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DIVA

Supported Environments

Release: 9.0

Revision: 1.0

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Contents

Managed Storage, Drives, and Disks   26

Object Storage   34

Partial File Restore   37

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Telestream Contact Information

To obtain product information, technical support, or provide comments on this guide, contact us using our web site, email, or phone number as listed below.

Resource	Contact Information
DIVA Technical Support	Web Site: https://www.telestream.net/telestream-support/ Depending on the problem severity, we will respond to your request within 24 business hours. For P1, we will respond within 1 hour. Please see the Maintenance & Support Guide for these definitions. • Support hours for customers are Monday-Friday, 7am-6pm local time. • P1 issues for customers are 24/7.
Telestream, LLC	Web Site: www.telestream.net Sales and Marketing Email: info@telestream.net Telestream, LLC 848 Gold Flat Road, Suite 1 Nevada City, CA USA 95959
International Distributor Support	Web Site: www.telestream.net See the Telestream Web site for your regional authorized Telestream distributor.
Telestream Technical Writers	Email: techwriter@telestream.net Share comments about this or other Telestream documents.

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Preface

This document outlines the technical environments supported by the DIVA (DIVA). Included are package compatibility, supported hardware, supported Managed Storage and drives, supported DIVA Partial File Restore formats, supported source and target servers, and supported Avid Interplay releases and transcoders.

Note: Refer to the DIVA Architecture, Concepts and Glossary book for detailed information on DIVA terminology, general concepts and architecture.

Topics

- Audience
- Documentation Accessibility
- Related Documents
- Document Updates

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Audience

This document is intended for System Administrators and Telestream Installation and Delivery Team personnel.

Documentation Accessibility

For information about Telestream's commitment to accessibility, visit the Telestream Support Portal at https://www.telestream.net/telestream-support/.

Related Documents

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

https://www.telestream.net/telestream-support/

Document Updates

The following table identifies updates made to this document.

Date	Update
January 2022	Updated copyright dates and book publishing date
	Update RAM configuration recommendation for Core Manager, Cluster Manager, and Core Actor and Core Manager.
	Removed references to Windows Server 2012 R2.
	Updated ACSLS releases and added note identifying latest qualified release.
February 2022	Updated minimum cores required on all Xeon servers.
	Added section on supported APIs.
April 2022	Converted book to Telestream formatting and styles.
	Added information for Oracle 19c support.
	Updated book for release 8.2.
	Added information for Hitachi Content Platform.
	Added information for AWS Glacier Instant Retrieval.
	Updated terminology to new standards (see the Overview for updated terms)
May 2022	Added REST API to the supported API section
	Updated list of Supported Drives for IBM designations.
August 2022	Added support for Windows Server 2022
	Reverted all references to Content App back to DIVA View
	Minor formatting updates.

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Date	Update
September 2022	Updated terminology and new title page graphic (see the *Overview* for updated terms).
	Updated Actor specifications for Oracle 8 and Windows Server 2022 support.
October 2022	Updated book for release 8.3.
November 2022	Reverted the term "Virtual Object" to "Object".
	Added FlashNet to Core Migration information in Product Compatibility section.
December 2022	Updated hardware minimum requirements.
	Updated book for 8.3.1 release.
January 2023	Updated book for 9.0 release.
March 2023	Updated document from DIVA Core to Content Manager
	Added MatrixStore information to Supported Object Storage table.
September 2023	Updated document from Content Manager to Content Conductor.
	Publish version 9.0 PDF.

Overview

DIVA has numerous options available that are either licensed together or separately.

Note: Telestream recommends using the Chrome browser to use the DIVA web app.

Overview

The DIVA architecture allows the integration of many different types of servers and technologies, such as Broadcast Video Servers, Storage Area Networks, and Enterprise Tape Group Managed Storage. DIVA can support interoperability among systems, helping to ensure long term accessibility to valued content, and keeping up with evolving storage technologies.

DIVA supports system installations in Windows 2016, 2019, and 2022. All Windows installations must be in English only.

The installation of DIVA varies from site to site. The exact configuration of your specific DIVA platform is not covered in this guide. For details on your specific DIVA System installation and configuration, consult with the Telestream Installation and Delivery Team.

Note: Telestream recommends keeping the operating system up to date with the latest security patches.

Options and Licensing

The following table identifies Core options and licensing metrics.

Description	Licensing Metric
DIVA System	Per Server
DIVA Single	Per Server
DIVA Actor	Per Server

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Description	Licensing Metric
DIVA Avid Connector	Per Avid Archive Provider
DIVA Partial File Restore	Per System
DIVA Analytics	Per Server
Managed Storage Capacity	Per 500 TB Block
Unlimited Storage Capacity	Per System

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Product Compatibility

DIVA is compatible with other DIVA Core product lines including the following:

■ Postgres Database and Content Conductor Backup Service

■ DIVA Connect

■ FlashNet to Content Conductor Migration

■ Supported API Releases

Postgres Database and DIVA Backup Service

The Database and Backup Service components are installed as an integral part of the standard DIVA system installation. The components are typically installed on the same server as DIVA.

Scheduled backups using the DIVA Backup Service are configured in it's configuration file. The DIVA Backup Service manages and monitors the entire backup process. DIVA supports Postgres Database version 14 or greater.

The DIVA Backup Service is also used to backup the MongoDB database and ElasticSearch, which are both required for metadata storage and searching.

DIVA Connect

DIVA Connect 4.0 is compatible with DIVA 9.0 and above. DIVA Connect 4.0 works with DIVA API versions 9.0 and below. The DIVA Connect 4.0 ClientAdapter will not inter-operate with the DIVA Connect Core Adapter 3.2 and below. Either DIVA Connect 2.0 or Legacy DIVA Connect must be used when running releases earlier than DIVA Core 7.3.1.

If operating a release earlier than 7.3.1, refer to the DIVA Connect Installation, Configuration, and Operations Guide.

FlashNet to DIVA Migration

Note: Refer to the Flashnet Product Retirement Announcement located at: https://www.telestream.net/pdfs/support/FlashNet-EOL-Notice.pdf

FlashNet customers can upgrade to DIVA or Kumulate while keeping their yearly payments at the same price as their existing support fees. While the FlashNet licenses will be transferred over at no cost, a modest one-time surcharge will be applied for the professional services needed for the upgrade.

