP address of the BMS or BMC node.	10.80.114.26
	You can disable the SeaChange Automatic Load Balancing by placing a $ in front of the IP address of *all* BMC nodes. The syntax for this is $IP_Address.	$10.80.114.26
Source Type	**SEACHANGE_BMC**	**SEACHANGE_BMC**
DIVAACTOR_ SEACHANGECHECKDELAY	Identifies the delay before checking if a video was not deleted by SeaChange just after a restore service. The default value is 1000.	*DIVAACTOR_ SEACHANGECHECKDELAY=1000*

SeaChange uses a flat file system. You must specify the parameters as shown in the following table when archiving a clip.

DIVA_archiveObject Parameter	Value	Example
FilePathRoot	Leave this field empty	
FileNames	Enter the name of the clip in this field.	POKEMON

SeaChange BML Servers

The SeaChange BML (*Broadcast Media Library*) is a large storage system for SAF (*SeaChange Archive Format*) files and is based on the RAID^2 technology of the SeaChange BMC platform.

A SeaChange BMC (*Broadcast Media Cluster*) is a cluster of video servers providing unified storage based on SeaChange RAID^2 technology. Each server of the BMC can deliver files stored on RAID^2 to DIVA Core using the FTP protocol.

DIVA Core uses the FTP protocol to communicate with either a BMS or BMC. You can only overwrite the files when the Actor service is stopped. The file transfer format is SAF (*SeaChange Archive Format*) only.

Note: The SeaChange FTP servers do not support directories. All files must be listed under the FTP root directory.

The Automatic Load Balancing feature as described for BMC also exists for BML and operates in a similar fashion.

Attribute	Value	Example
IP Address	IP address of the BML Node.	10.80.114.26
	You can disable the SeaChange Automatic Load Balancing by placing a $ in front of the IP address of all BMC nodes. The syntax for this is $IP_Address.	$10.80.114.26
Source Type	SEACHANGE_BML	**SEACHANGE_BML**
DIVAACTOR_ SEACHANGECHECKDELAY	Identifies the delay before checking if a video was not deleted by SeaChange just after a restore service. The default value is 1000.	*DIVAACTOR_ SEACHANGECHECKDELAY=1000*
DIRECTORY_SERVER_ENABLED	Identifies whether the BML directory server is enabled or disabled.	Valid values are 1 (*enabled*) and 0 (*disabled*). The default value is 1 (*enabled*).

SeaChange BML clip storage is flat. You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the name of the clip in this field.	OFFICESPACE

SeaChange BMLe and BMLex Servers

The SeaChange BMLe is the storage subsystem of the latest SeaChange MediaClient architecture. SeaChange BMLe is superseded by the BMLex series.

Both the BMLe and BMLex servers are based on the BML architecture. However Infiniband is used for the cluster interconnect rather than the earlier IOP interfaces. Each node of the cluster is equipped with four FSI ports to provide high speed transfers to and from the BMLe and BMLex.

DIVA Core uses CIFS or FTP protocols to communicate with BMLe and BMLex.

File transfer format is the native format of the files stored on the BMLe and BMLex. Each asset consists of:

MPEG2 Files
MPEG essence, private data (*.pd*) and video index (*.vix*) files.

MXF Files
MXF file (*.mxf*), private data (*.pd*) and video index (*.vix*) if the MXF essence is MPEG2.

When the clip consists of three files (*that is, the essence file, .vix, and .pd*), the files are always archived and restored by DIVA Core in the following sequence:

.pd
This is the private data file and the first file archived or restored.

.vix
This is the index file and the second file archived or restored.

Essence File
There is no extension on this file and it is the last one archived or restored.

DIVA Core can restore SAF (*SeaChange Archive Format*) files from the archive to the BMLe or BMLex. When a SAF clip is restored to a BMLe or BMLex, the SAF file is automatically unwrapped by DIVA Core and the three files are restored to BMLe or BMLex (*that is, the essence file, .pd file, and .vix file*). This Source/Destination can also restore SAF files from an archived SAF Object to BMLe.

This feature is transparent to you because DIVA Core automatically detects SAF and unwraps it in real time. When a SAF clip is restored to the BMLe, the SAF file is unwrapped by DIVA Core and the name of each file is extracted from the SAF file header. The content is restored to BMLe in the separate files previously described.

BMLe and BMLex generated files support SAF releases SAF 0.1, SAF 1.0, and SAF. SAF may contain two consecutive private data files including a 12 byte .pd file, and a 28 byte .pd file. In this case, DIVA Core will only restore the 28 byte file while ignoring the 12 byte file.

You must declare one Source/Destination for each FSI of each node:

Attribute	Value	Example
IP Address	IP address FSI	10.80.114.26
Source Type	**SEACHANGE_BML**	**SEACHANGE_BML**
Connect Options	-ftp or -cifs -login {FTP_user_name} -user {cifs_user_name@domain} -pass {password} -nometadata	-cifs -user me@ourdomain.com -pass Pa$$word
DIVAACTOR_ SEACHANGECHECKDELAY	Identifies the delay before checking if a video was not deleted by SeaChange just after a restore service. The default value is 1000.	DIVAACTOR_ SEACHANGECHECKDELAY=1000

-ftp or **-cifs**
One of these two options must be specified. Otherwise, Streaming API protocol is assumed, which is not supported by DIVA Core for BMLe and BMLex. This option cannot be superseded by the request option.

-ftp
FTP protocol is used for data transfer to and from BMLe and BMLex.

-cifs
CIFS protocol is used for data transfer to and from the BMLe and BMLex FSI cards. The implicit CIFS path to BMLe is \\fsi_ip_address\vstrm.

-nometadata
This option prevents DIVA Core from archiving the .vix and .pd files when the clip being transferred includes essence, .vix, and .pd files. This option cannot be superseded by the request option.

You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the name of the clip in this field.	HANNITY

Leitch vR Series Servers

The Leitch vR series video server is connected to external storage that is usually shared with other video servers of the same brand. Clips are stored on Leitch storage as flat files, one file per clip, without any folder structure.

To move clips in and out of the shared storage, Leitch provides a dedicated gateway called the Archive Streamer. The Archive Streamer offers standard FTP protocol over a Gigabit Ethernet network.

Note: The Leitch vR ***Source Type*** is depreciated. It was initially created to follow the first Archive Streamer releases that did not correctly report the size of the file to be transferred.

You must create one record for each Archive Streamer DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of Leitch Archive Streamer	10.80.114.21
Source Type	**FTP_STANDARD**	**FTP_STANDARD**
Connect Options	-login {FTP_user_name} -pass {FTP_password} -port {FTP_port}	-login ftpuser -pass Pa$$word -port 6021

You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	

DIVA_archiveObject Parameter	Value	Example
FileNames	Enter the name of the clip in this field.	FRIENDS

Leitch Nexio Servers

The Leitch Nexio video server is connected to external storage that is usually shared with other video servers of the same brand. Clips are stored on Leitch storage as flat files, one file per clip, without any folder structure.

To move clips in and out of the shared storage is possible directly from the video server using the standard FTP protocol over a Gigabit Ethernet network.

Note: The Leitch Nexio ***Source Type*** is deprecated.

You must create one record for each video server DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of Leitch Nexio video server.	10.80.114.21
Source Type	**FTP_STANDARD**	**FTP_STANDARD**
Connect Options	-login {FTP_user_name} -pass {FTP_password} -port {FTP_port}	-login ftpuser -pass Pa$$word -port 6021

You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the name of the clip in this field.	ENEMIES

Grass Valley Profile Servers

Grass Valley Profile video servers are provided in one of two ways; with independent storage, where the video server includes its own fault tolerant disk storage, or as part of a MAN, where video servers are connected to a SAN where the fault tolerant disk storage resides.

Irrespective of the storage mechanism, the DIVA Core Actor always connects to a specific Profile server. The exchange format is GXF only.

Profile Storage consists of one master disk (*for example, EXT: or INT1:*), and one level of folders where one clip is seen as one file. One folder called default always exists.

The network infrastructure between GVG Profiles and DIVA Core Actors is an IP/FC network.

You must create one record for each video server DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of the video server.	10.80.114.21
Source Type	**PDR**	**PDR**
Name	Logical name for the video server.	GVG-Profile-1

The Actor configuration parameters are located in the *Actor* frame of the DIVA Core Configuration Utility. The two parameters in the following table directly influence transfer performance. Telestream recommends trying several value combinations on the target platform.

In addition to these two parameters, the MTU size setting for the HBA used for IP/FC traffic to the Profile servers may also have an influence on transfer performance.

Grass Valley does not provide any recommendation for MTU size. However, Telestream recommends setting the MTU size on the Actor HBA to the same value as the MTU size of the Profile HBA. *This is only a recommended setting and not an absolute rule*.

Attribute	Description	Recommended Values
DIVAACTOR_ PROFILEREADINGBS	The FTP block size (*in bytes*) used for transfers on Profile video servers in reading.	1500 16374 32768 (*default*)
DIVAACTOR_ PROFILEWRITINGBS	FTP block size (*in bytes*) used for transfers on profile video servers in writing.	16374 32768 (*default*)

You must specify the parameters as described in the following table when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	/explodedFile/disk:/folder	/explodedFile/INT1:/default
FileNames	Enter the name of the clip in this field.	MyClip

Grass Valley UIM Gateway

UIM is a gateway to standalone or MAN Grass Valley Profile servers. It provides TCP/IP over Gigabit Ethernet connections to external systems (*such as DIVA Core*). For legacy purposes, the connection can also be IP/FC for regular profiles.

UIM also provides real-time format conversion (*to MXF*). The UIM exchange format is GXF (*by default*), or alternately MXF.

You must create one record for each UIM DIVA Core has to move data to and from.

Attribute	Value	Example
IP Address	IP address for the UIM.	10.80.114.21
Source Type	**PDR**	**PDR**
Connect Options	-login {movie|mxfmovie} -format {?D10AES3} -extension {file_extension}	-login mxfmovie -format ?D10AES3 -extension .mxf

-login

Specifies the FTP user for logging onto the UIM to achieve transfers in the desired format. The two available logins are movie (*for GXF exchange format*), and mxfmovie (*for MXF exchange format*). The movie user is assumed if -login is not specified.

-format

The UIM supported options for some file formats. This depends on -login option. The only available option is ?D10AES3. The ?D10AES3 option is an e-VTR compliant file format used with the -login mxfmovie option. If this option is not specified, MXF files will be processed in Grass Valley OP1a format. This option is not specified by default.

This option can be superseded by the request option.

-extension

This option adds the specified extension to the original clip name in the archive. For example, if the original clip is clip1 and the -extension .mxf option is specified, then the archived file will be clip1.mxf.

You must suppress the specified extension before restoring to the destination if it already exists. For example, if the archived file is clip1.mxf and -extension .mxf option is specified, the restored file on the destination will be clip1.

This option is deprecated and replaced by the -arch_renaming and the-rest_renaming options. This option can be superseded by the request option.

UIM are gateways to the Profile server. You use this the same way for UIM and Profile servers regardless of the transfer format (*GXF or MXF*).

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	/explodedFile/disk:/folder	/explodedFile/INT1:/default
FileNames	Enter the name of the clip in this field.	MyClip

Grass Valley K2 Servers

From DIVA Core's standpoint, K2 servers are similar to Profiles and UIM combined. K2 servers offer Gigabit Ethernet connections to external systems, and the exchange format is GXF (*default*), and alternately MXF.

You must create one record for each K2 server DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of the K2 server.	10.80.114.21
Source Type	**PDR**	**PDR**
Connect Options	-k2 -login {movie|mxfmovie} -format {?D10AES3} -extension {file_extension}	-k2 -login mxfmovie -format ?D10AES3 -extension .mxf

-k2

This specifies the interface with the K2 servers. When this option is set, DIVA Core will retrieve the size of the file to be transferred before the actual archive transfer (*K2 FTP does support the SIZE command*). Correct transfer progress is reported by DIVA Core.

When this option is not set, DIVA Core will assume that servers are Profile, and will not retrieve the file size before archive transfers. Progress will then remain at 0% before suddenly jumping to 100% when the transfer is complete.

This option has no impact on transferred content, and can be superseded by the request option.

-login
This option specifies the FTP user for logging onto the K2 Server to achieve transfers in the desired format. The two available logins are movie (*for GXF exchange format*), and mxfmovie (*for MXF exchange format*). The movie user is assumed if -login is not specified.

-format
The K2 supported options for some file formats. This depends on -login option. The only available option is ?D10AES3. The ?D10AES3 option is an e-VTR compliant file format used with the -login mxfmovie option. If this option is not specified, MXF files will be processed in Grass Valley OP1a format. This option is not specified by default.

This option can be superseded by the request option.

-extension
This option adds the specified extension to the original clip name in the archive. For example, if the original clip is clip1 and the -extension .mxf option is specified, then the archived file will be clip1.mxf.

You must suppress the specified extension before restoring to the destination if it already exists. For example, if the archived file is clip1.mxf and -extension .mxf option is specified, the restored file on the destination will be clip1.

This option is deprecated and replaced by the -arch_renaming and the-rest_renaming options. This option can be superseded by the request option.

You use this the same way for K2 and Profile servers regardless of the transfer format (*GXF or MXF*).

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	/explodedFile/disk:/folder	/explodedFile/INT1:/default
FileNames	Enter the name of the clip in this field.	MyClip

Grass Valley M-Series iVDR Servers

Grass Valley iVDR is an analog and digital VTR that includes a Gigabit connection for material exchange of GXF files. The iVDR exchange protocol is similar to the exchange protocol for Profile servers.

you must create one record for each video server DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of the iVDR.	10.80.114.21
Source Type	**PDR**	**PDR**
Name	Logical name for the iVDR.	GVG-iVDR

You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	/explodedFile/disk:/folder	/explodedFile/INT1:/default
FileNames	Enter the name of the clip in this field.	MyClip

Sony MAV70 Servers

The Sony MAV70 video server has its own independent storage. MAV70 storage organization is flat and all files reside in the storage root. A Linux computer in front of each MAV70 provides a standard FTP connection for moving data to and from the video server over a Gigabit Ethernet Network.

