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DIVA Core

DIVA Connect

Installation, Configuration and Operations Guide

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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 Core Technical Support	Web Site: https://www.telestream.net/telestream-support/diva/support.htm 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.
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Preface

This document describes how to install, configure, and administer DIVA Connect 3.2.0.

Notes: Refer to the DIVA Core Supported Environments book for minimum hardware and software requirements to run DIVA Connect.

Before DIVA Connect 2.0, DIVA Connect was installed, revised, and released with Core. DIVA Connect is now released and revised independently of Core. DIVA Connect 3.2.0 is not directly compatible with Legacy DIVA Connect 1.0 (in Core 6.x and 7.x), and is configured differently. It is therefore not a drop in replacement.

Topics:

- Documentation Accessibility
- Access to Telestream Support
- Related Documents
- Document Updates

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Documentation Accessibility

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

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

Access to Telestream Support

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

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

Related Documents

For additional information, see the DIVA Connect Security Guide for this release for your installed Core release located at:

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

Document Updates

The following table identifies updates made to this document.

Date	Update
May 2022	Updated book for release 3.2.0 Added information on Archive Load Balancing Updated Copyright information. Updated terminology to new standards (see the *Overview* for updated terms) Updated REST API information in Chapter 7
July 2022	Minor terminology updates.
August 2022	Migrated book to Telestream format and styles.
September 2022	Updated product name and terminology.
November 2022	Reverted the term "Virtual Object" to "Object".
January 2023	Added note to refer to DIVA Core Supported Environments for minimum hardware and software requirements to run DIVA Connect.
February 2023	Added Linux compatible platform information.

Overview

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System Overview

Note: Refer to the DIVA Core Supported Environments book for minimum hardware and software requirements to run DIVA Connect.

DIVA Connect provides a unified view of archived digital assets across multiple, distributed Core systems and the cloud. It facilitates the moving of content back and forth among Core sites, and from customer Server and disks. DIVA Connect assists with disaster recovery, content distribution, access control, performance, and content availability.

By connecting to multiple Core sites, DIVA Connect creates a virtual archive system that spans geographical locations. You can leverage disaster recovery sites to provide additional asset availability when outages occur, and improve archive and restore performance for some assets when systems run normally. You can use Core installations from other parts of your organization as strategic backup sites, content sharing partners, and participants in global business media workflows. DIVA Connect eases the burden of keeping track of content that could exist in local Core sites, remote Core sites, and the cloud.

Applications can use Core API to connect directly to DIVA Connect. This allows applications to store and access digital assets in different geographical locations. DIVA Connect synchronizes asset information from each Core site, so that it always has an up-to-date asset inventory. DIVA Connect uses this information to enforce naming uniqueness, and to select the best site for various jobs (for example Restore and Copy jobs). DIVA Connect also provides access rules to limit the operations that users are allowed to perform.

New Terminology

The following terminology has been updated to reflect standardization efforts across all DIVA and Kumulate applications. There will be some variations in the documentation compared to the interface until everything is switched over to the new terminology; the documentation uses the new terms wherever possible.

- Running Requests are now called Jobs
- Request History is now called Job History
- Libraries are now called Managed Storage
- Datahub is now called Actor
- Proxyhub is now called Proxy Actor
- DIVA Core and DIVA Manager are now called DIVA Core / Core / Core Manager
- Category is now called Collection
- Source/Destination is now called Unmanaged Storage Repository
- Storage Repository is now called Managed Storage Repository

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- Group is now called Tape Group
- Link is now called Storage Link
- Storage Plan Manager is now called Storage Policy Manager
- Drop Folder Monitor (DFM) is now called Watch Folder Monitor (WFM)
- DIVA Command and Control Panel are now called System Management App
- DIVA Analytics and DIVAProtect are now called Analytics App

API Support

DIVA Connect allows applications written using the Core API to control multiple Core sites as if they were one large archive system. The Core API allows client applications to connect to an archive system and store content, copy content, delete content, or restore content (see the Core C++ API Programmer's Guide for more on the Core API). The API also supports retrieving of information about archived objects. DIVA Connect implements support for a large subset of the Core API - that which is commonly used by popular applications such as MAM (Media Asset Management) applications.

DIVA Connect 3.2.0 supports the new REST API that is included as part of the installation of Core 8.0 and later. For more detailed implementation information, see the Swagger at https://[Core_install_IP_address]:8765/swagger-ui.html.

Note: Telestream recommends using the REST API rather than the previous existing APIs (that is, Core Enterprise Connect, DIVAS, Java and C++). Although all previous APIs will remain available, the REST API offers new and enhance features.

For more information, see Core API Support.

User Interface (DIVAConnectUI)

DIVAConnectUI allows the user to monitor DIVA Connect jobs, and view, copy, restore, and delete DIVA Connect Assets (Core archived objects) across multiple Core sites. All DIVA Connect level jobs can be monitored, whether issued through the API or through the UI itself. You can also view asset information for all configured Core sites, whether the asset was archived through DIVA Connect or not. DIVAConnectUI provides flexible ways of querying both job information and asset information.

DIVA Connect 3.2.0 does not support the Core System Management App (even in Direct Mode). Instead, use the DIVAConnectUI to monitor DIVA Connect, and the Core System Management App to monitor Core.

For more information, see Using the User Interface.