Customers can trade-in their existing FlashNet licenses for either subscription or perpetual licenses. For customers who choose subscription licensing, any content written to storage will continue to be accessible even if that subscription were to lapse.

This upgrade is designed to use the FlashNet-written archives on their existing media, so that customers can avoid a time-consuming media migration.

See the FlashNet Trade-In Program Product Sheet located at:

https://www.telestream.net/diva/resources/dat-Flashnet-to-DIVA-upgrades.pdf.

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Supported API Releases

The following legacy API releases and configurations are supported for each major DIVA Core and DIVA release. That is, the first two version number changes.

REST API

DIVA exposes its functionality through a REST interface. It is self-contained in DIVA and all future DIVA releases. The API is used by the DIVA web application and other internal components (for example, SPM, Migration Service, and so on).

Note: Telestream recommends using the REST API rather than the previous APIs (that is, DIVA Core Enterprise Connect, DIVAS, Java and C++). Although all previous APIs remain available, the REST API offers new and enhanced features that will not be implemented in the legacy APIs.

See the REST API Programmer's Guide for detailed information.

Web Services APIs

- WS 2.1: REST and SOAP require the DIVAS component.
- WS 2.2: REST and SOAP require the DIVA Enterprise Connect component.
- REST API: the REST API is embedded in DIVA.

Supported and Tested Legacy API Configurations

The following API configurations are supported in DIVA and later:

- C++ API 7.5 to 5.5 on Windows
- Java API 7.5 to 6.5 on Windows
- Enterprise Connect (latest release) on Windows with the following configurations:
  - http, rest, xml, connect directly to DIVA
  - http, rest, form_url_encoded, connect directly to DIVA
  - http, soap, xml, connect directly to DIVA
  - https, rest, xml, connect directly to DIVA
  - https, rest, form_url_encoded, connect directly to DIVA
  - https, soap, xml, connect directly to DIVA

Untested Configurations Used at Customer's Own Risk

The following API configurations are untested and can be used, but are used at the customer's own risk:

- C++ and Java Legacy API 7.6 and newer.

- DIVA Core Symphony; that is, DIVAS that uses WSO2 application server.

- Older Enterprise Connect (older than latest release). That is, if another EC is released, only the latest release will be tested.

- Enterprise Connect connected using the DIVA Core Adapter mode.

Known Issues

The following are known issues when using APIs:

- The Java API does not support Partial Restore Instance; it will always use -1 as the Instance ID and DIVA will always pick the instance automatically.

- Older Java API releases do not return the same status codes as the C++ API. Calls that fail in the C++ API due to DIVA_ERR_INVALID_PARAMETER might fail in the Java API with a different error code; for example, DIVA_ERR_IN-TERNAL, and so on.

- GetObjectsDetailsList does not work correctly in the Java API 7.0 and prior releases. They are skipped during automated tests because they cause random timeout and hang issues which break the automation.

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Hardware and Software

These are the minimum hardware and software requirements to install and operate the DIVA software. Refer to *General Storage Requirements* for detailed disk configuration information.

Note: MongoDB, in its default configuration, can use up to half the available RAM minus 1GB on the server on which it is installed. You have to plan the location of MDS MongoDB installation accordingly.

Topics:

- Content Conductor Core Architecture
- Intel and Microsoft Windows
- General Storage Requirements

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DIVA Core Architecture

A DIVA system uses a combination of software modules which can run on a single computer, or can be distributed across different systems.

The main DIVA components are as follows:

Manager
The DIVA component of the archive also hosting the archive system database.

Manager Cluster
Based on the Microsoft Cluster configuration. Manager Cluster is only valid in a Windows based environment.

Actor
Responsible for all data transfers to storage media (Archive, Restore, Copy, Repack, and so on).

Actor and Manager (Single Computer)
Systems running both Actor and Manager functions on a single computer. Try to avoid this configuration for performance reasons. This is only usable for entry level configurations.

DIVA Connect 2.1 and later
Used in DIVA Connect configurations for unified access. DIVA Connect 2.1 (and later) is not a drop in replacement for the legacy DIVA Connect. DIVA Connect 2.1 (and later) is specifically for compatibility with DIVA Core 7.5 and later Linux and Windows installations, and not backward compatible with earlier DIVA Core releases before 7.3.1.

Note: DIVA Connect 4.0 has been released with DIVA.

See the DIVA Connect documentation on the Telestream DIVA Support Portal for detailed DIVA Connect information.

DIVA Web App
Used for configuring, monitoring and managing the DIVA system.

The following figure represents a DIVA configuration with the main DIVA software components installed on different servers. DIVA Connect (used to access multiple DIVA systems) is not represented and is generally installed on a dedicated server.
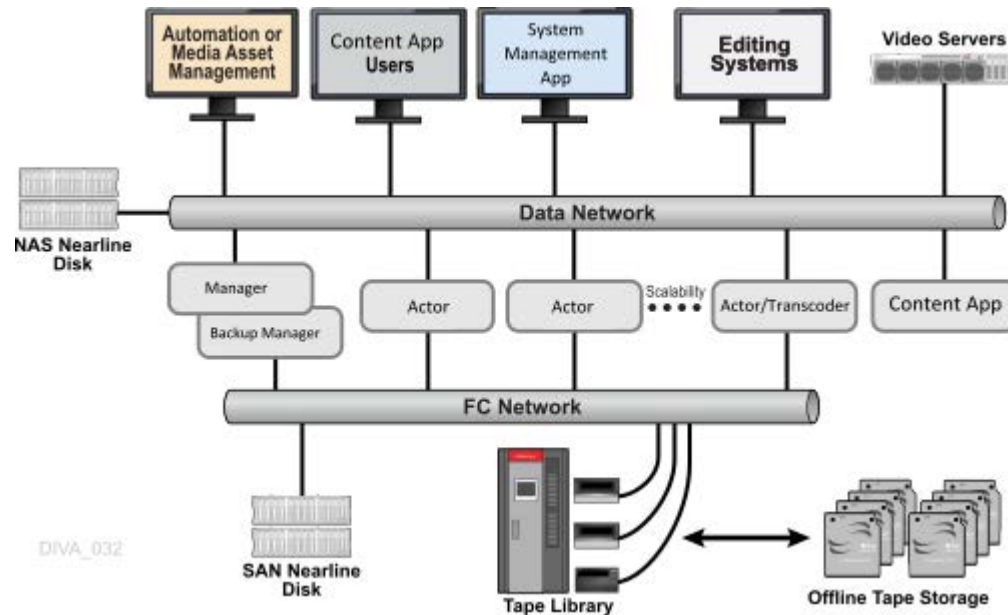
System Component Interconnectivity

On the data path, a DIVA solution is connected on the storage side to the Tape Group library, or shared disks, or both. On the source and target side, it is connected to the video servers, NLE, or file servers.