You must create one record for each MAV70 server DIVA Core must move data to and from.

Attributes	Value	Example
IP Address	IP address of the MAV70 server.	10.80.114.21
Source Type	**FTP_STANDARD**	**FTP_STANDARD**
Connect Options	-login {user_name} -pass {password}	**-login wing** -pass mpegworld

You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the name of the clip in this field.	MyClipName

Omneon Spectrum MediaDirector Servers (*QuickTime*)

The Omneon MediaDirector is the heart of the Omneon Spectrum architecture. It is connected to MediaPorts or MultiPorts which handle isochronous ingest and playback, and to external storage that is usually shared with other Omneon MediaDirectors.

You can use either MediaStore or MediaGrid for external storage. This section describes connecting MediaDirector to MediaStore storage for MediaGrid support in DIVA Core.

Note: MediaGrid is not supported in the Linux environment.

DIVA Core interfaces with an Omneon MediaDirector to move clips in and out of the shared storage, using standard FTP protocol, over a Gigabit Ethernet Network.

When Omneon Spectrum Servers are configured to ingest material in QuickTime format, essence files are stored in a specific folder structure. The DIVA Core Actors use unique FTP site commands for smart and transparent access to essence files (*in particular, the automatic discovery of a folders structure and collision-avoidance at restore time*).

You must create one record for each MediaDirector DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	IP address of Omneon Director.	10.80.114.21

Attribute	Value	Example
Source Type	**OMNEON**	**OMNEON**
Root Path	Either leave this field empty or enter an absolute clip directory.	/default/clip.dir
Connect Options	-streaming_mode -sm -tempdir_mode	-streaming_mode -sm -tempdir_mode

-streaming_mode or -sm
This option is QuickTime specific and has no effect on the MXF content. If this option is set, DIVA Core will restore the QuickTime reference file in the following sequence:

1. Audio Tracks
2. QuickTime File
3. Video track

The restore workflow is specific when this option is set. DIVA Core uses the temporary folder to cache the QuickTime file.

-tempdir_mode
This option performs a Partial File Restore of MXF files, and is applicable only to Omneon servers. The MXF Partial File Restore request will terminate if this option is not included in the request.

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Enter the absolute clip directory in this field, or leave this field empty to use the configured ***Root Path***.	/default/clip.dir
FileNames	Enter the name of the clip in this field.	MyClip

DIVA_restoreObject Parameter	Value	Example
FilesPathRoot	Enter the absolute clip directory in this field, or you can leave this field empty to use the configured ***Root Path***.	/default/clip.dir

Omneon MediaGrid Content Storage System

MediaGrid is the Content Storage System from Omneon to which Omneon Spectrum servers can be connected.

Note: MediaGrid is not supported in the Linux environment.

The MediaGrid system consists of two major components; *ContentServers* that store and provide access to media, and *ContentDirectors* that act as overall file system controllers. ContentDirectors manage the distribution of data throughout the system.

Like any other client system, DIVA Core gets access to the media through a MediaGrid ContentDirector. DIVA Core interfaces with MediaGrid using the CIFS protocol exclusively over a Gigabit Ethernet Network.

The MediaGrid ContentDirector manages data access while the data transfer occurs directly to/from the ContentServers. The Omneon FSD (*File System Driver*), installed on MediaGrid clients hides this complexity to client systems.

Note: The Omneon FSD must be installed on each Actor exchanging assets with MediaGrid.

The latest release of Omneon FSD for Windows is available for download at http://support.omneon.com/Updates/Omneon/Current/MediaGrid/WinFSD. The password for the site (*if required*) is alloyparka.

When material is wrapped in QuickTime format, the essence files are stored using a specific folder structure. DIVA Core also uses unique FTP site commands for smart and transparent access to the essence files (*in particular, automatic discovery of folders structure and collision-avoidance at restore time*).

When the Actor is running as a Windows service, MediaGrid shares are accessed through a UNC path because drive letters mapped to network drives are not accessible by Windows services. In this case ensure the following:

- Omneon MediaGrid folders being accessed by DIVA Core are properly shared for a given Windows user.
- The DIVA Core Actor service is configured to run under this user account.
- The user has local administrative rights on the DIVA Core Actor.

You must create one record for each ContentDirector DIVA Core must move data to and from.

Attribute	Value	Example
IP Address	Leave this field empty.	
Source Type	**MEDIAGRID**	**MEDIAGRID**
Root Path	\\ContentDirector\filesystem\clip.dir	\\10.30.0.200\cldev4\clip.dir \\mycontentdir\fs5\clip.dir

DIVA_archiveObject **Parameter**	**Value**	**Example**
FilesPathRoot	Leave this field empty.	
FileNames	enter the name of the clip in this field.	MyClip

In cases where the asset is wrapped as QuickTime, DIVA Core searches for files matching the format clipname.mov or clipname.MOV. DIVA Core automatically retrieves and processes all of the potentially referenced files.

In cases where the material is wrapped as MXF, DIVA Core will search for a file matching the format clipname.mxf or clipname.MXF. There is only one file per clip.

Quantel Power Portal Gateway

The Quantel Power Portal was previously called the *ISA Gateway*. An ISA system consists of the following components:

ISA Manager

The ISA Manager contains the Clip Database. Clips are identified using a unique FID (*File Identifier*) in the ISA System.

Q or sQ Servers

One or more Q or sQ servers. These servers contain video cards and disk arrays. Each disk array is associated to a POOL ID, and a single sQ Server can have several POOL IDs. For example, sQ Server ID 1 contains POOL ID 1 and POOL ID 2, sQ Server ID 2 contains POOL ID 3, and sQ Server 3 contains POOL ID 4.

ISA Gateway (*Power Portal*)

This gateway is a FTP server that imports and exports clips.

You must create one record for each Power Portal (*ISA Gateway*)

Attribute	Value	Example
IP Address	IP address of the video server.	10.80.114.21
Source Type	**QUANTEL_ISA**	**QUANTEL_ISA**
Connect Options	-login {FTP_user_name} -pass {FTP_password}	-login ftpuser -pass Pa$$word

The Actor configuration parameters are located in the *Actor* frame of the DIVA Core Configuration Utility.

Parameter	Description	Suggested Values
DIVAACTOR_QUANTELRENAMECLIPS	Enables and disables the file renaming feature.	0 indicates the renaming feature is disabled. 1 indicates the renaming feature is enabled.

DIVAACTOR_QUANTELRENAMECLIPS applies to Restore requests only. If this parameter is set to 1, and the ***Object Name*** format is clipName,UID (*this is Omnibus naming*), then object related files are renamed using clipName as the ***Name Root***.

For example, if the object Superman,01AB45 is composed of files 8152.D10 and 8152.WAV, and is restored to a **QUANTEL_ISA** destination, the following is true:

- If *DIVAACTOR_QUANTELRENAMECLIPS* is set to 0 (*disabled*), DIVA Core transfers files called 8152.D10 and 8152.WAV to Power Portal.
- If *DIVAACTOR_QUANTELRENAMECLIPS* is set to 1 (*enabled*), DIVA Core transfers files called Superman.D10 and Superman.WAV to Power Portal.

Quantel storage is a flat structure. You must specify the parameters as follows when archiving a clip:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	FID1.ext1[,FID1.ext2,] and so on.	clip.mxf,clip1.tar

Files coming from Power Portal can be different file types including: D10+WAV (*file names similar to 8152.D10 and 8152.WAV*), MXF (*TestClip.mxf*), and TAR (*FramesDifference.tar*).

If a file is restored twice to Power Portal, the first file is not overwritten. The second restore creates a new file that is identified by a new FID. The DIVA Core Actor captures the new FID after the transfer and forwards it to the DIVA Core Manager.

You must call DIVA_GetRequestInfo to obtain the new FID using the DIVA Core API. If the request is completed, the new FID is in the request's ADDITIONAL_INFO field within ClipID tags. The ClipID tag is encapsulated in the ADDITIONAL_INFO tag.

```
<ADDITIONAL_INFO>
 <ClipID>8546</ClipID>
</ADDITIONAL_INFO>
```

Automation is also free to specify a *POOL ID* in the ***FilePathRoot*** Restore request parameter. If no *POOL ID* is specified, Power Portal will automatically assign one at restore time.

Sony Hyper Agent Servers

Hyper Agent is the name given to Newsbase's FTP server from Sony. The implementation of this FTP server is specific because the LIST command returns a proprietary formatted list of files. This list contains duration, and start and end time codes, but not the size of the file in bytes. The size of each clip is calculated by the Actor using three values; *duration*, *frame rate* and *bitrate*. The resultant size is not accurate, but it is enough for the Manager to allocate a tape for all Archive requests. The progress bar is not affected by the approximated size.

Duration, *frame rate* and *bitrate* are retrieved using the following two commands, which are set by the Actor at the beginning of each Archive request:

SITE FSIZ {Clip ID}
This SITE command returns the duration of the specified clip.

SITE GCNF
This SITE command returns the current system configuration of the server. *This system configuration must remain the same to ensure that all of the clips on the server are the same*.

The following example is a log entry of communications between Actor and the Hyper Agent FTP:

Note: In the following log example the word *configuration* is misspelled; this is a bug in the FTP server and appears in logs as shown in the example.

SITE FSIZ 1444247

200 150 (*the duration is 150 frames*)

SITE GCNF

213-System configureation

PAL (*the frame rate is 25 frames per second*)

20

30.0 (*the Bitrate is 30 Mbps*)

D10

SD_IFRAMEONLY

213 End of system configuraion

You must create one record for each ClipBox DIVA Core must moved data to and from.

Attribute	Value	Example
IP Address	IP address of the Newsbase server.	10.80.114.21
Source Type	**SONY_HYPER_AGENT**	**SONY_HYPER_AGENT**
Connect Options	-login {user_name} -pass {password}	-login sony -pass sony

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Leave this field empty.	
FileNames	Enter the Clip ID in this field.	1444247

Standard FTP and SFTP Servers

DIVA Core running in a Windows environment can interface with any standard FTP server (*Linux or Windows*), and SFTP servers (*known as SSH FTP or Secure FTP*). The Windows-based FileZilla and IIS FTP servers are not supported in Linux because these servers are incapable of handling large numbers of files.

Video servers supporting a fully RFC-959 compliant FTP server are considered standard FTP servers. The only restriction that applies is that Linux-style directory listings are required. You set this parameter in the ***Home Directory*** section of the FTP Site Properties for Microsoft IIS FTP servers.

You must create one record for each video server DIVA Core must transfer data to and from.

Attribute	Value	Example
IP Address	IP address of the FTP server.	10.80.114.21
Source Type	**FTP_STANDARD** or **SFTP**	**FTP_STANDARD**
Connect Options	-login {user_name} -pass {password} -port {port_number}	-login moon -pass mars -port 27

-login
This is the FTP or SFTP user name. The default value is anonymous.

-pass
This is the FTP or SFTP user's associated password. The default value is anonymous.

-port
This is the port number the FTP or SFTP server is listening on for connections. The default value for **FTP_STANDARD** is 21, and for **SFTP** is 22.

You can specify parameters three different ways for Archive requests as described in the following table:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Full path to files Partial path to files No path entry	/my_videos/movies /my_videos

DIVA_archiveObject Parameter	Value	Example
FileNames	Names of files	maniolia, matrix
	Partial path and names of files	movies/maniolia, movies/matrix
	Full path and names of files	/my_videos/movies/maniolia, /my_videos/movies/matrix

DISK_FTP_PASSIVE_MODE

By default, data connections are created in active mode. In active mode, the DivaFtp client connects from a random, unprivileged port that is higher than port 1023. Then, it starts listening on the port and sends a PORT command to the FTP server. Valid values for this parameter are 0 (*disabled*) and 1 (*enabled*).

When you set DISK_FTP_PASSIVE_MODE to 1 (*enabled*), data connections are created in passive mode. In passive mode, DivaFTP sends a PASV command and the server (*not the client*) creates the socket.

DISK_FTP_BLOCK_SIZE

The DISK_FTP_BLOCK_SIZE parameter defines how much data Actor tries to send and receive with a single system call during FTP transfers. For example, if the internal buffer size of Actor is set to 2 MB and DISK_FTP_BLOCK_SIZE is set to 32768 bytes, 64 system calls are required to write a single buffer to a data socket. The default value is 32768 bytes.

DISK_FTP_SOCKET_WINDOW_SIZE

The DISK_FTP_SOCKET_WINDOW_SIZE parameter adjusts the normal buffer sizes allocated for output and input buffers. DISK_FTP_SOCKET_WINDOW_SIZE is internally used to set SO_SNDBUF and SO_RCVBUF for FTP managed disk types. The default value is 65536 bytes.

Local Sources

A local source represents a disk partition for a specific Actor (*internal disks, NAS or SAN disks*), and is tied to a specific Actor (*versus a disk source not tied to any particular Actor*).

You must create one record for each local source DIVA Core must transfer data to and from.

Attribute	Value	Example
Name	Enter the same name as the Actor this source is bound to.	actor1
IP Address	Enter the same IP address as the Actor this source is bound to.	10.80.114.21
Source Type	**LOCAL**	**LOCAL**

You can specify parameters three different ways for Archive requests as described in the following table:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Full path to files	/my_videos/movies
	Partial path to files	/my_videos
	No path entry	

DIVA_archiveObject Parameter	Value	Example
FileNames	Names of files	maniolia, matrix
	Partial path and names of files	movies/maniolia, movies/matrix
	Full path and names of files	/my_videos/movies/maniolia, /my_videos/movies/matrix

If NT drive letters (*for example E:*) are used, Telestream highly recommends leaving them in the ***FilesPathRoot*** section (*that is, use scheme 1 or 2 in the previous table*). Including them in the ***FileNames*** section prevents the request from replacing them with another path at restore time. Therefore, you cannot restore these objects on a different platform (*for example a Linux-based FTP server*) where drive letters are not considered valid paths.