Command Line Interface (DIVAConnectAdmin)

You can use the DIVAConnectAdmin command-line tool to:

- Monitor the status of database synchronization
- Set site-specific parameters and limits
- View API connections
- Reload the workflow profiles and access rules
- Change the log level of DIVA Connect services

For more information, see Administration.

Rule-Based Policies

Using DIVA Connect, you can create rules to control which users and which Workflow Profiles can perform certain operations. For instance, you can create rules that limit which Servers can receive restored content, or limit which objects can be copied to sites. For more information, see Access Rules.

You can use the AutoCopy feature to control which assets automatically replicate from one site to another. This feature supports flexible ways of scheduling copy tasks and can handle large numbers of jobs. For more information, see AutoCopy.

Other Core Components

Some inter-site transfer tasks are not performed specifically by DIVA Connect, but instead are carried out by other Core components as noted below:

The Watch Folder Monitor service monitors content that is being written to disk in a folder. It then archives that content into a Core system after the content has been completely transferred. WFM can be used as part of an intersite copy workflow, in DIVA Connect. See the Core Watch Folder Monitor User's Guide in the Core Documentation library for more information on WFM.

You can configure SPM (Storage Policy Manager) to automatically perform an operation when content arrives at a Core site. One of these operations is to restore the new content to a Watch Folder, which can then archive that content into another Core system. This functionality is similar to what you can achieve using AutoCopy. See the Core SPM (Storage Policy Manager) User's Guide in the Core Documentation library for more information on SPM.

Core itself provides the ability to transfer content from Servers to Core systems and back again, and copy and delete archived content.

DIVA Connect, Core, SPM, and WFM can work in unison to satisfy distributed media workflows.

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Installation Planning

> **Note:** Refer to the DIVA Core Supported Environments book for minimum hardware and software requirements to run DIVA Connect.

DIVA Connect is commonly configured at multiple Core sites. This chapter describes how to determine which DIVA Connect services to install and where. The major steps are:

- Understand which sites to connect to achieve the desired workflows. See Understanding Site Connectivity.
- Enable remote access for each site in the system (or local access). See Enabling Sites for Remote Access.
- Configure client access for sites that have applications connected them. See Configuring Client Access.
- Configure the access control and asset replication policies for the DIVA Connect network. See Configuring DIVA Connect Policies.

Understanding Site Connectivity

A DIVA Connect site is defined as exactly one Core installation (which could exist in the cloud) and one or more DIVA Connect services. Each site has a unique sitename. Each DIVA Connect service belongs to a particular site, indicated by the LocalSitename parameter in the DIVA Connect configuration files. A DIVA Connect site uses the sitename to refer to other sites in the network.

The most basic DIVA Connect connectivity uses DIVA Connect as a Core API proxy for a single Core system. In this configuration, you would create a DIVA Connect Direct Mode port in the ClientAdapter. This mode does not provide a view of multiple sites, and cannot be used (for example) to copy between sites. For more information on setting up DIVA Connect Direct Mode, see Configuring Client API Ports.

To have multiple Core sites act as one large archive system, DIVA Connect sites must be connected together using MultiDiva mode.

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DIVA Connect can connect to remote sites to retrieve asset information, monitor the remote site's status, and send jobs to the site (for example, a restore job), to satisfy DIVA Connect level jobs. You can use DIVAConnectUI to view assets that are stored on multiple sites, copy assets from one site to another, and view DIVA Connect jobs. You can use the Core API to connect to DIVA Connect and perform many of the same operations, and more.

Note: Some DIVA Connect deployments will not require each site to be connected to all other sites in the network.

Sample DIVA Connect Deployment

The following figure shows an example of a typical DIVA Connect deployment with three sites: New York, Los Angeles, and Dallas. In this example, applications in New York can see and copy assets from Los Angeles and Dallas, as well as locally in New York. In addition, applications in Los Angeles can see and copy assets from New York and Dallas. No customer applications are running at the Dallas site.
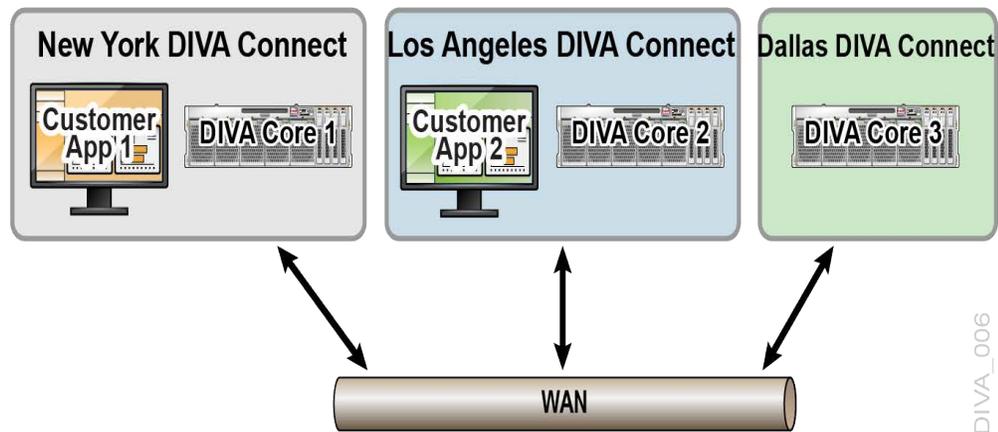
DIVA Connect Services

A DIVA Connect service is either a Windows or Linux Service installed on a server responsible for carrying out computing tasks in a DIVA Connect deployment.