Storage Connection

SAN (Storage Area Networks), NAS (Network Attached Storage), or Direct Attached technologies can be used. Different types of interfaces are required on the servers to support the different types of storage devices as follows:

- Fiber Channel HBA (Host Based Adapter) for SAN
- SCSI Bus or HBA for Direct Attach
- 10 Gigabit Ethernet for NAS
- Cloud Storage
- Tape Libraries

Intel and Microsoft Windows

Telestream can deliver x86 architecture servers matching or exceeding the recommendations provided in the following sections (except the Windows license to be purchased). Partners can also purchase servers from other vendors if the minimum requirements are met. Telestream does not qualify or recommend specific models from other vendors.

Note: The operating system installed on all computers must be installed in the English language. Telestream does not support DIVA computers that have the operating system installed in other languages.

DIVA Appliance

The release of DIVA introduces the DIVA Appliance. The appliance is a prebuilt system available to customers that includes hardware and software ready to rack and turn on.

The appliance is supported by the DIVA installer and creates a site/production system that includes some arrays to match the expected hardware. There is currently no special implementation in the web app for the appliance at this time.

Telestream has generated a wizard on startup to guide customers through importing a license, along with any other configuration required; this has not been implemented at this time.

Operating System Compatibility

Use the following table to confirm that you have the proper operating system installed for each computer in the system when upgrading your DIVA installation.

Note: The minimum server operating system for using complex objects is Windows Server 2016.

Component	DIVA Release	Operating System Compatibility (for upgrades only)
DIVA and Actor	9.0 and later	Windows Server 2016 Windows Server 2019 Windows Server 2022
DIVA Connect	2.3.1 and later	Windows Server 2016 Windows Server 2019 Windows Server 2022 Oracle Linux 7 x86_64 and later (64-bit)

Manager

HDD sizing for the Manager is now more complex. With the addition of MongoDB, ElasticSearch, and Postgres, more space is required for successful operations. The following server platform is the minimum requirement recommended for the installation of the Manager software:

- Rack mount chassis
- Intel® Xeon® Silver 4214R 2.4Ghz 12C/24T or equivalent (optional second processor possible)
- 64GB RAM
- Two 2 TB HDD 15,000 RPM or SSD (configured in RAID 1) system disks (and an optional third disk used as a hot spare)

Note: If DIVA is used to archive complex objects like DPX or Avid sequences, it is advisable to ask for a specific recommendation based on the estimated traffic (in terms of size and number of objects to be archived per day). In general, if complex objects need to be archived, Telestream recommends using a minimum of two 2 TB HDD with 15,000 RPM. This recommendation is also valid for the Backup Manager or an Actor if an Actor server is used for the Backup Manager.

- Redundant power supply and fans
- Dual onboard GbE or 10GbE interfaces (copper RJ45 interfaces)
- Dual port 16Gb Fiber Channel HBA (Host Bus Adapter) for Tape library control (only if a tape library is used and requires the use of a dedicated FC connection)
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

See the *Minimum Partition Sizing for ElasticSearch and Other Sizing* table for detailed partition information.

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Manager Cluster

Note: DIVA has not been tested with clusters at this time.

The following server platform (two identical servers) is the minimum requirement recommended for the installation of the Manager software in a cluster environment. A Manager Cluster is only valid in a Windows based environment.

- Rack mount chassis
- One Intel® Xeon® Silver 4214R 2.4Ghz 12C/24T or equivalent (optional second processor possible)
- 64GB RAM
- Two 2TB HDD 15,000 RPM or SSD (configured in RAID 1) system disks (and an optional third disk used as a hot spare)

Note: If DIVA is used to archive complex objects like DPX or Avid sequences, it is advisable to ask for a specific recommendation based on the estimated traffic (in terms of size and number of objects to be archived per day). In general, if complex objects need to be archived, Telestream recommends using a minimum of two 2TB HDD with 15,000 RPM. This recommendation is also valid for the Backup Manager or an Actor if an Actor server is used for the Backup Manager.

- Redundant power supply and fans
- Two onboard GbE or 10GbE interfaces (copper RJ45 interfaces)
- Dual port SAS or FC HBA (for the shared disk bay connection)

Note: A shared disk bay with dual RAID controller (SAS or FC Interface) and seven 300 GB SAS disks connected to both servers to accommodate the database.

- Dual port 16Gb Fiber Channel HBA for Tape library control (only if a tape library is used and requires the use of a dedicated FC connection)
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

See the *Minimum Partition Sizing for ElasticSearch and Other Sizing* table for detailed partition information.

Actor

The following is the minimum server configuration recommended for the installation of the Actor software:

- Rack mount chassis
- One Intel® Xeon® Silver 4214R 2.4Ghz 12C/24T or equivalent
- 32GB RAM
- Two 300 GB HDD 15,000 RPM or SSD (configured in RAID1) system disks (optional third disk can be used as a hot spare)
- RAID5 disk space for cache, at least five 1.8TB disks
- Optional RAID5 disk space for Nearline storage (DIVAgrid Architecture)

Note: The DIVAgrid Architecture consists of aggregating direct attached disks from multiple Actors into one single DIVA array. The Manager distributes content it needs to store on this array across the different Actors composing the array. This provides a cost-effective, high performance solution for Nearline disk storage and is ideal in workflows requiring temporary disk storage to enable the creation of multiple object instances and transcoding.