Disk and CIFS Sources

A **DISK** or **CIFS** source represents a disk partition assumed to be visible from all Production System Actors. The only difference between **DISK** and **CIFS** is the way blocks of data are read and written:

- **DISK** instructs Actors to use (*Windows*) Direct I/O.
- **CIFS** instructs Actors to use (*Windows*) Buffered I/O.
- Both **DISK** and **CIFS** sources support UNC paths.

You must create one record for each **DISK** or **CIFS** source DIVA Core must move data from the source to the destination. You can also create a generic source to represent any type of **DISK** or **CIFS** source.

Attribute	Value	Example
Name	Enter a nickname for the source.	generic-disk
IP Address	Enter the IP address for the source.	10.80.114.21
Source Type	**DISK** or **CIFS**	**DISK**

You can specify parameters three different ways for Archive requests as described in the following table:

DIVA_archiveObject Parameter	Value	Example
FilesPathRoot	Full path to files	/my_videos/movies
	Partial path to files	/my_videos
	No path entry	
FileNames	Names of files	maniolia, matrix
	Partial path and names of files	movies/maniolia, movies/matrix
	Full path and names of files	/my_videos/movies/maniolia, /my_videos/movies/matrix

If NT drive letters (*for example E:*) are used, Telestream highly recommends leaving them in the ***FilesPathRoot*** section (*that is, use scheme 1 or 2 in the previous table*). Including them in the ***FileNames*** section prevents the request from replacing them with another path at restore time. Therefore, you cannot restore these objects on a different platform (*for example a*

Linux-based FTP server) where drive letters are not considered valid paths. *Telestream only supports Linux-based FTP servers when operating in a Linux environment*. The Windows-based FileZilla and IIS FTP servers are not supported in Linux because these servers are incapable of handling large numbers of files.

Metasources

A Metasource is a collection of several (*single*) Sources of the same type. It is assumed that all Sources of the Metasource are sharing the same online storage. Each Source of the Metasource should be of the same regular type (*that is, any type except **METASOURCE***), aka Metasource Base Type. A Metasource provides load-balancing and failover mechanisms across all single sources of the Metasource.

You must create one record for each Metasource DIVA Core must transfer data to and from.

Attribute	Value	Example	Comments
Name	Name for video server's shared storage.	gvg-man-production	
IP Address	server1 [,server2,server3] and so on	10.158.1.10,10.2.5.60,97.64.52.3	server1, server2,server3 must also be defined in the configuration as regular sources of the same type (*all types except **METASOURCE**, **LOCAL**, and **DISK** are permitted, for example, **OMNEON**, **PDR**, and so on*).
Source Type	**METASOURCE**	**METASOURCE**	
Production System	Must be the same for Metasource and all single sources.		Manager will not start if there is no match.
Site	Either one or the other of the sites from Metasource single sources.		Site specified for Metasource is considered by Manager for resource selection.
Root Path	You can specify a ***Root Path*** at the Metasource level.		If the Metasource ***Root Path*** is null, the ***Root Path*** from the selected single source is considered.

Attribute	Value	Example	Comments
Max Accesses ***Max Write Acc.*** ***Max Read Acc.*** ***Max Throughput***	Actual value for Metasource does not matter.		The value from the selected single source is considered. You cannot leave these fields empty. Telestream suggests setting traffic regulation parameters to the sum of all single source's respective parameters. Telestream also recommends that you do not make any changes to this parameter while there are active requests being processed because it can lead to request termination.
Connect Options	-failover_time={time_in_milliseconds} -retry_actor={number_of_retries}	-failover_time=300 -retry_actor=3	

-failover_time={time_in_milliseconds}
When you select a single source to process a request and it fails, the single source is temporarily not considered part of the Metasource for 600 milliseconds. You can change this default value using this option. This option cannot be superseded by the request option.

-retry_actor={number_of_retries}
You use this option to specify the number of Metasource single sources to be tried for each Actor that can be part of the request processing. The default, when this option is not specified, is 2.

For example, if the Metasource is defined as sd1, sd2, sd3, the set of possible Actors is a1, a2, and -retry_actor is set to 2, DIVA Core will try a maximum of four combinations; most likely a0-sd1, a0-sd2, a1-sd3, a1-sd1.

This option cannot be superseded by the request option.

You can also specify other single source connection options for the Metasource. The following table indicates the effects for each possible option when specified at the Metasource level:

Connect Option	Considered?	Comments
qos=	No	The qos value should be the same for all Metasource single sources, otherwise Manager will not start.
-login	No	Value from selected single source is considered. Applicable to FTP Source/Destinations.
-user	No	Value from selected single source is considered. Applicable to CIFS Source/Destinations.
-pass	No	Value from selected single source is considered.

Connect Option	Considered?	Comments
-port	No	Value from selected single source is considered.
-allow_delete_on_source	No	Implicitly assumed to be true if all single sources (*implicitly or explicitly*) allow deleting on Source. Otherwise, assumed to be false.
-arch_renaming	No	Value from selected single source is considered.
-rest_renaming	No	Value from selected single source is considered.
-file_order	No	Value from selected single source is considered.
-tr_archive_format	Yes	Values specified for single sources do not matter.
-tr_restore_format	Yes	Values specified for single sources do not matter.
-tr_names	Yes	Values specified for single sources do not matter.
-rest_metadata	No	Value from selected single source is considered.
-num_actors_retry=	Yes	Values specified for single sources do not matter.
-ftp	No	Value from selected single source is considered.
-cifs	No	Value from selected single source is considered.
-nometadata	No	Value from selected single source is considered.
-format	No	Value from selected single source is considered.
-extension	No	Value from selected single source is considered.
-k2	No	Value from selected single source is considered.

You use a Metasource the same as any source of Metasource Base Type.

There are instances where it is required to delete content, and possibly the parent folder, on a server. To satisfy all possible scenarios there are two options available:

- -r deletes recursively
- -delete_fpr includes deletion of the parent folder

The two options, -r and -delete_fpr, work either separately or together, as described in the following workflow examples:

FilesPathRoot	Files	Options	Result
C:\source\root	*	-r	DIVA Core deletes the content of C:\source\root recursively.
C:\source\root	*	-r -delete_fpr	DIVA Core deletes the content of C:\source\root recursively, and then deletes root.
C:\source\root	*		DIVA Core deletes the content of C:\source\root (*first level only*).
C:\source\root	*	-delete_fpr	DIVA Core deletes the content of C:\source\root (*first level only*), and then eventually deletes root if it is empty.

FilesPathRoot	Files	Options	Result
C:\source\root	obj*	-r	DIVA Core deletes the content of C:\source\root\obj recursively, and then deletes C:\source\root\obj.
C:\source\root	obj*	-r -delete_fpr	DIVA Core deletes the content of C:\source\root\obj recursively, then deletes C:\source\root\obj, and finally deletes C:\source\root if it is empty.
C:\source\root	obj1* obj2*	-r	DIVA Core deletes the content of C:\source\root\obj1 recursively, then deletes C:\source\root\obj1, and then deletes the content of C:\source\root\obj2 recursively, and finally deletes C:\source\root\obj2.
C:\source\root	obj1* obj2*	-r -delete_fpr	DIVA Core deletes the content of C:\source\root\obj1 recursively, then deletes C:\source\root\obj1, then deletes the content of C:\source\root\obj2 recursively, then deletes C:\source\root\obj2, and finally deletes C:\source\root if it is empty.
C:\source\root	obj1* obj2\subfolder\clip.mov	-r -delete_fpr	DIVA Core deletes the content of C:\source\root\obj1 recursively, then deletes C:\source\root\obj1, then deletes the content of C:\source\root\obj2\subfolder\clip.mov, then deletes C:\source\root\obj2\subfolder if it is empty, and then deletes C:\source\root\obj2 if it is empty, and finally deletes C:\source\root if it is empty.

Expedat Servers

DIVA Core can interface with DataExpedition Expedat servers (*up to release 1.17*), also known as *servedat*. This solution uses MTP, which is a high performance file transfer protocol. This WAN acceleration software can use 100 percent of the bandwidth of any long distance or high latency networks.

See the DataExpedition Expedat Server Installation Manual for detailed information on installation and configuration.

This Source/Destination works similar to the **FTP_STANDARD** Source/Destination in terms of the ***FilesPathRoot*** and list of files.

When Expedat Server is configured with folders having the ***RestrictHome*** setting enabled, the ***RootPath*** for the Data Expedition Source/Destination entry must not reference an absolute path. The ***RootPath*** may be interpreted as a path that is not accessible from the Expedat home directory. For example, the ***Root Path*** / is interpreted as C:\. However, if the Expedat home directory is D:\folder, Expedat will attempt to access the path D:\folder on C:\, which is not valid. If the home directory is C:\folder, using the ***Root Path*** / is acceptable.

Instead of using an absolute path, relative path addressing must be used to resolve this situation. You accomplish relative path addressing by leaving the ***Root Path*** field empty in the Configuration Utility, or specifying the relative path in the ***FilesPathRoot*** field of the GUI Manager or API request for the archive or restore operation.

To set up a default home location so that an API request can always use "" files path, the Expedat cv_password.txt file must contain a log in account assigned to a folder with the ***RestrictHome*** option set.

For example:

```
diva:diva:::S:\DFM:RestrictHome
diva1:diva:::S:\DFM1:RestrictHome
diva2:diva:::S:\some_other_folder:RestrictHome
```

The separate user log in and password accounts allow for the creation of more than one EXPEDAT Source/Destination entry with different home locations. The API request can then reference the EXPEDAT Source/Destination pointing to the desired home location.

When you use DFM to monitor an FTP folder in a Linux environment, it must be configured similar to the following 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

You must create one record for each Expedat server DIVA Core must transfer data to and from.

Attribute	Value	Example
IP Address	IP address of the Expedat server.	10.80.114.21
Source Type	**EXPEDAT**	**EXPEDAT**
Connect Options	-login {user_name} -pass {password} -port {port_number} -license {license_code} -encryption -seq_buffer_size {size_in_megabytes} -exp_maxrate {size_in_kilobytes} -exp_mindatagram {size_in_bytes}	-login moon -pass mars -port 8080 -license 46FE464A98 -encryption -seq_buffer_size 16 -exp_maxrate 1024 -exp_mindatagram 2848

-login and -pass
These options are mandatory if the server is configured with authentication parameters.

-port
This option should always be present because there is no default value.

-license
This is a mandatory parameter to use the DIVA Core Expedat Client. Without the license code the EXPEDAT Source/Destination is unusable. You can only configure one Expedat license key per production system.

-encryption
This option works with the Expedat Source/Destination, is optional, and enables Expedat content encryption during transfers.

-seq_buffer_size {size_in_megabytes}
This option defines the size of the DataExpedition internal buffer for each transfer. The default value is 16 MB and should be sufficient for most transfers. A large buffer allows DataExpedition to continue moving data during times when the sender or receiver may not be able to process it. However, a small buffer consumes less memory.

-exp_maxrate {size_in_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.

-exp_mindatagram {size_in_bytes}
This transfer protocol is over UDP. This option defines a minimum size for each network datagram payload that DataExpedition sends. The purpose is to prevent DataExpedition from sending too small of a packet over the network. You may want to set this value between 2848 and 8544 when using a very fast network path (*Gigabit or higher*) 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.

D

Dynamic Configuration Changes

This appendix lists the currently supported changes to your configuration that become effective while the Manager is running, and those that require a software component or the DIVA Core Manager to be restarted. The following information is included:

- Configuration Parameter Defaults and Values

Updates in the Manager Configuration

If you change a parameter in the DIVA Core Manager configuration file the following list identifies what is currently required for your change to take effect.

You must use the manager restart command for the following parameter changes to take effect:

- SERVICE_NAME *(also effective after reinstall*)
- DIVAMANAGER_NAME
- DIVAMANAGER_PORT
- DIVAMANAGER_TNSNAME
- DIVAMANAGER_DBHOST
- DIVAMANAGER_DBPORT
- DIVAMANAGER_DBSID
- DIVAMANAGER_DBUSER
- DIVAMANAGER_MAX_CONNECTIONS
- DIVAMANAGER_TYPICAL_OBJECT_SIZE
- DIVAMANAGER_CAPACITY_LOW_WATER_MARK
- DIVAMANAGER_STOP_IMMEDIATELY_FOR_REPACK
- DIVAMANAGER_TIME_TO_WAIT_FOR_GRACEFUL_SHUTDOWN
- DIVAMANAGER_DISMOUNT_AFTER
- DIVAMANAGER_UPDATE_PRIORITIES_PERIOD
- DIVAMANAGER_PING_INTERVAL
- DIVAMANAGER_ETC_FEATURE
- DIVAMANAGER_ETC_CONFIDENCE_LEVEL

You must use the manager reload command for the following parameter changes to take effect:

- DIVAMANAGER_TO_LOWER
- DIVAMANAGER_MAX_SIMULTANEOUS_REQUESTS
- DIVAMANAGER_MAX_INACTIVE_REQUESTS
- DIVAMANAGER_MAX_SPAN_SEGMENTS
- DIVAMANAGER_MAX_OBJECTS_FOR_REPACK
- DIVAMANAGER_MAX_DELAY_BETWEEN_SCHEDULER
- DIVAMANAGER_SCHEDULER_AFTER_INACTIVITY
- DIVAMANAGER_EXPORT_ROOT_DIR
- DIVAMANAGER_MAX_RESTORE_SERVERS
- DIVAMANAGER_MAX_EXPORT_TAPES
- DIVAMANAGER_MAX_EXPORT_ELEMENTS
- DIVAMANAGER_MAX_FILES_IN_ARCHIVE
- DIVAMANAGER_MAX_FILES_IN_PARTIAL_RESTORE
- USE_IMPROVED_BEST_WORST_FIT_ALGORITHM
- DIVAMANAGER_SITE_SUPPORT_ENABLED
- DIVAMANAGER_CACHE_QOS_USE_DISK

- DIVAMANAGER_PRIORITY_TIER
- DIVAMANAGER_OVERWRITE_POLICY
- DIVAMANAGER_OVERWRITE_OVERRIDE
- ATTEMPT_ACCESS_TO_OFFLINE_DISK
- CHANGE_DISK_STATE_ON_ERROR
- MANAGER_ACTOR_DISK_RETRY_NUMBER
- DISK_STATUS_POLLING_RATE
- DISK_BUFFER_SPACE
- DISK_CONNECTION_STATE_RESET_DELAY
- DIVAMANAGER_MAX_EXCLUDED_INSTANCES
- DIVAMANAGER_REQUEST_SCHEDULING_QUEUE_SIZE
- DIVAMANAGER_API_TASK_QUEUE_SIZE
- DIVAMANAGER_MAX_CONCURRENT_REQUESTS
- DIVAMANAGER_MIN_DB_CONNECTION_LIMIT
- DIVAMANAGER_MAX_DB_CONNECTION_LIMIT
- DIVAMANAGER_INITIAL_DB_CONNECTION_LIMIT
- DIVAMANAGER_INACTIVITY_TIMEOUT
- DIVAMANAGER_SIZE_OF_STATEMENT_CACHE
- DIVAMANAGER_DEFAULT_ROW_PREFETCH
- DIVAMANAGER_FAILOVER_ENABLED
- DIVAMANAGER_NUM_RS_SOLUTIONS_TO_EVALUATE
- DIVAMANAGER_DBSERVICENAME
- ABORT_ARCHIVES_ON_EMPTY_FILES (*reloadable in service mode*)
- TAPE_FULL_ON_SPAN_REJECTED (*reloadable in service mode*)

Updates in the Configuration Utility System Tab

The following sections describe updates made in the various frames on the **System** tab.