Service	Description
ClientAdapter	Accepts jobs from the Core API and web clients, and interacts with Core sites and the DIVA Connect database to satisfy those jobs. You configure this service when implementing client application access. You can also use this in a minimal proxy-only DIVA Connect deployment (DIVA Connect Direct Mode, described in Configuring Client API Ports). For more information, see DIVA Connect ClientAdapter Service.
ManagerAdapter	Serves as a bridge between DIVA Connect and the Core Manager. This service provides remote access for a Core site. You must configure this service for all DIVA Connect sites that will be accessed by other sites remotely, especially those that will have asset information synchronized. For more information, see DIVA Connect ManagerAdapter Service.
DbSync	Responsible for synchronizing asset information from multiple Core sites, and storing the information in the DIVA Connect database. You configure this service when implementing client (application) access. For more information, see DIVA Connect DbSync Service.

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Enabling Sites for Remote Access

To enable a Core site for remote access by other DIVA Connect systems, you must set up a ManagerAdapter service on the site and configure Core for remote access.

The following figure shows an example of two sites: a New York site with a full DIVA Connect configuration (remote access and client access) and a Dallas site that is configured just for remote access. The Dallas site only has one DIVA Connect service running: the ManagerAdapter service. Core has been configured so it can interface with other sites.
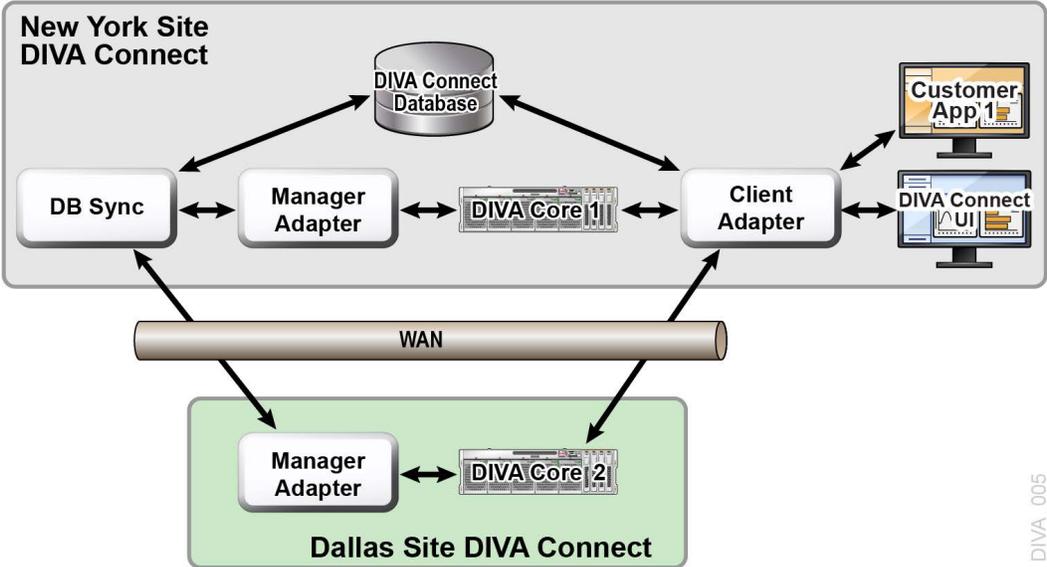
DIVA Connect ManagerAdapter Service

The ManagerAdapter service serves as a bridge between DIVA Connect and the Core Manager. It must be configured to provide remote access by other DIVA Connect systems.

For security and performance reasons, Telestream recommends that the ManagerAdapter be installed on the same system as the Core Manager. Likewise, it is often the case that the ClientAdapter and DIVA Connect database run together on a different server entirely.

The ManagerAdapter is configured using a simple configuration file. For more information, see Configuring Services.

DIVA Core

To achieve DIVA Connect workflows, you perform most of the configuration at each Core site. This section details some concepts needed to understand how DIVA Connect interacts with Core, and the importance of the Core configuration. Refer to the Core Installation and Configuration Guide for Core configuration details.

Objects and Instances

In a Core system, archived objects are uniquely identified by two parameters: an Object Name and an Object Collection. The Collection is part of the formal name of the object, a kind of namespace. For example, an object with a name of CLIP01 and Collection of MOVIES is a different object than one with a name of CLIP01 and a Collection of COMMERCIALS.

DIVA Connect uses the object name and Collection to associate objects on various sites.

Note: If an object on one site has the same object name and Collection as on another site, DIVA Connect will consider both to be the same object.

When you archive assets using DIVA Connect, it will (by default) reject new assets that have the same name (and Collection) as assets already archived on other sites. However, archives issued directly to a Core system are not checked this way. Archiving without using DIVA Connect may result in an object on site B that has different content than the corresponding object on site A, event though the two objects have the same name and Collection. This can lead to DIVA Connect restoring the wrong content.

In Core, each archived object can contain many instances: one instance for each physical copy of the object on tape or on disk. There is an order number for each instance. The numbering starts with zero and increments by one for each instance in the object. So, you can uniquely refer to an instance on a Core system by providing the object name, Collection, and instance order number.