- Redundant power supply and fans
- Two onboard GbE interfaces (copper RJ45 interfaces)
- Dual 10 GbE ports interface
- Dual port Fiber Channel HBA for the connection to an external shared SAN disk (optional)
- Dual port Fiber Channel HBA for the connection to the Tape drives (Qlogic recommended)
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

See the *Minimum Partition Sizing for ElasticSearch and Other Sizing* table for detailed partition information.

Actor and Manager (Single Computer)

The following is the minimum server configuration recommended for the installation of the Actor and Manager software on a single computer. This configuration should be limited to entry level systems for performances reasons:

- Rack mount chassis
- One Intel® Xeon® Silver 4214R 2.4Ghz 12C/24T or equivalent (optional second processor possible)
- 64GB RAM
- Two 2TB HDD 15,000 RPM (configured in RAID1) system disks (optional third disk can be used as a hot spare)

Note: If DIVA is used to archive complex objects like DPX or Avid sequences, it is advisable to ask for a specific recommendation based on the estimated traffic (in terms of size and number of objects to be archived per day). In general, if complex objects need to be archived, Telestream recommends using a minimum of two 900 GB HDD with 15,000 RPM. This recommendation is also valid for the Backup Manager or an Actor if an Actor server is used for the Backup Manager.

- RAID5 disk space—at least five 2TB disks, Redundant power supply, and fans
- Two on-board GbE interfaces
- Two 10 GbE interface (optional)
- Dual port Fiber Channel HBA for the connection to an external shared SAN disk (optional)
- Dual port 16Gb Fiber Channel HBA for the connection to Tape drives (Qlogic recommended)
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

See the *Minimum Partition Sizing for ElasticSearch and Other Sizing* table for detailed partition information.

DIVA Connect 4.x

The DIVA Connect configuration provides a consolidated view of a distributed DIVA system. The following is the minimum server configuration recommended for the installation of DIVA Connect 4.x:

- Rack mount chassis
- One Intel® Xeon® Silver 4214R 2.4Ghz 12C/24T or equivalent
- 64GB RAM
- Two 480GB HDD 15,000 (configured in RAID1) system disks (optional third disk can be used as a hot spare)
- One 10 GbE interfaces (optional)
- Oracle Linux 7 x86_64 and later
- Windows Server 2016
- Windows Server 2019
- Windows Server 2022

See the DIVA Connect documentation on the Telestream DIVA Support Portal for detailed DIVA Connect information.

General Storage Requirements

The following table describes the main storage characteristics of the various components:

Server	CPU	System Disks	Cache and Disk	Data Disks
Manager Cluster[1]	1	RAID1	No	No
Manager	1	RAID1	No	No
Actor	1	RAID1	RAID5	Nearline (optional)
Actor and Manager	1	RAID1	RAID5	Nearline (optional)
Actor and Transcoder	2	RAID1	RAID5	Transcoding area plus optional Nearline disk.
DIVA Connect	1	RAID1	No[3]	No

1. Manager Cluster is only valid in a Windows based environment.

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Minimum Partition Sizing for ElasticSearch and Other Sizing

The following are the minimum partition sizes for the Manager computer. These minimum sizes are also valid for a Manager Backup configuration or an Actor used as a Backup Manager.

Caution: All partitions must be protected by RAID.

Windows Partition		Minimum Size	Recommended Block Size	Comments
C:\		80 GB	Operating System Default	DIVA Software, Operating System, and DB engines
E:\		80 GB	8 kb	Database Data Files
F:\		Windows: 15 GB (exactly)	4 kb	Database Archive Logs
H:\		200 GB	64 kb	Database Backup Folder
G:\		100 GB	Operating System Default	Complex object Metadata Database (optional).

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Managed Storage, Drives, and Disks

DIVA supports various drives and Managed Storage.

- Supported Managed Storage and Control Software
- Supported Drives
- Supported Disks

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Supported Managed Storage and Control Software

The following table identifies Managed Storage and associated control software supported by DIVA LibAttach is only valid in a Windows based environment.

Note: The latest qualified release of ACSLS is 8.5.1.

Manufacturer	Library	Control Software	Robot Manager Module
Alto	Disk Library	Alto Protocol	ALTO_Robot.dll
Dell	TL4000/TL2000[1]	Direct SCSI/FC	Robot_SCSI
	ML6010[2]	Direct SCSI/FC	Robot_SCSI
HP	StoreEver	Direct SCSI/FC	Robot_SCSI
	ESL G3-700	Direct SCSI/FC	Robot_SCSI
	ESL G3-1500	Direct SCSI/FC	Robot_SCSI
	ESL G3-3000	Direct SCSI/FC	Robot_SCSI
	ESL G3-5000	Direct SCSI/FC	Robot_SCSI
	MSL-2024	Direct SCSI/FC	Robot_SCSI
	MSL-2048	Direct SCSI/FC	Robot_SCSI
	MSL-6480	Direct SCSI/FC	Robot_SCSI
IBM	TS3100	Direct SCSI/FC	Robot_SCSI
	TS3200	Direct SCSI/FC	Robot_SCSI
	TS3310	Direct SCSI/FC	Robot_SCSI
	TS3500	Direct SCSI/FC	Robot_SCSI
	TS4500	Direct SCSI/FC	Robot_SCSI

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Manufacturer	Library	Control Software	Robot Manager Module
Oracle StorageTek	SL8500[3]	LibAttach 1.4.2[5]	Robot_ACSLS
	SL500[4]	Direct SCSI/FC	Robot_SCSI
	SL150	Direct SCSI/FC	Robot_SCSI
	9310	ACSLS	Robot_ACSLS
	5500	ACSLS	Robot_ACSLS
	L180	ACSLS or Direct SCSI/FC	Robot_ACSLS or Robot_SCSI
	L7000	ACSLS	Robot_ACSLS
	SL24	LibAttach 1.4.2[5]	Robot_ACSLS
	L80	Direct SCSI/FC	Robot_ACSLS
	L40	Direct SCSI/FC	Robot_ACSLS
	L20	Direct SCSI/FC	Robot_ACSLS
	L1400M	Direct SCSI/FC	Robot_ACSLS
Oracle StorageTek	SL4000	LibAttach 1.4.25	Robot_ACSLS
		Direct SCSI/FC	Robot_SCSI
Oracle StorageTek	SL3000	LibAttach 1.4.25	Robot_ACSLS
		Direct SCSI/FC	Robot_SCSI
Overland Tandberg	NEO XL Series	Direct SCSI/SAS	Robot_SCSI
Qualstar	TLS-5000	Direct SCSI/FC	Robot_SCSI
	RLS-85210	Direct SCSI/FC	Robot_SCSI