Product Systems Frame

If one of the following parameters or actions in the *Production Systems* frame of the **Systems** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Production System Name**

Sites Frame

If one of the following parameters or actions in the *Sites* frame of the **Systems** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Site Name**
- **Is Main Site**

- **Comments**

Sources and Destinations Frame

If one of the following parameters or actions in the *Sources and Destinations* frame of the **Systems** tab is changed, you must **Notify Manager** for the changes to take effect.

Some changes only take effect after notifying the Manager, and currently executing requests are complete.

- **Add**
- **Delete** (*Notify Manager and after requests complete*)
- **Source Name** (*Notify Manager and after requests complete*)
- **IP Address** (*Notify Manager and after requests complete*)
- **Source Type** (*Notify Manager and after requests complete*)
- **Production System** (*Notify Manager and after requests complete*)
- **Site** (*Notify Manager and after requests complete*)
- **Connect Options** (*Notify Manager and after requests complete*)
- **Root Path** (*Notify Manager and after requests complete*)
- **Max Throughput** (*Notify Manager and after requests complete*)
- **Max Accesses** (*Notify Manager and after requests complete*). You must not make changes to this parameter while there are active request because it could lead to the request being terminated.
- **Max Read Accesses** (*Notify Manager and after requests complete*). You must not make changes to this parameter while there are active request because it could lead to the request being terminated.
- **Max Write Accesses** (*Notify Manager and after requests complete*). You must not make changes to this parameter while there are active request because it could lead to the request being terminated.

Actors Frame

If one of the following parameters or actions in the *Actors* frame of the **Systems** tab is changed, you must **Notify Manager** for the changes to take effect.

Before the change becomes effective on several of the parameters or actions, you must disconnect the Actor. Also, some changes only take effect after notifying the Manager, and currently executing requests are complete.

- **Add**
- **Delete** (*must disconnect Actor first and Notify Manager*)
- **Actor Name** (*must disconnect Actor first and Notify Manager*)
- **IP Address** (*must disconnect Actor first and Notify Manager*)
- **Port** (*must disconnect Actor first and Notify Manager*)
- **Production System** (*Notify Manager and after requests complete*)
- **Site** (*Notify Manager and after requests complete*)
- **Max Drive Operations** (*Notify Manager and after requests complete*)
- **Max Server Operations** (*Notify Manager and after requests complete*)
- **Max Disk Operations** (*Notify Manager and after requests complete*)
- **Direct Restore** (*Notify Manager and after requests complete*)
- **Cache Restore** (*Notify Manager and after requests complete*)
- **Copy to Group** (*Notify Manager and after requests complete*)
- **Associative Copy** (*Notify Manager and after requests complete*)

- **Repack** (*Notify Manager and after requests complete*)
- **Delete** (*Notify Manager and after requests complete*)
- **Direct Archive** (*Notify Manager and after requests complete*)
- **Cache Archive** (*Notify Manager and after requests complete*)

Transcoders Frame

If one of the following parameters or actions in the *Transcoders* frame of the **Systems** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Transcoder Name**
- **Transcoder Type**
- **Transcoder Port**
- **Working Directory**
- **Executable Path**
- **Performance**

Updates in the Configuration Utility Robots Tab

The following sections describe updates made in the various frames on the **Robots** tab.

Robot Managers Frame

If one of the following parameters or actions in the *Robot Managers* frame of the **Robots** tab is changed, you must **Notify Manager** for the changes to take effect.

Before the change becomes effective on several of the parameters or actions, you must disconnect the Robot Manager.

- **Add**
- **Delete**
- **Robot Manager Name**
- **Address** (*must disconnect Robot Manager first and Notify Manager*)
- **Port** (*must disconnect Robot Manager first and Notify Manager*)
- **Site**

Media Compatibility Frame

If you **Delete** an entry in the *Media Compatibility* frame of the **Robots** tab, you must **Notify Manager** for the changes to take effect.

Robot Managers-ACS Frame

If you **Delete** an entry in the *Robot Managers-ACS* frame of the **Robots** tab, you must **Notify Manager** for the changes to take effect.

Updates in the Configuration Utility Disks Tab

The following sections describe updates made in the various frames on the **Disks** tab.

Arrays Frame

If one of the following parameters or actions in the *Arrays* frame of the **Disks** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Array Name**
- **Description**

Disks Frame

If one of the following parameters or actions in the *Disks* frame of the **Disks** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Disk Name**
- **Array**
- **Site**
- **Status**
- **Min Free Space**

Actor-Disk Connections Frame

If one of the following parameters or actions in the *Actor-Disk Connections* frame of the **Disks** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Disk**
- **Actor**
- **Interface**
- **Mount Point**
- **Max Throughput**
- **Access**
- **Used For**

Object Storage Accounts Frame

If one of the following parameters or actions in the *Object Storage Accounts* frame of the **Disks** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Account Name**
- **Login**
- **Password**
- **URL**
- **Proxy**

- **Service Name**
- **Identity Domain**
- **Threads Per Transfer**
- **Type**
- **Vendor**

Updates in the Configuration Utility Drives Tab

The following sections describe updates made in the various frames on the **Drives** tab.

Drives Frame

If one of the following parameters or actions in the *Drives* frame of the **Drives** tab is changed, you must perform the noted action for the changes to take effect.

- **Delete** (*Notify Manager*)
- **Serial Number** (*Notify Manager*)
- **Status** (*Notify Manager*)
- **Enabled Operations** (*Notify Manager*)
- **Used** (*manager restart*)
- **Installation Date** (*no action required, effective immediately*)
- **Last Upgrade Date** (*no action required, effective immediately*)
- **Last Cleaning Date** (*no action required, effective immediately*)

Libraries Frame

If one of the following parameters or actions in the *Libraries* frame of the **Drives** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Delete**
- **Name**
- **Serial Number**
- **Status**

Drive Properties Frame

If one of the following parameters or actions in the *Drive Properties* frame of the **Drives** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add** (*through syncDB*)
- **Delete**

Actor-Drives Frame

If one of the following parameters or actions in the *Actor-Drives* frame of the **Drives** tab is changed, you must **Notify Manager** for the changes to take effect.

- **Add**
- **Delete**
- **Actor**
- **Drive**

Updates in the Configuration Utility Tapes Tab

If one of the following parameters or actions in the **Tapes** tab is changed, you must perform the noted action for the changes to take effect.

- **Tape Properties** (*Notify Manager*)
- **Empty Ejected Tapes** (*no action required, effective immediately*)
- **Inserted Protected Tapes** (*no action required, effective immediately*)
- **Tape States** (*no action required, effective immediately*)

Updates in the Configuration Utility Sets, Groups & Media Mapping Tab

Changes made in this tab are effective as soon as they are applied. No manual update is necessary.

Updates in the Configuration Utility DIVAprotect Tab

If one of the following parameters or actions in the **DIVAprotect** tab is changed, you must perform the noted action for the changes to take effect.

- **Configuration** (*Notify Manager*)
- **Event Definitions** (*currently cannot be altered*)
- **Metric Definitions** (*no action required, effective immediately*)

Updates in the Configuration Utility Storage Plans Tab

Changes made in this tab are effective immediately. *It is highly recommended that the Storage Plan Manager Service be stopped before altering any setting in this tab*.

Updates in the Configuration Utility Slots Tab

Changes made in this tab are effective immediately. *It is highly recommended that the Storage Plan Manager Service be stopped before altering any setting in this tab*.

Event Fields

The following three tables identify event fields and the types of events associated with them. *There are three tables only due to the amount of entries*. Locate the desired field on the top row of the table, and then follow down the column to identify which events are valid for the selected field.

	Event Type	Tape Type	Tape Barcode	Drive Type	Drive Name	Disk Name	Drive Serial Number	Library Serial Number	SD Name	Actor Name
TAPE_INSERT	Yes	Yes	Yes					Yes		
TAPE_INSERT_ERR	Yes							Yes		
TAPE_MOUNT	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_MOUNT_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_POSITION	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_POSITION_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes

	Event Type	Tape Type	Tape Barcode	Drive Type	Drive Name	Disk Name	Drive Serial Number	Library Serial Number	SD Name	Actor Name
TAPE_READ	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_READ_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_WRITE	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_WRITE_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
DISK_READ[1]	Yes					Yes				Yes
DISK_READ_ERR[1]	Yes					Yes				Yes
DISK_WRITE[1]	Yes					Yes				Yes
DISK_WRITE_ERR[1]	Yes					Yes				Yes
SD_READ	Yes								Yes	Yes
SD_READ_ERR	Yes								Yes	Yes
SD_WRITE	Yes								Yes	Yes
SD_WRITE_ERR	Yes								Yes	Yes
TAPE_UNLOAD	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_UNLOAD_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_DISMOUNT	Yes	Yes	Yes	Yes	Yes		Yes	Yes		
TAPE_DISMOUNT_ERR	Yes	Yes	Yes	Yes	Yes		Yes	Yes		
TAPE_EJECT	Yes	Yes	Yes					Yes		
TAPE_EJECT_ERR	Yes	Yes	Yes					Yes		
END_OF_TAPE	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
TAPE_REPACK	Yes							Yes		
ARCHIVE_REQUEST	Yes								Yes	
COPY_REQUEST	Yes									
COPY_AS_REQUEST (*to new*)	Yes									
CREATE_INSTANCE	Yes									
RESTORE and PARTIAL_RESTORE	Yes								Yes	
DELETE_OBJECT	Yes									
DELETE_INSTANCE	Yes									
TRANSCODE_END	Yes									Yes
TRANSCODE_ERR	Yes									Yes
STOPPED_ON_CANCEL	Yes									
CHECKSUM_ERROR_TAPE	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes
CHECKSUM_ERROR_DISK	Yes					Yes				Yes
CHECKSUM_ERROR_SD	Yes								Yes	Yes
TAPE_IMPORT	Yes		Yes							
TAPE_EXPORT	Yes		Yes							

[1] The transcoder work directory is not a DIVA Core disk. No **DISK READ** or **DISK WRITE** events are created when accessing this directory.

The presence of *Optional* in the following table indicates that it is optional. New Instance IDs are only generated after the final write to the destination media. Instance ID is not available in the following cases:

- Temporary instances created in cache disk by an Archive request
- SD READ or SD WRITE during the transcode phase of an archive when transferring to or from the transcoder work directory
- Cache DISK READ or DISK WRITE when performing a tape to tape Copy request
- Tape positioning before a tape write (*Archive request*)
- End Of Tape (*EOT exception*) encountered during an Archive request

	Object Name[1]	Object Category[1]	Object Instance[1]	Media (*group or array*)	Request ID	Event End Time	Event Duration	Transfer Size	Transfer Rate
TAPE_INSERT						Yes	Yes		
TAPE_INSERT_ERR				Yes		Yes			
TAPE_MOUNT				Yes		Yes	Yes		
TAPE_MOUNT_ERR				Yes		Yes			
TAPE_POSITION	Yes	Yes	Optional	Yes	Yes	Yes	Yes		
TAPE_POSITION_ERR	Yes	Yes	Optional	Yes	Yes	Yes			
TAPE_READ	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TAPE_READ_ERR	Yes	Yes	Yes	Yes	Yes	Yes		Yes	
TAPE_WRITE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TAPE_WRITE_ERR	Yes	Yes		Yes	Yes	Yes		Yes	
DISK_READ[2]	Yes	Yes	Optional	Yes	Yes	Yes	Yes	Yes	Yes
DISK_READ_ERR[2]	Yes	Yes	Optional	Yes	Yes	Yes		Yes	
DISK_WRITE[2]	Yes	Yes	Optional	Yes	Yes	Yes	Yes	Yes	Yes
DISK_WRITE_ERR[2]	Yes	Yes		Yes	Yes	Yes		Yes	
SD_READ	Yes	Yes	Optional		Yes	Yes	Yes	Yes	Yes
SD_READ_ERR	Yes	Yes	Optional		Yes	Yes		Yes	
SD_WRITE	Yes	Yes	Optional		Yes	Yes	Yes	Yes	Yes
SD_WRITE_ERR	Yes	Yes			Yes	Yes		Yes	
TAPE_UNLOAD				Yes		Yes	Yes		
TAPE_UNLOAD_ERR				Yes		Yes			
TAPE_DISMOUNT				Yes		Yes	Yes		
TAPE_DISMOUNT_ERR				Yes		Yes			
TAPE_EJECT						Yes	Yes		
TAPE_EJECT_ERR						Yes			
END_OF_TAPE	Yes	Yes	Optional	Yes	Yes	Yes			
TAPE_REPACK					Yes	Yes			
ARCHIVE_REQUEST	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
COPY_REQUEST	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
COPY_AS_REQUEST (*to new*)	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
CREATE_INSTANCE	Yes		Yes	Yes	Yes	Yes		Yes	
RESTORE and PARTIAL_RESTORE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
DELETE_OBJECT	Yes	Yes			Yes	Yes			
DELETE_INSTANCE	Yes	Yes	Yes	Yes	Yes	Yes		Yes	

	Object Name[1]	Object Category[1]	Object Instance[1]	Media (*group or array*)	Request ID	Event End Time	Event Duration	Transfer Size	Transfer Rate
TRANSCODE_END	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
TRANSCODE_ERR	Yes	Yes	Yes		Yes	Yes			
STOPPED_ON_CANCEL	Yes	Yes			Yes	Yes			
CHECKSUM_ERROR_TAPE	Yes	Yes	Optional	Yes	Yes	Yes			
CHECKSUM_ERROR_DISK	Yes	Yes	Optional	Yes	Yes	Yes			
CHECKSUM_ERROR_SD	Yes	Yes	Optional		Yes	Yes			
TAPE_IMPORT				Yes		Yes			
TAPE_EXPORT				Yes	Yes	Yes			

[1] Object information is not provided for Repack requests.