DIVA Connect assigns its own set of instance order numbers that are derived from the Core instance order number. It does this so that for each object, the DIVA Connect instance order numbers are unique across all DIVA Connect sites.

Source and Target Servers

A Core Server contains information necessary to communicate with a customer server or disk external to Core. Customers transfer content to and from Core through these servers and disks.

If a Server on one site has the same name as one on another site, DIVA Connect concludes that they refer to the same physical server and (or) disk. This convention is important in setting up a DIVA Connect system (see Restore Workflow for more information). If the Servers are addressable through the API, and they point to the same physical server, disk, and path, you should give them the same name.

Setting Up Transfer Servers

To use DIVA Connect to transfer content from one site to another, configure at least one Server to be accessible from both sites. DIVA Connect will use this common Server to copy objects from one site to the other. The Server configurations on both sites should have the following characteristics:

– Same Name

   On all sites, you should configure the same name for Servers that refer to the same physical server, disk, and directory.

   DIVA Connect's Site-To-Site Mappings can handle Servers that point to the same place but are not necessarily named the same. See Site-to-Site Mappings for more information.

– Same Place

   The two Server entries must point to the exact same location (path) on the disk on a server. The types of transfer (for example, FTP_STANDARD, DISK) may differ on each site, and may even have different root paths in the configuration. For example, a Server named NY_SHOWS might be of type DISK on the New York site, but of type FTP on the Los Angeles site.

– No Transcode or Renaming

   For Servers used in inter-site copies, do not configure the Server for transcoding upon restore. This will lead to incorrect content being archived to Core sites.

– Delete on Source

   For each Server that will be used in copy commands, set the -allow_delete_on_-source option in the Core Server configuration. This allows you to delete content from the site after it has been transferred to Core. You provide this option in the options field of Core's Server configuration panel.

– AXF and Checksums

   You can enable end-to-end checksum comparisons on inter-site copies (copy operations from one site to another) by enabling AXF Genuine Checksums in Core. In the Core Configuration Utility, select the Server that you use for copies, and then select the AXF Genuine Checksum option. After this is performed, you can set the -axf option in the DIVA Connect Site-To-Site mapping AdditionalOp-

tions parameter. This allows checksum information to be embedded in the AXF wrapper on the Source Server site, and checked again at the target site.

– Punch Hole Server

To use the Actor to Actor feature introduced, a Punch Hole Server must be installed and running on a server that is accessible to both the Source Server site and Target Server site of intersite transfers. This server is used only by DIVA Connect for Actor to Actor transfers.

Do not be confused by the Site parameter in the Core Configuration Utility's Server panel. The sitename here is used only by Core, and does not correspond to a DIVA Connect site (see the Core Installation and Configuration Guide for more information).

Caution: **Modifying the names of Core configuration parameters (such as Unmanaged Storage Repositories, Media Names, and Storage Plans) when connected to DIVA Connect can cause errors.**

Media (Storage Mediums) and Storage Plans

When DIVA Connect copies objects from one Core system to another, take care when assigning the archive Media Name and Storage Plan Name of the copy on the target site. Use a good naming policy regarding media values on each Core system.

DIVA Connect records the Core Media Names when it synchronizes each object instance. You can configure DIVA Connect to automatically assign the Media/Storage Plan on a Copy operation. See Selected By DIVA Connect (media of any) for more information. One of the ways to configure this feature is to archive to the target site with the same Storage Plan Name as the source object. For this to work, the proper storage plans need to be configured in the target Core. Alternatively, you can use Core Media Mappings to transform the Storage Plan Name into a media or another storage plan, all at the target Core site.

Watch Folder Monitor

The Watch Folder Monitor monitors folders for new content, and then archive the new content into Core. By restoring to a particular Watch Folder, the Watch Folder Monitor can pick up the content and archive it to a different Core system.

DIVA Connect can implement copy workflows without WFM, but in some cases, it is needed or desirable. To copy without WFM in the mix, the DIVA Connect RestoreAndArchive Transfer Method can be used. However, there are some situations where it is appropriate to use WFM. Good candidates for using WFM might include autonomous sites that want to perform their own cleanup of unsuccessfully transferred content, or systems where third party WAN accelerators are used. To use WFM for transfers, use the DIVA Connect RestoreAndMonitor Site-To-Site Transfer Method. See Site-to-Site Transfer Mappings (Workflow Profile) for more information.

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Actor to Actor Transfer (D2D)

DIVA Connect 3.2.0 supports the Actor to Actor intersite transfer feature. You can configure two Actors on different sites to transfer content directly. This feature requires that the Core Bridge component of Core be setup and running, and must be configured in both the Source Server and Target Server Core configurations. The name of the Bridge Server must be specified as the FromSrcDest and ToSrcDest in a SiteToSiteTransfer section of the Site-to-Site Transfer Mappings.

Configuring Client Access

Configuring for Client Access involves configuring:

- The local Core for remote access (see Enabling Sites for Remote Access)
- The ClientAdapter service
- A DbSync service
- A DIVA Connect database

Configuring all DIVA Connect services enables the site for full DIVA Connect workflow processing.