Manufacturer	Library	Control Software	Robot Manager Module
Quantum (ADIC)	Scalar i6000	Direct SCSI/FC	Robot_SCSI
	Scalar i500	Direct SCSI/FC	Robot_SCSI
	Scalar i40/i80	Direct SCSI/FC	Robot_SCSI
	Scalar i3/i6	Direct SCSI/FC	Robot_SCSI
	Scalar 100	Scalar DLC or Direct SCSI/FC	Robot_ADIC or Robot_SCSI
	Scalar 1000	Scalar DLC or Direct SCSI/FC	Robot_ADIC or Robot_SCSI
	Scalar 10000	Scalar DLC or Direct SCSI/FC	Robot_ADIC or Robot_SCSI
	Scalar 12000	Scalar DLC or Direct SCSI/FC	Robot_ADIC or Robot_SCSI
	Scalar i2000[6]	Scalar DLC or Direct SCSI/FC	Robot_ADIC or Robot_SCSI
Sony Petasite	S60	PSC 5.00	Robot_Sony
Sony ODA	ODS-L10	Core Robot Manager	Robot_SCSI
	ODS-L30M	Core Robot Manager	Robot_SCSI
	ODS-L60E	Core Robot Manager	Robot_SCSI
	ODS-L100E	Core Robot Manager	Robot_SCSI
Spectralogic	T-Finity	Direct SCSI/FC	Robot_SCSI
	T950	Direct SCSI/FC	Robot_SCSI
	T680, T380, T200	Direct SCSI/FC	Robot_SCSI
	T120	Direct SCSI/FC	Robot_SCSI
	T50e	Direct SCSI/FC	Robot_SCSI

1. The Dell TL2000 is an IBM TS3100 library.
2. The Dell ML6010 is an AIDC i500 library.
3. Operational upon robot failure when configured with multiple LSMs and one robot per LSM.
4. The SL500 library will be transitioned to End of Life (EOL) soon.
5. DIVA only supports 32-bit LibAttach and not 64-bit.
6. Autoclean is not supported, but the Scalar i2000 with partitioning is supported.

Supported Drives

The following drives are supported by DIVA.

Manufacturer	Drive Model
HP	LTO-3
	LTO-4
	LTO-5
	LTO-6
	LTO-7
	LTO-8
IBM	LTO-1
	LTO-2
	LTO-3
	LTO-4
	LTO-5
	LTO-6
	LTO-7[1]
	LTO-8
	LTO-9
	Note: When a virgin LTO-9 tape is mounted into a drive for the first time, it will require an initialization that may take between 30 minutes and 2 hours. In DIVA, the consequence is the positioning step will take between 30 minutes and 2 hours.
	3592
	TS1120 Jaguar
	TS1140 Jaguar
	TS1150 Jaguar
	TS1155 Jaguar
	TS1160 Jaguar

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Manufacturer	Drive Model
Oracle StorageTek	Titanium 10000-A
	Titanium 10000-B
	Titanium 10000-C
	Titanium 10000-D
	9840A
	9840B
	9840C
	9840D
	9940A
	9940B
Sony (Optical)	ODS-D55U
	ODS-D77F
	The following drives are supported in DIVA Core 7.4 and later:
	ODS-280F
	ODS-280U[2]
	ODS-D380F

1. Drivers for the IBM LTO-7 and LTO-8 drives only exist for Windows Server 2012.
2. The ODS-280U has not been qualified for use with DIVA.

Sony ODA Optical Drives

Sony ODA Blu-ray Optical Drives are supported in DIVA on Windows only. The drives are viewable as a Tape Group Drive and Cartridge (having UDF format) in the web app on the Resource Management > Drives page.

The drives must be configured using the Optical Disk Archive Utility before configuring DIVA on the system.

The Windows Device Manager will display the drives as an Unknown Device because there are no drivers available for them. Several configuration files must be modified to include these drives in the DIVA System. See the DIVA Installation and Configuration Guide for detailed information.

The details of these drives are as follows:

- DIVA has only been tested with the ODS-280F Fiber Channel type. These drives are twice as fast as the Gen1 drives. The ODS-280U has not been qualified for use with DIVA.

- The cartridge available for the ODC3300R WORM drive has a 3.3 TB capacity.

- Gen2 drives can read content written on Gen1 media with Gen1 drives. DIVA does not support the READ-ONLY media drive compatibility. Telestream recommends isolating Gen1 media from Gen2 media in the configuration (no cross-generation compatibility), and there must be at least one Gen1 drive in a library containing Gen1 cartridges.

- Sony ODA Gen 3 is supported. The drive type is ODS-D380F and uses the following new cartridge:
  - **Cartridge Type**
    ODC5500R
  - **Capacity**
    5.5 TB
  - **Drive Type**
    WORM

Note: The drive is still R/W compatible with ODC3300R and read-only compatible with older cartridge types.

Disk Archive Corporation ALTO

ALTO is an offline, cold storage archive; a secure and convenient alternative to data tape, optical disk, and cloud for Petabyte sized volumes of valuable media assets. ALTO uses data file replication to create multiple non-segmented replicas of files on removable media. ALTO systems can be distributed between on-premises and other geographically separated locations. Disks can be barcoded and externalized to vault storage for air-gap security providing a copy of last resort for disaster recovery.

DIVA supports ALTO storage in two different ways:

- With Virtual File System (VFS), in which case multiple Alto disks are combined and presented by VFS as a Virtual Disk. From the DIVA web app the storage appears as a DIVA Array.