[2] The transcoder work directory is not a DIVA Core disk. No **DISK READ** or **DISK WRITE** events are created when accessing this directory.

	Transfer Error Rate	Error Code	Error Message	Transcoder or Analyzer Name	Number of Archive Operations	Data Size
TAPE_INSERT						
TAPE_INSERT_ERR		Yes	Yes			
TAPE_MOUNT						
TAPE_MOUNT_ERR		Yes	Yes			
TAPE_POSITION						
TAPE_POSITION_ERR		Yes	Yes			
TAPE_READ	Yes					
TAPE_READ_ERR		Yes	Yes			
TAPE_WRITE	Yes					
TAPE_WRITE_ERR		Yes	Yes			
DISK_READ[1]						
DISK_READ_ERR[1]		Yes	Yes			
DISK_WRITE[1]						
DISK_WRITE_ERR[1]		Yes	Yes			
SD_READ						
SD_READ_ERR		Yes	Yes			
SD_WRITE						
SD_WRITE_ERR		Yes	Yes			
TAPE_UNLOAD						
TAPE_UNLOAD_ERR		Yes	Yes			
TAPE_DISMOUNT						
TAPE_DISMOUNT_ERR		Yes	Yes			
TAPE_EJECT						
TAPE_EJECT_ERR		Yes	Yes			
END_OF_TAPE						
TAPE_REPACK						
ARCHIVE_REQUEST					Yes	
COPY_REQUEST					Yes	

	Transfer Error Rate	Error Code	Error Message	Transcoder or Analyzer Name	Number of Archive Operations	Data Size
COPY_AS_REQUEST (*to new*)					Yes	
CREATE_INSTANCE						
RESTORE and PARTIAL_RESTORE					Yes	
DELETE_OBJECT						
DELETE_INSTANCE						
TRANSCODE_END				Yes		
TRANSCODE_ERR		Yes	Yes	Yes		
STOPPED_ON_CANCEL						
CHECKSUM_ERROR_TAPE						
CHECKSUM_ERROR_DISK						
CHECKSUM_ERROR_SD						
TAPE_IMPORT						Yes
TAPE_EXPORT						Yes

[1] The transcoder work directory is not a DIVA Core disk. No **DISK READ** or **DISK WRITE** events are created when accessing this directory.

Metrics Definitions

The following table identifies DIVA Core metrics definitions. By default, all definitions are enabled.

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
ACTOR_READ_WRITE	Actor: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Actor Name	Lifetime
ACTOR_READ_WRITE_ABORTED_NUMBER	Actor: number of terminated READ and terminated WRITE operations with drives	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Actor Name	Lifetime
ACTOR_READ_WRITE_ABORTED_NUMBER_DAY	Actor: number of terminated READ and terminated WRITE operations with drives	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Actor Name	Day
ACTOR_READ_WRITE_ABORTED_NUMBER_SD	Actor: number of terminated READ and terminated WRITE operations with SD	SD_READ_ERR SD_WRITE_ERR	Count	Null	Event ID	Actor Name	Lifetime

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
ACTOR_READ_WRITE_ABORTED_NUMBER_SD_DAY	Actor: number of terminated READ and terminated WRITE operations with SD	SD_READ_ERR SD_WRITE_ERR	Count	Null	Event ID	Actor Name	Day
ACTOR_READ_WRITE_DAY	Actor: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Actor Name	Day
ACTOR_READ_WRITE_MONTH	Actor: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Actor Name	Month
ACTOR_READ_WRITE_NUMBER	Actor: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Actor Name	Lifetime
ACTOR_READ_WRITE_NUMBER_DAY	Actor: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Actor Name	Day
ACTOR_READ_WRITE_NUMBER_MONTH	Actor: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Actor Name	Month

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
ACTOR_TIME_ALL_OPERATION	Actor: time in all operations	DISK_READ DISK_READ_ERR DISK_WRITE DISK_WRITE_ERR SD_READ SD_READ_ERR SD_WRITE SD_WRITE_ERR TAPE_END_OF_TAPE TAPE_MOUNT_ERR TAPE_POSITION TAPE_POSITION_ERR TAPE_READ TAPE_READ_ERR TAPE_UNLOAD TAPE_UNLOAD_ERR TAPE_WRITE TAPE_WRITE_ERR	Sum	Null	Duration	Actor Name	Lifetime
ACTOR_TIME_ALL_OPERATION_DAY	Actor: time in all operations	DISK_READ DISK_READ_ERR DISK_WRITE DISK_WRITE_ERR SD_READ SD_READ_ERR SD_WRITE SD_WRITE_ERR TAPE_END_OF_TAPE TAPE_MOUNT_ERR TAPE_POSITION TAPE_POSITION_ERR TAPE_READ TAPE_READ_ERR TAPE_UNLOAD TAPE_UNLOAD_ERR TAPE_WRITE TAPE_WRITE_ERR	Sum	Null	Duration	Actor Name	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
ACTOR_TIME_ALL_OPERATION_MONTH	Actor: time in all operations	DISK_READ DISK_READ_ERR DISK_WRITE DISK_WRITE_ERR SD_READ SD_READ_ERR SD_WRITE SD_WRITE_ERR TAPE_END_OF_TAPE TAPE_MOUNT_ERR TAPE_POSITION TAPE_POSITION_ERR TAPE_READ TAPE_READ_ERR TAPE_UNLOAD TAPE_UNLOAD_ERR TAPE_WRITE TAPE_WRITE_ERR	Sum	Null	Duration	Actor Name	Month
ACTOR_TIME_READ	Actor: time in READ operations	DISK_READ SD_READ TAPE_READ	Sum	Null	Duration	Actor Name	Lifetime
ACTOR_TIME_READ_DAY	Actor: time in READ operations	DISK_READ SD_READ TAPE_READ	Sum	Null	Duration	Actor Name	Day
ACTOR_TIME_READ_MONTH	Actor: time in READ operations	DISK_READ SD_READ TAPE_READ	Sum	Null	Duration	Actor Name	Month
ACTOR_TIME_WRITE	Actor: time in WRITE operations	DISK_WRITE SD_WRITE TAPE_WRITE	Sum	Null	Duration	Actor Name	Lifetime
ACTOR_TIME_WRITE_DAY	Actor: time in WRITE operations	DISK_WRITE SD_WRITE TAPE_WRITE	Sum	Null	Duration	Actor Name	Day
ACTOR_TIME_WRITE_MONTH	Actor: time in WRITE operations	DISK_WRITE SD_WRITE TAPE_WRITE	Sum	Null	Duration	Actor Name	Month
DISK_AVG_TRANSFER_RATE_READ	DISK: average transfer rate of READ	DISK_READ	Average	Null	Transfer Rate	Disk Name	Lifetime
DISK_AVG_TRANSFER_RATE_READ_DAY	DISK: average transfer rate of READ	DISK_READ	Average	Null	Transfer Rate	Disk Name	Day
DISK_AVG_TRANSFER_RATE_READ_MONTH	DISK: average transfer rate of READ	DISK_READ	Average	Null	Transfer Rate	Disk Name	Month
DISK_AVG_TRANSFER_RATE_WRITE	DISK: average transfer rate of WRITE	DISK_WRITE	Average	Null	Transfer Rate	Disk Name	Lifetime

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DISK_AVG_TRANSFER_RATE_WRITE_DAY	DISK: average transfer rate of WRITE	DISK_WRITE	Average	Null	Transfer Rate	Disk Name	Day
DISK_AVG_TRANSFER_RATE_WRITE_MONTH	DISK: average transfer rate of WRITE	DISK_WRITE	Average	Null	Transfer Rate	Disk Name	Month
DISK_CHECKSUM_FAILURE_COUNT_DAY	DISK: Checksum failure operations count	CHECKSUM_ERROR_DISK	Count	Null	Event ID	Disk Name	Day
DISK_CHECKSUM_FAILURE_COUNT_MONTH	DISK: Checksum Failure Operations Count	CHECKSUM_ERROR_DISK	Count	Null	Event ID	Disk Name	Month
DISK_NUMBER_READ	Disk: Total number of READ operations	DISK_READ DISK_READ_ERR	Count	Null	Event ID	Disk Name	Lifetime
DISK_NUMBER_READ_ABORTED	Disk: Total number of terminated READ operations	DISK_READ_ERR	Count	Null	Event ID	Disk Name	Lifetime
DISK_NUMBER_READ_ABORTED_DAY	Disk: Total number of terminated READ operations	DISK_READ_ERR	Count	Null	Event ID	Disk Name	Day
DISK_NUMBER_READ_ABORTED_MONTH	Disk: Total number of terminated READ operations	DISK_READ_ERR	Count	Null	Event ID	Disk Name	Month
DISK_NUMBER_READ_DAY	Disk: Total number of READ operations	DISK_READ DISK_READ_ERR	Count	Null	Event ID	Disk Name	Day
DISK_NUMBER_READ_MONTH	Disk: Total number of READ operations	DISK_READ DISK_READ_ERR	Count	Null	Event ID	Disk Name	Month
DISK_NUMBER_WRITE	Disk: Total number of WRITE operations	DISK_WRITE DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Lifetime
DISK_NUMBER_WRITE_ABORTED	Disk: Total number of terminated WRITE operations	DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Lifetime
DISK_NUMBER_WRITE_ABORTED_DAY	Disk: Total number of terminated WRITE operations	DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Day
DISK_NUMBER_WRITE_ABORTED_MONTH	Disk: Total number of terminated WRITE operations	DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Month
DISK_NUMBER_WRITE_DAY	Disk: Total number of WRITE operations	DISK_WRITE DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DISK_NUMBER_WRITE_ MONTH	Disk: Total number of WRITE operations	DISK_WRITE DISK_WRITE_ERR	Count	Null	Event ID	Disk Name	Month
DISK_READ	DISK: total amount of data READ	DISK_READ	Sum	Null	Transfer Size	Disk Name	Lifetime
DISK_READ_DAY	DISK: total amount of data READ	DISK_READ	Sum	Null	Transfer Size	Disk Name	Day
DISK_READ_MONTH	DISK: total amount of data READ	DISK_READ	Sum	Null	Transfer Size	Disk Name	Month
DISK_TIME_ALL_ OPERATION	DISK: total time of ALL operations	DISK_READ DISK_WRITE	Sum	Null	Duration	Disk Name	Lifetime
DISK_TIME_ALL_ OPERATION_DAY	DISK: total time of ALL operations	DISK_READ DISK_WRITE	Sum	Null	Duration	Disk Name	Day
DISK_TIME_ALL_ OPERATION_MONTH	DISK: total time of ALL operations	DISK_READ DISK_WRITE	Sum	Null	Duration	Disk Name	Month
DISK_TIME_READ	DISK: total time of READ operations	DISK_READ	Sum	Null	Duration	Disk Name	Lifetime
DISK_TIME_READ_DAY	DISK: total time of READ operations	DISK_READ	Sum	Null	Duration	Disk Name	Day
DISK_TIME_READ_MONTH	DISK: total time of READ operations	DISK_READ	Sum	Null	Duration	Disk Name	Month
DISK_TIME_WRITE	DISK: total time of WRITE operations	DISK_WRITE	Sum	Null	Duration	Disk Name	Lifetime
DISK_TIME_WRITE_DAY	DISK: total time of WRITE operations	DISK_WRITE	Sum	Null	Duration	Disk Name	Day
DISK_TIME_WRITE_ MONTH	DISK: total time of WRITE operations	DISK_WRITE	Sum	Null	Duration	Disk Name	Month
DISK_WRITE	DISK: total amount of data WRITE	DISK_WRITE	Sum	Null	Transfer Size	Disk Name	Lifetime
DISK_WRITE_DAY	DISK: total amount of data WRITE	DISK_WRITE	Sum	Null	Transfer Size	Disk Name	Day
DISK_WRITE_MONTH	DISK: total amount of data WRITE	DISK_WRITE	Sum	Null	Transfer Size	Disk Name	Month
DIVA Core_SYSTEM_ ACTIVE_ARCHIVE_ NUMBER	DIVA Core System: number of active Archive requests	ARCHIVE_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ ACTIVE_ARCHIVE_ NUMBER_DAY	DIVA Core System: number of active Archive requests	ARCHIVE_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DIVA Core_SYSTEM_ACTIVE_ARCHIVE_NUMBER_MONTH	DIVA Core System: number of active Archive requests	ARCHIVE_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Month
DIVA Core_SYSTEM_ACTIVE_COPY_AS_NUMBER	DIVA Core System: number of active Copy As New Object requests	COPY_AS_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ACTIVE_COPY_AS_NUMBER_DAY	DIVA Core System: number of active Copy As New Object requests	COPY_AS_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Day
DIVA Core_SYSTEM_ACTIVE_COPY_AS_NUMBER_MONTH	DIVA Core System: number of active Copy As New Object requests	COPY_AS_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Month
DIVA Core_SYSTEM_ACTIVE_COPY_NUMBER	DIVA Core System: number of active Copy requests	COPY_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ACTIVE_COPY_NUMBER_DAY	DIVA Core System: number of active Copy requests	COPY_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Day
DIVA Core_SYSTEM_ACTIVE_COPY_NUMBER_MONTH	DIVA Core System: number of active Copy requests	COPY_REQUEST	Maximum	Null	Number of Operations	Local DIVA Core System	Month
DIVA Core_SYSTEM_ACTIVE_RESTORE_NUMBER	DIVA Core System: number of active Restore requests	RESTORE	Maximum	Null	Number of Operations	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ACTIVE_RESTORE_NUMBER_DAY	DIVA Core System: number of active Restore requests	RESTORE	Maximum	Null	Number of Operations	Local DIVA Core System	Day
DIVA Core_SYSTEM_ACTIVE_RESTORE_NUMBER_MONTH	DIVA Core System: number of active Restore requests	RESTORE	Maximum	Null	Number of Operations	Local DIVA Core System	Month
DIVA Core_SYSTEM_AVG_READ_WRITE	DIVA Core System: average amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Weighted Average	Duration	Transfer Size	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_AVG_READ_WRITE_DAY	DIVA Core System: average amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Weighted Average	Duration	Transfer Size	Local DIVA Core System	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DIVA Core_SYSTEM_AVG_READ_WRITE_MONTH	DIVA Core System: average amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Weighted Average	Null	Transfer Size	Local DIVA Core System	Month
DIVA Core_SYSTEM_NUMBER_OBJECT_ARCHIVE	DIVA Core System: number of objects archived	ARCHIVE_REQUEST	Count	Null	Transfer Size	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_NUMBER_OBJECT_ARCHIVE_DAY	DIVA Core System: number of objects archived	ARCHIVE_REQUEST	Count	Null	Transfer Size	Local DIVA Core System	Day
DIVA Core_SYSTEM_NUMBER_OBJECT_ARCHIVE_MONTH	DIVA Core System: number of objects archived	ARCHIVE_REQUEST	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_NUMBER_OBJECT_CREATED	DIVA Core System: number of objects created	ARCHIVE_REQUEST COPY_AS_REQUEST	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_NUMBER_OBJECT_CREATED_DAY	DIVA Core System: number of objects created	ARCHIVE_REQUEST COPY_AS_REQUEST	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_NUMBER_OBJECT_CREATED_MONTH	DIVA Core System: number of objects created	ARCHIVE_REQUEST COPY_AS_REQUEST	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_NUMBER_OBJECT_DELETED	DIVA Core System: number of objects deleted	DELETE_OBJECT	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_NUMBER_OBJECT_DELETED_DAY	DIVA Core System: number of objects deleted	DELETE_OBJECT	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_NUMBER_OBJECT_DELETED_MONTH	DIVA Core System: number of objects deleted	DELETE_OBJECT	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_NUMBER_OBJECT_INSTANCE_COPY	DIVA Core System: number of object instances copied	COPY_REQUEST	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_NUMBER_OBJECT_INSTANCE_COPY_DAY	DIVA Core System: number of object instances copied	COPY_REQUEST	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_NUMBER_OBJECT_INSTANCE_COPY_MONTH	DIVA Core System: number of object instances copied	COPY_REQUEST	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_NUMBER_OBJECT_INSTANCE_CREATED	DIVA Core System: number of object instances created	CREATE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Lifetime