In the following figure, both the New York and Los Angeles sites are configured for full DIVA Connect workflow processing. Applications in Los Angeles connect directly to the ClientAdapter in LA. By doing so, they can retrieve content from New York if needed. The local DIVA Connect database provides a global view of assets across sites, even if connectivity is lost from one site to another. If sufficient permissions are granted, DIVAConnectUI users in LA can copy content from New York to LA, and even delete content in New York.

Lorem ipsum
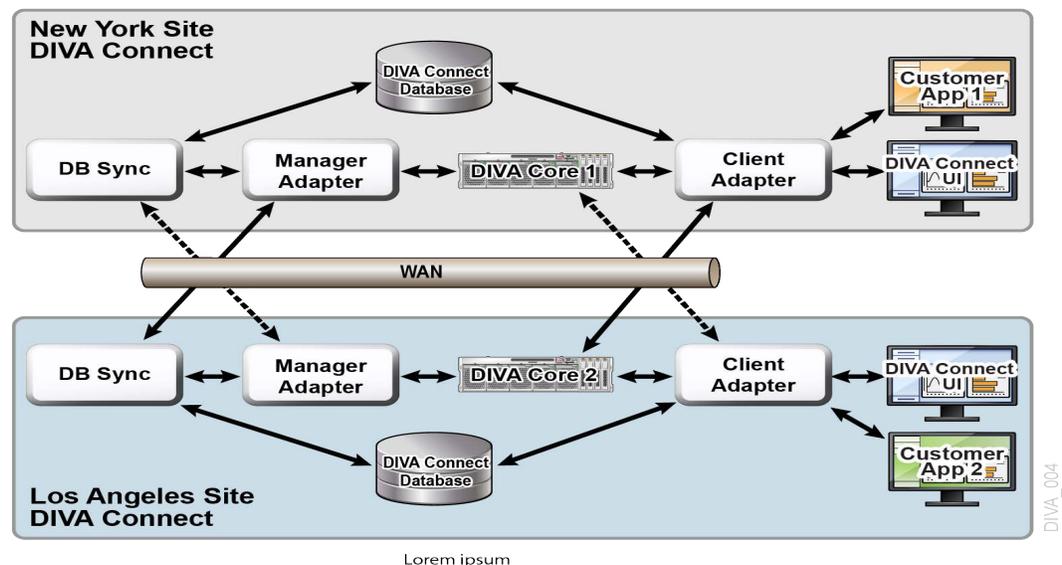
Though it is technically possible to configure Customer App 2 to remotely connect to New York's ClientAdapter, this configuration often provides better availability, security, and auditing. Performance and scalability is often increased as well, especially with

unreliable or slow WAN links.

DIVA Connect ClientAdapter Service

Application clients that want to use the Core API, or want to use the DIVA Connect GUI, connect to the DIVA Connect ClientAdapter service. This DIVA Connect service accepts web and socket connections from applications and processes the jobs. A ClientAdapter is configured on each site that has applications that are local to the site where Core and DIVA Connect are installed. The ClientAdapter communicates with local and remote sites through the ManagerAdapter service. ClientAdapters can also connect directly to Core Managers using Socket Mode.

You configure the ClientAdapter service using one (or two) configuration files (see Configuring Services for more information).

DIVA Connect DbSync Service

The DbSync service is responsible for synchronizing asset information from multiple Core sites, and storing the information in the DIVA Connect database. DbSync communicates remotely with ManagerAdapter services on multiple sites to synchronize archived object information. DbSync is typically deployed along with the ClientAdapter. Both the DbSync service and ClientAdapter require direct access to the DIVA Connect database.

You configure the DbSync service using a simple configuration file (see Configuring Services for more information).

Display-Only Sites

You can configure a site as display-only, meaning that asset information from that site will be synchronized, but no jobs (or any other messaging) will be sent to the site. Configure the site (for example, site core4) in the DbSync configuration file, but not in the ClientAdapter configuration. Site core4 will be effectively display-only. Asset information from this site will be queryable in the UI and in informational API calls, but jobs sent to the site (using DIVA Connect) will be rejected.

DIVA Connect Database

Configuring DIVA Connect local client access also involves setting up a DIVA Connect database.

Object Cleanup

DIVA Connect will sometimes satisfy a restore operation by temporarily copying an object from a remote site to the local site before restoring. This way, future restores of the content will be much faster. DIVA Connect does not automatically delete the disk

instance after the restore. Instead, it leaves the content in case others will want to restore it.

Core contains two tools that can automatically clean up content when a given disk/array becomes full:

- Core SPM (Storage Policy Manager) has a feature that can automatically clean up disk instances for an individual Core site.

- Core Local Delete can perform a similar function, but can optionally verify that an object also exists on other Core sites.

Because Core is configured to create a nearline disk instance by default, object cleanup also may need to occur on a Core site configured for DIVA Connect remote access only.

DIVA Connect Version Compatibility

DIVA Connect 3.2.0 will interoperate with Core 7.3.1 or later. Some features incorporated into future releases of Core may not be accessible to DIVA Connect without upgrading DIVA Connect to a later release.

The DIVA Connect 3.2.0 ClientAdapter and DbSync services will interoperate with a DIVA Connect 3.2.0 ManagerAdapter only.

Configuring DIVA Connect Policies

DIVA Connect policies can be configured to enforce access control, automatically replicate assets, and delete assets over time. These policies stretch across sites, effecting how one site will access services or process information from other sites.