- Direct API integration, in which case Alto is considered as a removable storage system like tape libraries or Sony ODA. DIVA tracks and exposes the content stored on each disk and groups can be created as with tapes or ODA.

Supported Disks

DIVA supports the following disks:

- Direct Connection using a local path

  For example drive letters in Windows such as M:\managed_disk.

- CIFS Connection

- FTP Connection

- Harmonic MediaGrid

- Tiger MetaSan

- Quantum StoreNext Filesystem

- IBM GPFS (General Purpose Filesystem)

- Huawei OceanStore 9000

- Dell PowerScale (Isilon)

Cache Disk

This disk is only used for caching, Tape Group to Tape Group copying, Tape Group spanning, and Tape Group repacking operations. The cache does not have to be on a RAID protected disk, but it is recommended.

The size of this disk must be at least the size of the largest object. The cache disk can be a local disk, SAN, NFS, or SMB connected. Telestream recommends setting the cache disk block size to at least 64KB.

Storage or Storage and Nearline

The disk will be used for storing objects and Nearline operations. The storage size depends on the amount of space desired to store objects. This disk must be RAID protected.

A storage disk can also be used for cache. The storage disk can be a local disk, SAN, NFS, or SMB connected. Telestream recommends setting the storage disk block size to at least 64KB.

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Object Storage

DIVA supports a variety of object storage solutions.

Topics

- Supported Object Storage
- Ceph Implementation Notes
- HCP (Hitachi Content Platform) Notes

Supported Object Storage

The following table identifies object storage accounts supported by DIVA Core 9.0.

Object Storage Type	Protocol	Supported Storage Classes	Managed Storage	AXF Reference-File	Server	Auto-Indexing and AXF Discovery
Alibaba OSS	S3	Standard, IA (Infrequent Access), Archive, ColdArchive	Yes	Yes	Yes	Yes
AWS S3	S3	Standard, Intelligent-Tiering, Standard-IA, One Zone-IA, Glacier, Glacier-Deep-Archive, Glacier-Instant-Retrieval	Yes	Yes	Yes	Yes
Azure Blob Storage	Blob REST API	Standard, Hot, Cool, Cold, Archive	Yes	Yes	Yes	Yes

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Object Storage Type	Protocol	Supported Storage Classes	Managed Storage	AXF Reference-File	Server	Auto-Indexing and AXF Discovery
Ceph	S3	Standard	Yes	Currently Not Tested	Yes	Yes
Cloudian	S3	Standard, Archive	Yes	Yes	Yes	Yes
EMC ECS	Swift / S3	Standard	Yes	Yes	Yes	Yes
Google Cloud Storage	JSON API	Standard, Nearline, Coldline, Archive	Yes	Yes	Yes	Yes
HCP (Hitachi Content Platform)	S3	Standard	Yes	Yes	Yes	Yes
Isilon OneFS (8.2 and later)	S3	Standard	Yes	Yes	Yes	Yes
NetApp StorageGRID	S3	Standard	Yes	Currently Not Tested	Yes	Yes
ObjectMatrix MaxiStore	S3	Standard	Yes	Yes	Yes	Not currently tested.
Oracle Cloud Storage	OCI	Standard, Archive	Yes	Not Supported Yet	Yes	No
Scality	S3	Standard	Yes	Not Supported Yet	Yes	Yes
Tata Cloud Storage	S3	Standard	Yes	Yes	Yes	Yes

Ceph Implementation Notes

The current Ceph implementation cannot create a bucket in Ceph storage yet due to the Ceph current implementation of the S3 protocol, so the bucket must exist before it can be written to. For use as disk (versus use as a server) the user must provide the bucket to use through the `-bucket_name` option in the Storage Option of the corresponding array definition.

There must be two buckets created prior using Ceph as a Storage Array, one for storing data and one for metadata. For example, mybucket and mybucket-metadata. Those

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two buckets must be created and specify `-bucket_name=mybucket` in the array configuration in Storage Options as shown in the following figure:

HCP (Hitachi Content Platform) Notes

For the multipart upload to work with HCP, `-disable_etag_verification` must be set to the storage options of an S3 array:

Also, in the HCP Management Console, the option Optimized for Cloud Protocols only must be set. This option can be found under Namespace > Settings > Optimization.

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Partial File Restore

Numerous object formats have been tested successfully with the DIVA Partial File Restore operation. Testing with samples provided by the customer is recommended to confirm interoperability. Telestream makes no commitment if variations in the encoding profiles cause issues with the DIVA Partial File Restore feature. All formats support AUTO_DETECT.

Access the Partial File Restore settings in the web app under Configuration > System Settings > Actors > Edit Actor > Partial Restore Settings, and in the DIVA configuration file.

Contact Telestream Support for more details about each implementation.

Notes: All formats are supported on Windows. However, Linux currently only supports GXF, QuickTime, MPEG2 Transport Stream, BWAV, and MXF. The initial DIVA release does not support Linux.

- GXF (General Exchange Format)
- MXF (Material Exchange Format)
- AVI (Audio Video Interleaved)
- AVI with Separate WAV Files
- AVI with FFV1 or FFVH
- QuickTime/MP4
- LXF (Leitch Exchange Format)
- DIF with Separate WAV Files, and DV with Separate Audio, or Self-contained DV Types
- BWAV (Broadcast WAV)

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GXF (General Exchange Format)

GXF Partial File Restore is supported on Windows in the following formats:

- Aurora Edit
  - MPEG2 D10 MPEG2 I-frame
  - MPEG2 D10 MPEG2 LGOP
- BitScream
  - DV25
- K2 Media System
  - MPEG2 D10 MPEG2 I-frame
  - MPEG2 D10 MPEG2 LGOP
- K2 Media System / Summit
  - AVC-I
  - DVCPRO
  - XDCAM HD
- Mseries
  - MPEG2 D10 MPEG2 I-frame
  - MPEG2 LGOP
- NewsEdit
  - DV25
  - DV50
  - MPEG2 D10 MPEG2 I-frame
- PDR
  - MJPEG
- Profile XP
  - DV25
  - DV50
  - MPEG2 D10 MPEG2 I-frame

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MXF (Material Exchange Format)

MXF standard specification (SMPTE377M) defines multiple operational patterns. Only OP1a is supported. MXF Partial File Restore is supported on Windows and Linux in the following video essence formats:

- DV25, DV50, DV100
- DVCPRO (SD and HD)
- DNxHD
- MPEG2 D10[1]
- MPEG2 LGOP (SD and HD)
- SONY XDCAM HD
- H.264/MPEG-4 AVC
- AVC-Intra (subset of H.264)
- SONY XACV (subset of H264, HD and 4K)
- DNxHR (new codec from AVID for high definition)

Note: Although these video formats are supported, qualifications are still required because there might be many variations of MXF wrapper for a given video essence format.