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DIVA Core_SYSTEM_ NUMBER_OBJECT_ INSTANCE_CREATED_DAY	DIVA Core System: number of object instances created	CREATE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_ NUMBER_OBJECT_ INSTANCE_CREATED_ MONTH	DIVA Core System: number of object instances created	CREATE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_ NUMBER_OBJECT_ INSTANCE_DELETED	DIVA Core System: number of object instances deleted	DELETE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ NUMBER_OBJECT_ INSTANCE_DELETED_DAY	DIVA Core System: number of object instances deleted	DELETE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_ NUMBER_OBJECT_ INSTANCE_DELETED_ MONTH	DIVA Core System: number of object instances deleted	DELETE_INSTANCE	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_ NUMBER_OBJECT_ RESTORE	DIVA Core System: number of objects restored	RESTORE	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ NUMBER_OBJECT_ RESTORE_DAY	DIVA Core System: number of objects restored	RESTORE	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_ NUMBER_OBJECT_ RESTORE_MONTH	DIVA Core System: number of objects restored	RESTORE	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_ READ_WRITE	DIVA Core System: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ READ_WRITE_ABORTED_ NUMBER	DIVA Core System: number of terminated READ and terminated WRITE operations	DISK_READ_ERR DISK_WRITE_ERR SD_READ_ERR SD_WRITE_ERR TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_ READ_WRITE_ABORTED_ NUMBER_DAY	DIVA Core System: number of terminated READ and terminated WRITE operations	DISK_READ_ERR DISK_WRITE_ERR SD_READ_ERR SD_WRITE_ERR TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Local DIVA Core System	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
DIVA Core_SYSTEM_READ_WRITE_ABORTED_NUMBER_MONTH	DIVA Core System: number of terminated READ and terminated WRITE operations	DISK_READ_ERR DISK_WRITE_ERR SD_READ_ERR SD_WRITE_ERR TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Local DIVA Core System	Month
DIVA Core_SYSTEM_READ_WRITE_DAY	DIVA Core System: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Local DIVA Core System	Day
DIVA Core_SYSTEM_READ_WRITE_MONTH	DIVA Core System: amount of data READ and written	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Local DIVA Core System	Month
DIVA Core_SYSTEM_READ_WRITE_NUMBER	DIVA Core System: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Local DIVA Core System	Lifetime
DIVA Core_SYSTEM_READ_WRITE_NUMBER_DAY	DIVA Core System: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Local DIVA Core System	Day
DIVA Core_SYSTEM_READ_WRITE_NUMBER_MONTH	DIVA Core System: number of READ and WRITE operations	DISK_READ DISK_WRITE SD_READ SD_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Local DIVA Core System	Month
MEDIA_ARCHIVED_OBJECT_DATASIZE_DAY	Media: data size of all objects archived	ARCHIVE_REQUEST	Sum	Null	Transfer Size	Media Name	Day
MEDIA_ARCHIVED_OBJECT_DATASIZE_MONTH	Media: data size of all objects archived	ARCHIVE_REQUEST	Sum	Null	Transfer Size	Media Name	Month
MEDIA_OBJECT_INSTANCE_CREATE	Media: number of object instances created	CREATE_INSTANCE	Count	Null	Event ID	Media Name	Lifetime
MEDIA_OBJECT_INSTANCE_CREATE_DAY	Media: number of object instances created	CREATE_INSTANCE	Count	Null	Event ID	Media Name	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
MEDIA_OBJECT_INSTANCE_CREATE_MONTH	Media: number of object instances created and deleted	CREATE_INSTANCE	Count	Null	Event ID	Media Name	Month
MEDIA_OBJECT_INSTANCE_DELETE	Media: number of object instances deleted	DELETE_INSTANCE	Count	Null	Event ID	Media Name	Lifetime
MEDIA_OBJECT_INSTANCE_DELETE_DAY	Media: number of object instances deleted	DELETE_INSTANCE	Count	Null	Event ID	Media Name	Day
MEDIA_OBJECT_INSTANCE_DELETE_MONTH	Media: number of object instances created and deleted	DELETE_INSTANCE	Count	Null	Event ID	Media Name	MOnth
MEDIA_READ_WRITE	Media: amount of data READ and written	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Media Name	Lifetime
MEDIA_READ_WRITE_DAY	Media: amount of data READ and written	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Media Name	Day
MEDIA_READ_WRITE_MONTH	Media: amount of data READ and written	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Media Name	Month
MEDIA_READ_WRITE_NUMBER	Media: number of READ and WRITE operations	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Media Name	Lifetime
MEDIA_READ_WRITE_NUMBER_DAY	Media: number of READ and WRITE operations	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Media Name	Day
MEDIA_READ_WRITE_NUMBER_MONTH	Media: number of READ and WRITE operations	DISK_READ DISK_WRITE TAPE_READ TAPE_WRITE	Count	Null	Event ID	Media Name	Month
MEDIA_RESTORE_OBJECT_DATASIZE_DAY	Media: data size of all objects restored	RESTORE	Sum	Null	Transfer Size	Media Name	Day
MEDIA_RESTORE_OBJECT_DATASIZE_MONTH	Media: data size of all objects restored	RESTORE	Sum	Null	Transfer Size	Media Name	Month
MEDIA_TAPE_EXPORT_NUMBER_DAY	Media: Number of tapes EXPORTED	TAPE_EXPORT	Count	Null	Event ID	Media Name	Day
MEDIA_TAPE_EXPORT_NUMBER_MONTH	Media: Number of tapes EXPORTED	TAPE_EXPORT	Count	Null	Event ID	Media Name	Month

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
MEDIA_TAPE_IMPORT_NUMBER_DAY	Media: Number of tapes IMPORTED	TAPE_IMPORT	Count	Null	Event ID	Media Name	Day
MEDIA_TAPE_IMPORT_NUMBER_MONTH	Media: Number of tapes IMPORTED	TAPE_IMPORT	Count	Null	Event ID	Media Name	Month
SD_ARCHIVE_OBJECT_DATASIZE_DAY	SD: data size of all objects archived	ARCHIVE_REQUEST	Sum	Null	Transfer Size	SD Name	Day
SD_ARCHIVE_OBJECT_DATASIZE_MONTH	SD: data size of all objects archived	ARCHIVE_REQUEST	Sum	Null	Transfer Size	SD Name	Month
SD_CHECKSUM_FAILURE_COUNT_DAY	SD: checksum failure operations count	CHECKSUM_ERROR_SD	Count	Null	Event ID	SD Name	Day
SD_READ	SD: amount of data READ	SD_READ	Sum	Null	Transfer ID	SD Name	Lifetime
SD_READ_DAY	SD: amount of data READ	SD_READ	Sum	Null	Transfer ID	SD Name	Day
SD_READ_MONTH	SD: amount of data READ	SD_READ	Sum	Null	Transfer Id	SD Name	Month
SD_READ_NUMBER	SD: number of READ operations	SD_READ	Count	Null	Event ID	SD Name	Lifetime
SD_READ_NUMBER_DAY	SD: number of READ operations	SD_READ	Count	Null	Event ID	SD Name	Day
SD_READ_NUMBER_MONTH	SD: number of READ operations	SD_READ	Count	Null	Event ID	SD Name	Month
SD_RESTORE_OBJECT_DATASIZE_DAY	SD: data size of all objects restored	RESTORE	Sum	Null	Transfer Size	SD Name	Day
SD_RESTORE_OBJECT_DATASIZE_MONTH	SD: data size of all objects restored	RESTORE	Sum	Null	Transfer Size	SD Name	Month
SD_TIME	SD: time in operation	SD_READ SD_WRITE	Sum	Null	Duration	SD Name	Lifetime
SD_TIME_DAY	SD: time in operation	SD_READ SD_WRITE	Sum	Null	Duration	SD Name	Day
SD_TIME_MONTH	SD: time in operation	SD_READ SD_WRITE	Sum	Null	Duration	SD Name	Month
SD_WRITE	SD: amount of data written	SD_WRITE	Sum	Null	Transfer Size	SD Name	Lifetime
SD_WRITE_DAY	SD: amount of data written	SD_WRITE	Sum	Null	Transfer Size	SD Name	Day
SD_WRITE_MONTH	SD: amount of data written	SD_WRITE	Sum	Null	Transfer Size	SD Name	Month
SD_WRITE_NUMBER	SD: number of WRITE operations	SD_WRITE	Count	Null	Event ID	SD Name	Lifetime
SD_WRITE_NUMBER_DAY	SD: number of WRITE operations	SD_WRITE	Count	Null	Event ID	SD Name	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
SD_WRITE_NUMBER_MONTH	SD: number of WRITE operations	SD_WRITE	Count	Null	Event ID	SD Name	Month
TAPE_CHECKSUM_FAILURE_COUNT_DAY	Tape: checksum failure operations count	CHECKSUM_ERROR_TAPE TAPE_DISMOUNT_ERR TAPE_MOUNT_ERR	Count	Null	Event ID	Tape Barcode	Day
TAPE_DRIVE_DATA_RATE	Tape Drive: data rate	TAPE_READ TAPE_WRITE	Average	Null	Transfer Rate	Drive Serial Number	Day
TAPE_DRIVE_DATA_RATE_MONTH	Tape Drive: data rate	TAPE_READ TAPE_WRITE	Average	Null	Transfer Rate	Drive Serial Number	Month
TAPE_DRIVE_ERROR_RATE	Tape Drive: internal error rate	TAPE_READ TAPE_WRITE	Average	Null	Error Rate	Drive Serial Number	Day
TAPE_DRIVE_ERROR_RATE_MONTH	Tape Drive: internal error rate	TAPE_READ TAPE_WRITE	Average	Null	Error Rate	Drive Serial Number	Month
TAPE_DRIVE_LAST_OPERATION_DATE	Tape Drive: date of last MOUNT, DISMOUNT, READ or WRITE	TAPE_DISMOUNT TAPE_MOUNT TAPE_READ TAPE_WRITE	Maximum	Null	Event Time	Drive Serial Number	Lifetime
TAPE_DRIVE_NUMBER_MOUNTS	Tape Drive: number of mounts	TAPE_MOUNT	Count	Null	Event ID	Drive Serial Number	Lifetime
TAPE_DRIVE_NUMBER_MOUNT_DISMOUNT_ABORTED	Tape Drive: number of terminated MOUNT and DISMOUNT operations (*together*)	TAPE_DISMOUNT_ERR TAPE_MOUNT_ERR	Count	Null	Event ID	Drive Serial Number	Lifetime
TAPE_DRIVE_NUMBER_READ_WRITE_ABORTED	Tape Drive: number of terminated READ and WRITE operations (*together*)	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Drive Serial Number	Lifetime
TAPE_DRIVE_NUMBER_READ_WRITE_ABORTED_DAY	Tape Drive: number of terminated READ and WRITE operations (*together*)	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Drive Serial Number	Day
TAPE_DRIVE_NUMBER_READ_WRITE_ABORTED_MONTH	Tape Drive: number of terminated READ and WRITE operations (*together*)	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Drive Serial Number	Month
TAPE_DRIVE_OPERATION_TOTAL_TIME	Tape Drive: total time of drive operations	TAPE_READ TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Lifetime
TAPE_DRIVE_OPERATION_TOTAL_TIME_DAY	Tape Drive: total time of drive operations	TAPE_READ TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
TAPE_DRIVE_READ_WRITE	Tape Drive: amount of data READ and written (*together*)	TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Drive Serial Number	Lifetime
TAPE_DRIVE_READ_WRITE_DAY	Tape Drive: amount of data READ and written (*together*)	TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Drive Serial Number	Day
TAPE_DRIVE_READ_WRITE_MONTH	Tape Drive: amount of data READ and written (*together*)	TAPE_READ TAPE_WRITE	Sum	Null	Transfer Size	Drive Serial Number	Month
TAPE_DRIVE_READ_WRITE_NUMBER	Tape Drive: number of READ and WRITE operations (*together*)	TAPE_READ TAPE_WRITE	Count	Null	Event ID	Drive Serial Number	Lifetime
TAPE_DRIVE_READ_WRITE_NUMBER_DAY	Tape Drive: number of READ and WRITE operations (*together*)	TAPE_READ TAPE_WRITE	Count	Null	Event ID	Drive Serial Number	Day
TAPE_DRIVE_READ_WRITE_NUMBER_MONTH	Tape Drive: number of READ and WRITE operations (*together*)	TAPE_READ TAPE_WRITE	Count	Null	Event ID	Drive Serial Number	Month
TAPE_DRIVE_TIME_ALL_OPERATION	Tape Drive: time in all operations	TAPE_DISMOUNT TAPE_EJECT TAPE_INSERT TAPE_MOUNT TAPE_POSITION TAPE_READ TAPE_UNLOAD TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Lifetime
TAPE_DRIVE_TIME_ALL_OPERATION_DAY	Tape Drive: time in all operations	TAPE_DISMOUNT TAPE_EJECT TAPE_INSERT TAPE_MOUNT TAPE_POSITION TAPE_READ TAPE_UNLOAD TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Day
TAPE_DRIVE_TIME_ALL_OPERATION_MONTH	Tape Drive: time in all operations	TAPE_DISMOUNT TAPE_EJECT TAPE_INSERT TAPE_MOUNT TAPE_POSITION TAPE_READ TAPE_UNLOAD TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Month