DIVA Connect allows rules to be defined that restrict certain operations in the API as well as in DIVA Connect UI. To configure access rules, see Access Rules. To set up users for authentication in DIVA Connect UI, see Adding Users in Administration.

DIVA Connect supports the ability to automatically replicate new assets to other sites. To define rules to automatically replicate assets to multiple sites, see AutoCopy. To defines policies governing how queued copy tasks will be scheduled and processed, see Scheduling AutoCopy Tasks.

The Core Local Delete application can remove assets from a site that are no longer needed. This service is installed separately from the DIVA Connect application, and has it's own configuration file. For more information, review the documentation for the Core Local Delete application.

Performing Installation

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Before Installing

- DIVA Connect is a distributed application, meaning that it is often installed on multiple systems. Refer to Installation Planning to understand what systems and servers DIVA Connect should be installed on, and which particular DIVA Connect services should be installed.

- Each Core site connected to DIVA Connect must be running Core 7.3.1 or later.

- DIVA Connect can be installed on 64-bit Windows platforms, 64-bit Oracle Linux 8 (or later), and 64-bit Red Hat Linux 8 platforms. Although you can install DIVA Connect in the same directory as Core, Telestream recommends that you install DIVA Connect in its own directory.

- On Windows computers the DIVA Connect installer requires administrator privileges. On Linux computers the DIVA Connect installer requires the user named diva.

- By default, the DIVA Connect installer handles the installation of the DIVA Connect services files, the DIVAConnectUI, and a compatible 64-bit Java 8 JRE (Java Runtime Environment). DIVA Connect uses the installed JRE for execution. Installing the DIVA Connect database requires an Oracle Database 11g release 2 or later (Oracle 12c recommended). Oracle SQLPlus (Oracle 11 or later client software) must be installed directly on the DIVA Connect system.

- If you are reinstalling DIVA Connect, make sure the DIVA Connect components are not running. The DIVA Connect 3.2.0 Windows installer has an option to automatically stop and start DIVA Connect services during installation.

- If a DIVA Connect database is installed, you will need to run a utility (see Upgrading DIVA Connect) to upgrade the database to the latest release. You can execute the upgradeDb functionality in DIVAConnectAdmin, on the command line, and the DIVA Connect Windows installer.

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Installing DIVA Connect Software

DIVA Connect can be installed on either Windows or Oracle Linux 7 operating systems. The following subsections describe the installation on each platform.

DIVA Connect Windows Installation

Use the following procedure to install DIVA Connect in a Windows environment:

1. Launch the DIVA Connect installer executable, *DIVAConnect_V3.2.0.version.exe* using an account with administrator privileges.

2. Select the desired components, and then click Next.

   – Select Java if you have not previously installed in the target directory.

   – If only the DIVA Connect user interface is to be installed, deselect DIVA Connect Services.

3. Specify a target installation directory. This will be the DIVA Connect home directory.

Note: Use the Core installation directory as the DIVA Connect home directory. However, Telestream recommends installing DIVA Connect in its own directory.

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4. If this is an upgrade of DIVA Connect, the installer will prompt to have DIVA Connect automatically backup the software, stop/start services, and perform database upgrades. If "y" is selected, and a database configuration exists, the installer will prompt for database connection information.

5. Click Install.

Oracle Linux DIVA Connect Installation

If running on Linux, a user named diva and a user named divaconnectsvc must be created. The divaconnectsvc user must have permissions to write, read, and execute files owned by diva. The diva user must have sudo privileges for the Linux systemctl command. The installation must be executed as the diva user, an admin user, or root. The diva user must be created before installing the software. An option is provided in the Linux installer package to create the diva and divaconnectsvc users before installation.

Use the following procedure to install DIVA Connect in a Linux environment:

1. Open a terminal session and navigate to the parent directory for the DIVA Connect release.

2. Place the DIVA Connect installation package (for example, DIVAConnect-3.2.0-RELEASE.sh) in the directory. The installer enables DIVA Connect to be installed in a child subdirectory of this parent directory.

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3. Start the DIVA Connect installation using the following command:

   `sh ./DIVAConnect-3.2.0-RELEASE.sh`

   The install wizard provides an option to create the prerequisite diva and divaconnectsvc Linux users before installing the software. These users do not need to be recreated if they already exist and are assigned the correct permissions.

   The installation will not continue if the users do not exist. If the users already exist, or after they are created, select the option to install the DIVA Connect software.

4. When prompted for the installation directory, press Enter to use the default subdirectory named DIVA Connect, or specify a custom subdirectory name and then press Enter to create the installation directory.

   The DIVA Connect install process begins, and all files and folders are extracted into the specified target directory.

The following sections describe additional steps you may need to take to complete the installation. See Installation Planning for more information.

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Creating the DIVA Connect Database

To create the DIVA Connect database, you first create the DIVA Connect Oracle database user and tables, and then configure the Core sites. You can use the DIVAConnectAdmin utility to perform both of these activities. See Administration for more information. These tasks can also be executed via the scripts documented below.

Creating the Tables

This step involves creating the DIVA Connect database tables that will exist on a running Oracle server. This step is required only for a full DIVA Connect install (see Installation Planning).