For Windows, BMX is the default library. MOG SDK can only be used for temporary compatibility by going to the web app under Configuration > System Settings > Actors > Edit Actors > Partial Restore Settings and click the down arrow for MXF. Under the settings, changing the Use BMX Library parameter to off using the slide switch.

AVI (Audio Video Interleaved)

The applicable wrapper format is a single AVI file per object, and may contain audio tracks. This Partial File Restore is supported by AUTO_DETECT only.

Adobe Premiere
Supports DVSD and PCM video and audio essences.

Harris Corporation Nexio 3600
Supports DVSD and PCM video and audio essences.

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1. MXF generated by Seachange are supported as standalone MXF files (no .pd or .vix file).

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AVI with Separate WAV Files

The applicable file format is a single AVI file with separate WAV files. The AVI file contains a single video track, and the WAV files contain a PCM sample format. This Partial File Restore is supported by VIDEO_FORMAT_AVI and AUTO_DETECT in Windows only.

Manufacturer	Product	Release	Supported Video and Audio Essence
Insipiens	AVI Writer	1.0.0.0	MPEG2 LGOP
Matrox	MQSink Filter Format 4	2.0.0.271	DV25, DV50
	MQSink Filter Format 6	2.0.0.271	Dv25, DV50, DVSD
	MQSink Filter for MPEG Format 4	2.0.0.270, 2.0.0.271	MPEG2 LGOP, MPEG2 I-Frame[1]
	DSX AVI File Format 6	1.0.0.362, 1.0.0.401	MPEG2 LGOP[2], M701 HD

1. MPEG2 I-Frame supported on 2.0.0.271 only.
2. MPEG2 LGOP supported on 1.0.0.362 only.

AVI with FFV1 or FFVH

AVI clips containing FFV1 or FFVH video essence are supported. Use these formats for video preservation purposes. These codecs are lossless and generate intra-coded frame only (no GOP).

QuickTime/MP4

QuickTime is a file wrapper and may contain multiple tracks of various types (audio, video, and so on). QuickTime self-contained clips are supported using OMNEON and AUTO_DETECT.

QuickTime Partial File Restore is supported by Windows Actors only.

Partial File Restore support for QuickTime with MPEG2 LGOP (XDCAM HD 422 with sixteen tracks of audio) is supported as follows, regardless of the type of video or audio content:

- The number of tracks per clip is currently limited to thirty.
- Tracks must have the same duration and start time.
- QuickTime standards support advanced edit list features that are not supported by Partial File Restore.
- Each track must be composed of a single valid edit list entry that may or may not start from zero.

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Some content types are not supported, including some video and audio combinations. The following table identifies supported types:

Supported Track Types	Cardinality
Video	One video track per clip
Video	Two video tracks per clip[1]
Audio	Zero or multiple tracks per clip
Closed Caption[2]	One track per clip
Timecode with a single entry	One track per clip
Timecode with multiple entries	One track per clip

1. When a QuickTime clip contains two video tracks, the tracks must be synchronized and have the same duration and start from 00:00:00:00.
2. Empty Closed Caption tracks are supported.

QuickTime Self-Contained Clips

The format of the video essence is not a criterion in QuickTime Self-Contained clips. In theory, the Partial File Restore for QuickTime should be able to support any type of video essence. Partial File Restore is not recommended for the following variations in the video essence format:

- Where the video quality supports 420 or 422
- Where the number of pixels is not a factor
- Where the clip is bit rate independent

The following table describes what has already been tested and does not guarantee that Partial File Restore will support it. The only supported audio formats are AIFF and WAV (LPCM).

Manufacturer	Product	Release	Supported Video Essence
Dalet			DVCPRO100
Omneon	Spectrum	5.x	DV25, DVCPRO, DVCPRO50, DVCPRO HD, MPEG2 D10, MPEG2 I-Frame, MPEG2 LGOP, MPEG2 LGOP HD
Oracle	SAMMAsolo	Unknown	DV25

MP4 Clips

MP4 wrapper is also known as MPEG-4 Part 14. This format has been developed based on QuickTime specifications. All the formats currently supported by the QuickTime partial restore are also supported with MP4.

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LXF (Leitch Exchange Format)

LXF (Leitch Exchange Format) is well defined, and Partial File Restore supports specific releases of the file format regardless of the source of the clip (Nexio, Flip Factory, and so on). The supported job format is either AUTO_DETECT or VIDEO_FORMAT_LEITCH.

The LXF Release 0 supported video and audio essences are:

- MPEG2 I-frame Standard Definition (SD)
- MPEG2 LGOP SD
- DV
- DVCPRO
- DVCPRO50

The LXF Release 1 supported video and audio essences are:

- MPEG2 4:2:2 (1080i and SD only)
- DV SD
- DVCPRO SD
- DVCPRO50 SD
- DVCPRO HD

DIF with Separate WAV Files, and DV with Separate Audio, or Self-contained DV Types

The applicable file format is a single DIF or DV file with separate WAV files, and DV with separate audio or self-contained DV types. WAV files contain the PCM sample format. This Partial File Restore supports Avid Liquid and Omneon Spectrum with DV25 and WAV PCM using either AUTO_DETECT or VIDEO_FORMAT_OMNEON.

BWAV (Broadcast WAV)

BWAV (Broadcast WAV) is a regular WAV file that includes additional information—Bext and iXML (optional). Bext is a broadcast extension containing metadata, including TimeReference (timecode reference in milliseconds). DIVA Core uses Bext as a timecode reference for Partial File Restore.