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
TAPE_DRIVE_TIME_READ	Tape Drive: time in READ operation	TAPE_READ	Sum	Null	Duration	Drive Serial Number	Lifetime
TAPE_DRIVE_TIME_READ_DAY	Tape Drive: time in READ operation	TAPE_READ	Sum	Null	Duration	Drive Serial Number	Day
TAPE_DRIVE_TIME_READ_MONTH	Tape Drive: time in READ operation	TAPE_READ	Sum	Null	Duration	Drive Serial Number	Month
TAPE_DRIVE_TIME_WRITE	Tape Drive: time in WRITE operation	TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Lifetime
TAPE_DRIVE_TIME_WRITE_DAY	Tape Drive: time in WRITE operation	TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Day
TAPE_DRIVE_TIME_WRITE_MONTH	Tape Drive: time in WRITE operation	TAPE_WRITE	Sum	Null	Duration	Drive Serial Number	Month
TAPE_EXTERNALIZATION_NUMBER	Tape: number of externalizations	TAPE_EJECT	Count	Null	Event ID	Tape Barcode	Lifetime
TAPE_LAST_DISMOUNT	Tape: date of last DISMOUNT	TAPE_DISMOUNT	Maximum	Null	Event Time	Tape Barcode	Lifetime
TAPE_LAST_EVENT_ID	Tape: DIVAprotect Event ID of the last tape or drive operation	TAPE_DISMOUNT TAPE_DISMOUNT_ERR TAPE_MOUNT TAPE_MOUNT_ERR TAPE_POSITION TAPE_POSITION_ERR TAPE_READ TAPE_READ_ERR TAPE_UNLOAD TAPE_UNLOAD_ERR TAPE_WRITE TAPE_WRITE_ERR	Maximum	Null	Event ID	Tape Barcode	Lifetime
TAPE_LAST_MOUNT_DATE	Tape: date of last MOUNT	TAPE_MOUNT	Maximum	Null	Event Time	Tape Barcode	Lifetime
TAPE_LAST_READ	Tape: date of last READ	TAPE_READ	Maximum	Null	Event Time	Tape Barcode	Lifetime
TAPE_LAST_WRITE	Tape: date of last WRITE	TAPE_WRITE	Maximum	Null	Event Time	Tape Barcode	Lifetime
TAPE_LIBRARY_NUMBER_DISMOUNT_ABORTED	Tape Library: total number of terminated DISMOUNT operations	TAPE_DISMOUNT_ERR	Count	Null	Event ID	Library Serial Number	Lifetime
TAPE_LIBRARY_NUMBER_DISMOUNT_ABORTED_DAY	Tape Library: total number of terminated DISMOUNT operations	TAPE_DISMOUNT_ERR	Count	Null	Event ID	Library Serial Number	Day
TAPE_LIBRARY_NUMBER_DISMOUNT_ABORTED_MONTH	Tape Library: total number of terminated DISMOUNT operations	TAPE_DISMOUNT_ERR	Count	Null	Event ID	Library Serial Number	Month

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
TAPE_LIBRARY_NUMBER_MOUNT	Tape Library: total number of MOUNT operations	TAPE_MOUNT	Count	Null	Event ID	Library Serial Number	Lifetime
TAPE_LIBRARY_NUMBER_MOUNT_ABORTED	Tape Library: total number of terminated MOUNT operations	TAPE_MOUNT_ERR	Count	Null	Event ID	Library Serial Number	Lifetime
TAPE_LIBRARY_NUMBER_MOUNT_ABORTED_DAY	Tape Library: total number of terminated MOUNT operations	TAPE_MOUNT_ERR	Count	Null	Event ID	Library Serial Number	Day
TAPE_LIBRARY_NUMBER_MOUNT_ABORTED_MONTH	Tape Library: total number of terminated MOUNT operations	TAPE_MOUNT_ERR	Count	Null	Event ID	Library Serial Number	Month
TAPE_LIBRARY_NUMBER_MOUNT_DAY	Tape Library: total number of MOUNT operations	TAPE_MOUNT	Count	Null	Event ID	Library Serial Number	Day
TAPE_LIBRARY_NUMBER_MOUNT_MONTH	Tape Library: total number of MOUNT operations	TAPE_MOUNT	Count	Null	Event ID	Library Serial Number	Month
TAPE_LIBRARY_NUMBER_READ	Tape Library: total number of READ operations	TAPE_READ TAPE_READ_ERR	Count	Null	Event ID	Library Serial Number	Lifetime
TAPE_LIBRARY_NUMBER_READ_DAY	Tape Library: total number of READ operations	TAPE_READ TAPE_READ_ERR	Count	Null	Event ID	Library Serial Number	Day
TAPE_LIBRARY_NUMBER_READ_MONTH	Tape Library: total number of READ operations	TAPE_READ TAPE_READ_ERR	Count	Null	Event ID	Library Serial Number	Month
TAPE_LIBRARY_NUMBER_WRITE	Tape Library: total number of WRITE operations	TAPE_WRITE TAPE_WRITE_ERR	Count	Null	Event ID	Library Serial Number	Lifetime
TAPE_LIBRARY_NUMBER_WRITE_DAY	Tape Library: total number of WRITE operations	TAPE_WRITE TAPE_WRITE_ERR	Count	Null	Event ID	Library Serial Number	Day
TAPE_LIBRARY_NUMBER_WRITE_MONTH	Tape Library: total number of WRITE operations	TAPE_WRITE TAPE_WRITE_ERR	Count	Null	Event ID	Library Serial Number	Month
TAPE_LIBRARY_READ	Tape Library: total amount of data READ	TAPE_READ	Sum	Null	Transfer Size	Library Serial Number	Lifetime
TAPE_LIBRARY_READ_DAY	Tape Library: total amount of data READ	TAPE_READ	Sum	Null	Transfer Size	Library Serial Number	Day
TAPE_LIBRARY_READ_MONTH	Tape Library: total amount of data READ	TAPE_READ	Sum	Null	Transfer Size	Library Serial Number	Month

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
TAPE_LIBRARY_WRITE	Tape Library: total amount of data WRITE	TAPE_WRITE	Sum	Null	Transfer Size	Library Serial Number	Lifetime
TAPE_LIBRARY_WRITE_DAY	Tape Library: total amount of data WRITE	TAPE_WRITE	Sum	Null	Transfer Size	Library Serial Number	Day
TAPE_LIBRARY_WRITE_MONTH	Tape Library: total amount of data WRITE	TAPE_WRITE	Sum	Null	Transfer Size	Library Serial Number	Month
TAPE_MOUNT_DISMOUNT_NUMBER	Tape: number of MOUNT and DISMOUNT operations (*together*)	TAPE_DISMOUNT TAPE_MOUNT	Count	Null	Event ID	Tape Barcode	Lifetime
TAPE_MOUNT_NUMBER	Tape: number of MOUNT operations	TAPE_MOUNT	Count	Null	Event Id	Tape Barcode	Lifetime
TAPE_READ_WRITE_ABORTED_NUMBER	Tape: number of terminated READ and WRITE operations (*together*)	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Tape Barcode	Lifetime
TAPE_READ_WRITE_ABORTED_NUMBER_DAY	Tape: number of terminated READ and WRITE operations (*together*)	TAPE_READ_ERR TAPE_WRITE_ERR	Count	Null	Event ID	Tape Barcode	Day
TAPE_READ_WRITE_NUMBER	Tape: number of READ and WRITE operations (*together*)	TAPE_READ TAPE_WRITE	Count	Null	Event Id	Tape Barcode	Lifetime
TAPE_READ_WRITE_NUMBER_DAY	Tape: number of READ and WRITE operations	TAPE_READ TAPE_WRITE	Count	Null	Event ID	Tape Barcode	Day
TAPE_REPACK_NUMBER	Tape: number of REPACK, REUSE, and REFORMAT operations (*together*)	TAPE_REPACK	Count	Null	Event ID	Local DIVA Core System	Lifetime
TRANSCODE_ABORTED_NUMBER	Transcoder: number terminated TRANSCODE operations	TRANSCODE_ERR	Count	Null	Event ID	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_ABORTED_NUMBER_DAY	Transcoder: number terminated TRANSCODE operations	TRANSCODE_ERR	Count	Null	Event ID	Transcoder Name or Analyzer Name	Day
TRANSCODE_AVG_DATA	Transcoder: average amount of data TRANSCODED	TRANSCODE_END	Weighted Average	Duration	Transfer Size	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_AVG_DATA_DAY	Transcoder: average amount of data TRANSCODED	TRANSCODE_END	Weighted Average	Duration	Transfer Size	Transcoder Name or Analyzer Name	Day

Metric Name	Description	Events	Operation	Weight Factor	Collection Field	Aggregation Field	Collection Interval
TRANSCODE_AVG_ THROUGHPUT	Transcoder: average transcoding throughput	TRANSCODE_END	Average	Null	Transfer Rate	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_AVG_ THROUGHPUT_DAY	Transcoder: average transcoding throughput	TRANSCODE_END	Average	Null	Transfer Rate	Transcoder Name or Analyzer Name	Day
TRANSCODE_DATA	Transcoder: amount of data TRANSCODED	TRANSCODE_END	Sum	Null	Transfer Size	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_DATA_DAY	Transcoder: amount of data TRANSCODED	TRANSCODE_END	Sum	Null	Transfer Size	Transcoder Name or Analyzer Name	Day
TRANSCODE_DATA_ MONTH	Transcoder: amount of data TRANSCODED	TRANSCODE_END	Sum	Null	Transfer Size	Transcoder Name or Analyzer Name	Month
TRANSCODE_MAX_ THROUGHPUT	Transcoder: maximum transcoding throughput	TRANSCODE_END	Maximum	Null	Transfer Rate	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_MAX_ THROUGHPUT_DAY	Transcoder: maximum transcoding throughput	TRANSCODE_END	Maximum	Null	Transfer Rate	Transcoder Name or Analyzer Name	Day
TRANSCODE_MIN_ THROUGHPUT	Transcoder: minimum transcoding throughput	TRANSCODE_END	Minimum	Null	Transfer Rate	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_MIN_ THROUGHPUT_DAY	Transcoder: minimum transcoding throughput	TRANSCODE_END	Minimum	Null	Transfer Rate	Transcoder Name or Analyzer Name	Day
TRANSCODE_NUMBER	Transcoder: number TRANSCODE operations	TRANSCODE_END	Count	Null	Event ID	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_NUMBER_ DAY	Transcoder: number TRANSCODE operations	TRANSCODE_END	Count	Null	Event Id	Transcoder Name or Analyzer Name	Day
TRANSCODE_NUMBER_ MONTH	Transcoder: number TRANSCODE operations	TRANSCODE_END	Count	Null	Event ID	Transcoder Name or Analyzer Name	Month
TRANSCODE_TIME	Transcoder: time in transcoding operations	TRANSCODE_END	Sum	Null	Duration	Transcoder Name or Analyzer Name	Lifetime
TRANSCODE_TIME_DAY	Transcoder: time in transcoding operations	TRANSCODE_END	Sum	Null	Duration	Transcoder Name or Analyzer Name	Day
TRANSCODE_TIME_ MONTH	Transcoder: time in transcoding operations	TRANSCODE_END	Sum	Null	Duration	Transcoder Name or Analyzer Name	Month

Configuration Parameter Defaults and Values

Parameter	Default	Values
Manager: Enable/Disable DIVAprotect Data Collection	1	0 or 1
Manager: Size of the event batch download (number of events)	100	Integer
Manager: Max timeout in the event there are not events to fill the above batch (seconds)	15	Integer
Conf Utility GUI: Enable/Disable DIVAprotect Configuration	0	0 or 1
DB: Maximum possible history of Events in Months	12	Integer
DB: Maximum possible number of Metrics in DB	1000000	Integer

E

ADIC SDLC Installation and Configuration

This appendix describes installation and configuration of the SDLC Server and SDLC Client and includes the following information:

SDLC Server

The following sections describe prerequisites and configuration of the SDLC Server.