Create the DIVA Connect Database Schema

To run the SQL creation scripts, you must have SQLPlus (Oracle 11g or later client software) installed on the system you are installing DIVA Connect on. Insure that the path to the sqlplus utility is in the PATH environment variable on your system.

1. Open a command line window or terminal shell. Change directory to the DIVA Connect home directory (the directory where DIVA Connect is installed).

2. Change directory to *Program/Database/divaconnect/Install*.

3. Run the following command:

    Windows:

    ```
    create_divaconnect_user.bat {sys_password} {user_name}
    {user_password} {oracle_tns_name}
    ```
    Linux:

    ```
    create_divaconnect_user.sh {sys_password} {user_name}
    {user_password} {oracle_tns_name}
    ```
    In the previous command, syspassword is the Oracle system password, user_name is the Oracle user name/schema name that will contain the DIVA Connect tables, and oracle_tns_name is the Oracle TNS Name for the DIVA Connect database you want to use for installation. If there is no TNS Name defined for the database, refer to the following section to create a TNS Name real-time.

Deleting the DIVA Connect Database Schema

Execute the following steps to delete the DIVA Connect database schema.

Caution: This will delete all data in the DIVA Connect database.

1. Change directory to *Program/Database/divaconnect/Install*.
2. Run the following command:

    Windows:

    ```
    delete_divaconnect_user.bat {sys_password} {user_name}
    {oracle_conn_string}
    ```
    Linux:

    ```
    delete_divaconnect_user.sh {sys_password} {user_name}
    {oracle_conn_string}
    ```

    In the previous command, syspassword is the Oracle system password, user_name is the Oracle user name or schema name that will contain the DIVA Connect tables, and oracle_conn_string is either the Oracle TNS Name for the DIVA Connect database you want to use, or the Oracle Connection String (see the following section) for installation. If there is no TNS Name defined for the database, refer to the following section to create an Oracle connection string for use in the add and delete scripts.

Oracle Connection String

If a TNS Name is not defined for the database, an Oracle connection string can be supplied. The format for this string is the following:

```
netaddress:port/remote_servicename
```

Where:

- netaddress: network address where the database runs
- port: port where clients can connect
- remote_servicename: The Oracle remote service name. This is different from the service name used locally. The default for the Core Oracle database installation package is lib5.world.

    An example full connection string is 183.34.34.67:1521/lib5.world.

Adding Sites

After the DIVA Connect tables are created, you must configure the Core sites in the DIVA Connect database. You can execute this in DIVAConnectAdmin, or run the addSites script to configure the sites in the database as follows:

1. Change to the DIVA Connect home directory, and then navigate to the Program/divaconnect/bin subfolder.

2. Run the addSites script:

Windows:

addSites.bat

Linux:

addSites.sh

This script will walk you through adding sitename records and configuring sitenames, locations, and comments. The network connections to the sites are con-figured in the ClientAdapter configuration file (see Configuring Services). It is rec-ommended to create sitenames that are easy to read and reflect either the physical location, or the function of the site.

Note: The sitenames you provide in this step will be used when configuring both local and remote DIVA Connect services. Ensure the desired sitenames are consistent and agreed upon before running the addSites script. After the sitenames are in the database, DIVA Connect installation can proceed.

Adjusting the Configuration Files

Refer to Installation Planning to determine which DIVA Connect services need to be configured, and then refer to Configuring Services for details on how to configure each service.

Underneath the DIVA Connect home directory, in the Program/conf/divaconnect/ templates subdirectory, there are template configuration files for each of the DIVA Connect services that need to be configured. Each template file has a .ini extension. Copy each file to the parent directory (in this case, Program/conf/divaconnect); make sure to remove the .ini extension.

At the top of each .ini file, there is documentation of the parameters available. For each DIVA Connect site, configure a ManagerAdapterConfig.xml. Also configure the ClientAdapterConfig.xml and DBSyncConfig.xml files for a full DIVA Connect installation.

Many of the parameters can be left at their default value. None of the configuration files in the Program/conf/divaconnect/wrapper folder should need to be changed. Optionally add information to the divaEnv.conf file (see Adding Script Variables to a Configuration File for more information).

Note: Contact Telestream Support if, after reading this documentation, it is still unclear on what parameters should be modified from their defaults.

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Installing and Starting the Services

See Installation Planning to determine what services need to be installed and configured.

After the configuration files have been set up properly, install and start the DIVA Connect services. Perform each step for every service to be installed at each DIVA Connect site.

The DIVAConnectAdmin utility can install DIVA Connect services, as well as start/stop them; see Administration for more information. Scripts to perform these operations are also included, and are described in the following sections.

Installing DIVA Connect Windows Services

Use DIVAConnectAdmin to install Windows services, or use the following procedure to install DIVA Connect services in the windows environment:

1. Change to the DIVA Connect home directory (where DIVA Connect is installed).

2. Navigate to the Program/divaconnect/bin folder.

3. Execute the *InstallDIVAConnectService.bat* script, providing the wrapper configuration file for the service being installed. For example, to install the ManagerAdapter Service (required at all sites where a Manager to be connected to DIVA Connect is running), run the following command:

```
InstallDIVAConnectService.bat ../../conf/divaconnect/wrapper/
ManagerAdapterWrapper.conf
```

   – For the ClientAdapter Service, use the same command and same path, but substitute *ClientAdapterWrapper.conf* as the file name.