BWAV may also contain and optional metadata called iXML. The metadata iXML contains an additional `TimeReference` and a frame rate. When iXML and Bext are both present, DIVA uses iXML because it contains an accurate frame rate (useful to convert milliseconds to and from a timecode). Without iXML, the millisecond to timecode conversion is only an approximation.

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Unmanaged Storage Repositories

DIVA transfers content to and from external equipment such as broadcast video servers, video editing systems, and generic computer systems. The following are the certified interfaces and protocols supported by DIVA.

Note: The Vstream protocol is no longer supported for Seachange source and target servers. This applies to the source types SEACHANGE_BMC and SEACHANGE_BML when no `-ftp` option is specified (indicating Vstream protocol is in use, not FTP).

- Unmanaged Storage Repositories
- Cloud and Object Storage Servers

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Unmanaged Storage Repositories

The following table identifies the source and target servers supported by DIVA.

Manufacturer	Server Model	Protocol	Unicode Support	OTU Support
Avid Airspace	See FTP_STANDARD table.	FTP	See the Avid Connectivity and Tools Guide.	No
Avid Interplay	ISIS or NEXIS	AVID_DHM AVID_DET AVID_AMC AVID_DIRECT	Yes, currently for AMC only.	No
DataExpedition	Expedat 1.15, Expedat 1.16	MTP	Yes	No
Dell PowerScale	Isilon	SMB	Yes	Yes
Disk (Local)	Internal disk	Direct	Yes	No
Disk (Network)	Shared File System, SAN, NAS	CIFS	Yes	No
EVS	Little Big Server, XT3	FTP	No	No
Grass Valley	NewsEdit, NewsFTP (Aurora Edit HD), UIM Gateway with MXF[1], K2[2]	FTP	Only K2 is supported.	No
Leitch	VR Series[3], Nexio 3600	FTP	Only Nexio 3600 is supported.	Only Nexio 3600 is supported
Omneon	Spectrum 4.6 SR2 Spectrum 4.7 SR2 Spectrum 5.0 SR1	FTP and AVI player FTP and AVI Player FTP and AVI Player	Only Spectrum 5.0 SR1 is supported.	Yes Yes Yes
Omneon	Spectrum 6.1 with System Manager 5.14	FTP Only	Yes	Yes

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Manufacturer	Server Model	Protocol	Unicode Support	OTU Support
Omneon	MediaGrid[4] 1.1	Mapped drive using MediaGrid file system drivers	Yes	No
Quantel	SQserver regional server with ISA gateway[5]	FTP	No	No
Sony	News Base Hyper Agent	FTP	No	No
Various (UNIX, Windows, Mac)	Any standard FTP server (RFC-959)	FTP	No	No
	Secure FTP server V3 (limited support)	SFTP	No	No

1. UIM Gateway with MXF is supported for release 2.0.6.3.
2. GXF and MXF formats are supported.
3. Supported only using WanStreamer or ArchiveStreamer.
4. Linux does not support MediaGrid because the API it depends on is not Linux compatible.
5. MXF supports release 2.1-22.09. Release 2.1-22.10 supports intelligent archive in TAR format.

The following table identifies FTP servers supporting FTP_STANDARD.

Manufacturer	Product Name	Core Actor Qualified	Unicode Support	WFM Qualified	OTU Qualified
Microsoft	IIS	Yes[1]	No	Yes[2]	Yes
FileZilla	FileZilla FTP Server	Yes	Yes	No	Yes
Gene6	Gene6 FTP Servers	Yes	Yes	No	No

1. Actor supports IIS with UNIX-like listing type configured.
2. WFM supports IIS with DOS-like listing type configured.

Cloud and Object Storage Servers

The following table identifies the Cloud and Object Storage Servers supported by DIVA.

Product Name	Protocol	Supported Storage Tier
OCI Object Storage	OCI	Standard Archive
AWS Storage	S3	Standard Intelligent-Tiering Standard-IA One Zone-IA† Glacier Glacier Deep Archive
Dell Elastic Cloud Storage		Standard
Scality Zenko		Standard
Cloudian		Standard
NetApp StorageGrid		Standard
Alibaba OSS		Standard Archive
Google Cloud Storage	GCS JSON API	Standard Nearline Coldline Archive
Azure Blob Storage	Blob REST API	Standard Hot Cool Archive

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Transcoders

DIVA supports the use of Vantage for performing transcoding operations. The following table lists the DIVA | DIVA Core and DIVA version and the qualified versions of Vantage:

DIVA	Content Director Version	Vantage Version
DIVA 7.1	4.1
DIVA 7.2	6.2
DIVA 7.3	6.3
DIVA 7.4	6.3
DIVA 7.5	7.1
DIVA 7.6	7.1
DIVA 7.7	8.1
DIVA 8.0	8.1
DIVA 8.1	8.1
DIVA 8.2	8.1
DIVA 8.3	8.1
DIVA 9.0	8.1

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Avid Connectivity

DIVA supports Avid Connectivity and MediaCentral | Asset Management DIVA Connector version 4.6.0. For more detailed information see the Avid Connectivity and Tools User Guide.

- Avid Interplay Compatibility
- MediaCentral Compatibility

Avid Interplay Compatibility

The following identifies current Avid Interplay release compatibility for DIVA:

The following are supported for Avid connectivity and Interplay:

- •AMC [2.1]: Interplay 2.2 or later: DIVA Core 8.0 or later
- •AWD [1.0]: Interplay 3.6 or later: DIVA Core 8.3 or later

MediaCentral Compatibility

The MediaCentral | Asset Management DIVA Connector version 4.6.0 is now tested and qualified with DIVA. This means DIVA and this DIVA Connector release can be updated if it is not release 4.6.0, and then all the releases of MediaCentral listed can be supported. This new connector release can be used in the following MediaCentral | Asset Management systems:

MC	AM Release Date	AM Build Number
2019.6	7.2
2019.9	7.3
2020.4	7.4
2020.9	7.5
2021.3	7.6
2021.7	7.7
2021.11	8.0
2022.3	8.0.1
2022.12	8.1

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