Prerequisites

The SDLC Server process is called *supervisor*. The SDLC GUI is also available as an applet in your web browser address bar. You access the GUI by entering the IP address of the computer on which SDLC Server is running in the browser address bar.

Avoid stopping the SDLC Manager (*that is, the NobleNet PortMapper for TCP Windows service*) while SDLC Clients are currently connected (*for example, the SDLC GUI connection*). If the service is stopped, the SDLC Server will vary to a transient state making it temporarily impossible to restart.

Configuration

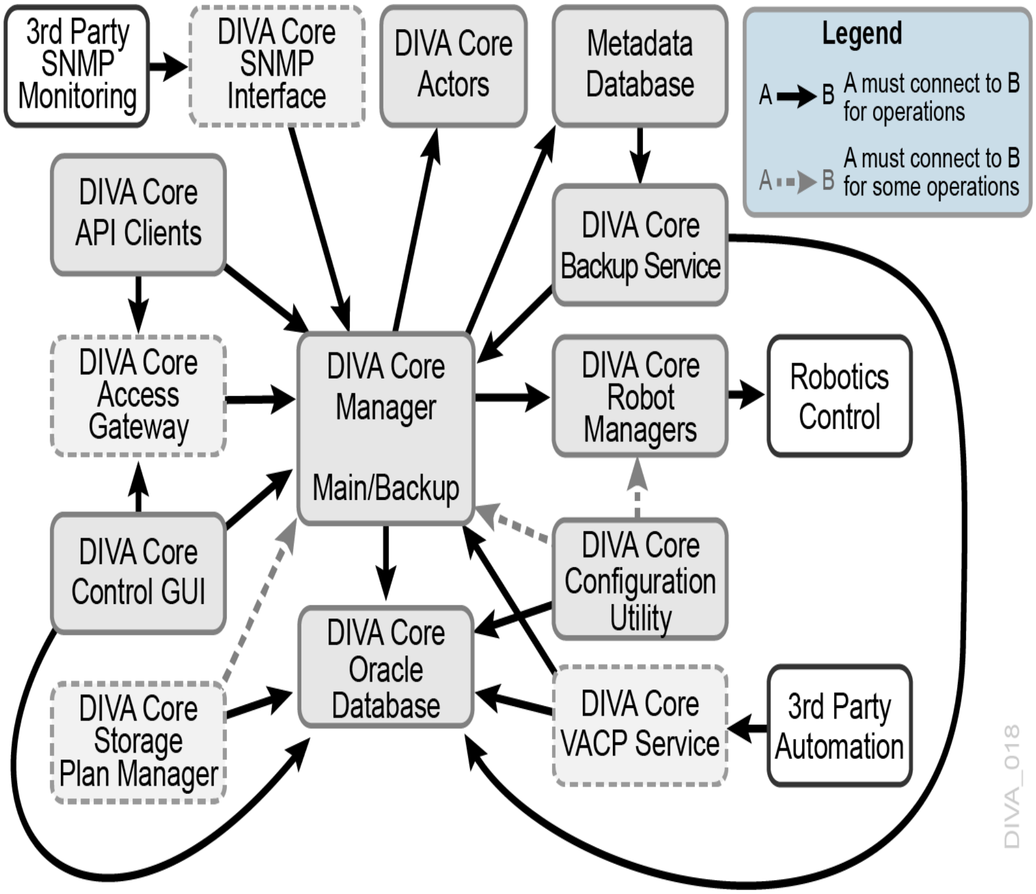
You must first define a physical resources partition (*in the **SDLC GUI Libraries** tab, then the **Wizard** tab*) to make the SDLC usable. After you define the physical resources, you define a logical library with its slots and drives. When the wizard completes, the partition is automatically bound to an ADIC Client. The DIVA Core ADIC Robot Manager uses the client to obtain status information about library items, and to send mount and dismount commands.

Confirm that the drives being used by DIVA Core are bound to the client dedicated to the DIVA Core ADIC Robot Manager. In the following figure, two drives are bound to Client2.

Use the following procedure to bind a drive to a specific client:

1. Open the SDLC GUI.
2. Click the **Clients** tab.
3. Select the client from the *Clients* navigation tree on the left.
4. Right-click the desired drive in the right *Drives* area.
5. Select **Up** from the menu.

   After a drive is bound to a client, the name of the client is appended to the name of the drive.



6. Confirm that for the given client (*Client2 in the previous example*), the ***Client Hostname*** field is configured with the host name or IP address of the client computer; that is, the client that will use the *Client2* connection when communicating with the SDLC Server.

   You can specify **any** in this field to accept any incoming connections from any client computer that provides *Client2* as the client name when connecting through the SDLC API. You must use the **any** keyword to use the dasadmin tool from a supervising computer.
7. Confirm the *NobleNet PortMapper for TCP* Windows service is started. You must start the service if it is not running.

SDLC Client

The SDLC Client must be installed on the computer where the DIVA Core ADIC Robot Manager is installed.

Installation

Install the SDLC Client from the SDLC distribution. You are prompted for the name of the client being used by the ADIC Robot Manager to connect to SDLC Server during installation. You must use the client you created in the SDLC Server. This is *Client2* in the example.

Note: The client name is case-sensitive.

Confirm the *NobleNet PortMapper for TCP* Windows service is started. You must start the service if it is not running.

Configuration

You must define two Windows environmental variables on a Windows system as follows:

Environment Variable	Definition	Example
DAS_SERVER	Host name or IP address of the computer where the SDLC Server has been installed.	10.201.10.100
DAS_CLIENT	Name of the client that the DIVA Core Robot Manager uses to connect to SDLC.	Client2

Use the following procedure to test the SDLC Client connection to the SDLC Server:

1. Open a Windows command line window.
2. Change to the C:\Program Files\ADIC\SDLC\Bin folder.
3. Execute dasadmin qversion.

   The output will be similar to the following, and then you will be back at the command prompt.

   ```
   ACI-Version: 3.10E
   DAS-Version: 3.10
   ```

Using dasadmin Commands

The following is a list of commands used when executing the dasadmin application. You must always execute dasadmin from the C:\Program Files\ADIC\SDLC\Bin folder.

Getting Help

```
dasadmin -h
```

Mounting a Tape

```
dasadmin mount {tape_id} [drive]
```

The tape_id is required. If drive is not specified, the first free drive is chosen automatically.

Dismounting a Tape

```
dasadmin dism {tape_id}
```

Alternatively you can execute dasadmin dism {drive_name}. The drive_name is the name of the drive to dismount.

Note: The tape must first be ejected with a SCSI unload before dismounting.

Ejecting a Tape

dasadmin eject2 {tape_name} {eject_or_insert_slot_name}

Note: Depending on the server configuration, the eject and insert area (*that is, slots from the CAP*) can have different names.

Inserting a Tape

dasadmin insert2 {-n|-c} {eject_or_insert_slot_name}

You use the -n to specify data tapes and the -c to specify cleaning tapes.

Note: Depending on the server configuration, the eject and insert area (*that is, slots from the CAP*) can have different names.

Querying Drives

dasadmin ld

Retrieving the Tapes List

dasadmin qvolsrange "" "" {number_of_tapes_to_list}

Parking the Robot Arm

dasadmin robhome {robot_number}

Synchronizing the SDLC Database and Library

dasadmin inventory

Retrieving Tape Information

dasadmin view {tape_id}

dasadmin Release Information

dasadmin qversion

Library Configuration Information

dasadmin eif_conf

Note: This command is not supported in SDLC 2.1 and later.

dasadmin References

See the sdlc_doc.pdf file on the SDLC Installation CD.

Troubleshooting

The dasadmin qversion command may not respond as previously stated. The following list identifies the most common cases and remedies:

RPC failure error dialog box appears

A dialog box appears on the screen with the title ACI0004 Function clnttcp_create Failed, and the following error displays in the command window:

```
version failed: An RPC failure occurred.
ACI-Version : 3.10E
DAS error = 1
```

To resolve this issue, confirm on the server that you can to connect to this client from the computer where you launched dasadmin.

Invalid host name or IP Address error in command window

The following error appears in the command window:

```
version failed: Invalid hostname or IP Address
ACI-Version : 3.10E
DAS error = 14
```

To resolve this issue, confirm on the server that you can to connect to this client from the computer where you launched dasadmin. The client host name is probably set to localhost.

Invalid pointer to IDAS interface error in command window

The following error appears in the command window:

```
version failed: Invalid pointer to IDAS interface
ACI-Version : 3.10E
DAS error = 28
```

To resolve this issue confirm the DAS_CLIENT environment variable is set properly.

The command never ends (*endless loop*)

If the command results in an endless loop and never stops, confirm the following:

- Confirm the SDLC Server is started.
- Confirm the DAS_SERVER environment variable is set properly.
- Confirm the *NobleNet PortMapper for TCP* Windows service is running.

Glossary

CA (*Certificate Authority*)

A CA (*Certificate Authority*) is an issuer who receives the CSR and returns the SSL certificate with its digital signature.

CSR (*Certificate Signing Request*)

A CSR (*Certificate Signing Request*) is an encoded file that is given to a CA (*Certificate Authority*) when requesting an SSL certificate. It contains information that will be included in the certificate including the holder's name, serial number, expiration date and the public key. The CA returns the signed SSL certificate with its signature.

DNS (*Domain Name Service*)

A system for naming computers and network services that is organized into a hierarchy of domains. DNS services resolve IP addresses to host names for proper network routing.

FQDN (*Fully Qualified Domain Name*)

The complete domain name for a specific computer, or host, on the internet. The FQDN consists of two parts: the host name and the domain name. For example, rd-mc1-qalab.oracle.com.

Java Keystore

The JAVA Keystore is a password protected encrypted file repository containing the Key pairs, SSL certificates, and CA certificates.

Key Pair

A Key Pair consists of two uniquely related cryptographic keys; a Public Key and a Private Key (*basically long random numbers*).

The Public Key is what its name suggests - Public. It is made available to everyone through a publicly accessible repository or directory.

The Private Key must remain confidential to its respective owner. Because the key pair is mathematically related, whatever is encrypted with a Public Key can only be decrypted with its corresponding Private Key, and vice versa.

MPIO (*Multipath I/O*)

Microsoft MPIO (*Multipath I/O*) is a Microsoft-provided framework that allows storage providers to develop multipath solutions that contain the hardware-specific information needed to optimize connectivity with their storage arrays.

NIC Teaming

The process of combining multiple network adapter cards together for performance and redundancy reasons. Microsoft refers to this as *NIC Teaming*, however other vendors may refer to this as bonding, balancing, or aggregation. The process is the same regardless of which solution is used or what it is called.

OU (*Organizational Unit*)

An OU (*Organizational Unit*) is a subdivision within an Active Directory into which you can place users, groups, computers, and other organizational units. You can create organizational units to mirror your organization's functional or business structure. Each domain can implement its own organizational unit hierarchy. If your organization contains several domains, you can create organizational unit structures in each domain that are independent of the structures in the other domains.

SAS (*Serial Attached SCSI*)

A point-to-point serial protocol that moves data to and from computer storage devices such as hard drives and tape drives.

SSL (*Secure Sockets Layer*)

SSL (*Secure Sockets Layer*) is a standard security protocol for establishing an encrypted connection between a server and a client. Specifically, it encrypts the connection and the data transmitted along the connection. To achieve a secure connection, a service needs a Key Pair (*Public Key and Private Key*) and SSL Certificate.

SSL Certificate Authentication

An SSL certificate is a digital certificate that authenticates a service in network connections. To generate an SSL certificate, you must create a CSR (*Certificate Signing Request*) for your service Key Pairs and have it signed by your CA (*Certificate Authority*). An SSL certificate contains the following information:

- Certificate holder's name
- Certificate serial number and expiration date
- A copy of the certificate holder's public key
- Digital signature of the certificate issuing authority

SSL Certificate Chain

There are two types of CAs (*Certificate Authorities*): Root CAs and Intermediate CAs.

A certificate chain is an ordered list of certificates, containing an SSL Certificate and Certificate Authority Certificates that enable the receiver to verify that the sender and all CAs are trustworthy using its trust store. The chain (*or path*) begins with the SSL certificate, and each certificate in the chain is signed by the entity identified by the next certificate in the chain. Any certificate that sits between the SSL Certificate and the Root CA Certificate (*last certificate in the chain*) is called an Intermediate CA Certificate. The Root CA is at the end of the chain and it signs the intermediate CA certificate, and the Intermediate CA signs the SSL certificate for the services.

For example, when a service receives its peer's SSL certificate chain that is trying to connect during the SSL handshake process, it verifies its peers SSL certificate in the chain using the Intermediate CA certificate next in the chain. It then verifies the Intermediate CA certificate by looking for the Root CA certificate that signed the intermediate CA certificate in its trust store. This verification completes the Certificate Chain. Connection is not established if the full chain verification fails.

Trust Store

A Trust Store contains the certificates of CAs (*Certification Authorities*) you trust. For example, when a service receives its peer's SSL certificate that is trying to connect during SSL handshake process, it verifies that its peer's SSL certificate's digital signature is signed by one of the trusted certificates in its trust store. If the certificate is not in the Trust Store, the SSL handshake fails and the connection is not established.