   – For the DbSync Service, use the file name *DBSyncWrapper.conf*.

1. In the Windows Services window, one or more of the following DIVA Connect services should be visible:

   – DIVA Connect ManagerAdapter

   – DIVA Connect ClientAdapter

   – DIVA Connect DbSync

   The services can be started in any order, but keep in mind that after the DbSync Service and the ManagerAdapter Services are both started, the database syncing process will start automatically. Start the ClientAdapter Service to allow new DIVA Connect connections and API processing.

Installing Linux Services

Install a Linux service using DIVAConnectAdmin, or use the following procedure to install DIVA Connect services in the Linux environment:

1. Open a terminal session and navigate to the *Program/divaconnect/bin* directory.
2. Run the *divaconnectservice* script to install the desired service (DbSync, ClientAdapter, or ManagerAdapter). For example, to install the ClientAdapter, enter the following command:

    ./divaconnectservice install ClientAdapter

Managing Linux Services

After the Linux DIVA Connect services are created you use the following commands to manage them:

Operation	Command
List All Services	./divaconnectservice list
Start a Service	./divaconnectservice start {service_name}
Stop a Service	./divaconnectservice stop {service_name}
Restart a Service	./divaconnectservice restart {service_name}
Install a Service	./divaconnectservice install {service_name}
Uninstall a Service	./divaconnectservice uninstall {service_name}

The service_name parameter can be DbSync, ClientAdapter, or ManagerAdapter. The DIVA Connect services can also be managed using the standard Linux System V systemctl command syntax. Enter *man systemctl* at the Linux command prompt for more information on the systemctl command.

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Viewing Logs

The DIVA Connect applications produce two main types of logs:

- Trace Logs

  Located within the DIVA Connect home directory, in the Program/log/divaconnect subfolder. Each of the DIVA Connect services (ManagerAdapter, DbSync, and Client-Adapter) create their own subfolder underneath the Program/log/divaconnect folder and generate their log files in that subdirectory.

- Wrapper Service Logs

  Examine these first to make sure the applications are starting correctly. These logs are within the DIVA Connect home directory in the Program/log/divaconnect sub-folder. They will be named similar to the Wrapper.conf file, but with a .log file name extension (for example: ManagerAdapterWrapper.log).

Checking the Configuration

The most common errors in configuring DIVA Connect are errors in specifying the sitenames. All Core sites in the DIVA Connect network must use the same set of sitenames. The sitenames must be consistent in all of the configuration files, and in the DIVA Connect database. The LocalSitename parameter must be correctly configured in all the service configuration files.

You should also check the Core Server. For example, by default, if site core1 has a Server that is named the same as one on site core2, DIVA Connect considers them as pointing to the same logical Server. If the same Server name is configured on two different Core sites, DIVA Connect will assume that these Servers refer to the same place.

Syncing the DIVA Connect Database

When the DbSync service is started, it will attempt to synchronize archived object information by consulting the ManagerAdapter service. The ManagerAdapter service in turn pulls asset information from the Core site to which it is connected. Therefore, you should start the DbSync service and ManagerAdapter services only when you are ready to begin synchronization.

Note: If you stop the DbSync service, synchronization will start again where it left off when the service is restarted.

The DIVAConnectAdmin command-line tool monitors the status of the database synchronization on a site-by-site basis. If DIVA Connect is performing an initial synchronization of a particular site, it will show the percentage complete of that initial sync operation. If the site is up-to-date, DIVAConnectAdmin will indicate that the site is In Sync.

DIVAConnectAdmin can also be used to resynchronize a site. This involves deleting all archived object records previously synchronized from the site and resynchronizing them from the Source Server. This should only be used in rare circumstances, such as when the Source Server Core database has been unexpectedly restored from an out-of-date database backup.

Run the gather_schema_stats script after an initial synchronization, or resynchronization, to immediately improve performance. See the following section for more information.

Upgrading DIVA Connect

It is recommended to back up the existing DIVA Connect home directory before attempting to upgrade to a new version of DIVA Connect. Also stop any running DIVA Connect services or programs on the server before attempting an upgrade. The new DIVA Connect 3.2.0 Windows Installer has an option to automatically backup the existing DIVA Connect directory, stop running services, and run the database upgrade utility. On Linux, use the following procedure to upgrade the DIVA Connect software:

1. Follow the instructions in the Installing DIVA Connect Software section. This will install the latest DIVA Connect software into the DIVA Connect home directory.

2. The DIVA Connect database upgrade utility must be executed if upgrading a system that contains a DIVA Connect database. To run the utility, change directory to Program/divaconnect/bin and run the following command:

   Windows:

   ```
   ./upgradeDb.bat
   ```
   Linux:

   ```
   ./upgradeDb.sh
   ```

   The script will prompt for input about the DIVA Connect database (including database user name and the network address of where the database resides). The utility will add or modify the required database objects. The script will simply return success if the database has already been upgraded to the latest release.

3. If upgrading a DIVA Connect 2.1 system that has a DIVA Connect database, the gather_schema_stats script must be executed. This script installs a weekly job to gather statistics for the database (if needed), and then immediately gathers current statistics. The script requires the Oracle sys password. To run the script, change directory to *Program/Database/divaconnect/Install*, and execute the following:

   In Windows:

   ```
   ./gather_schema_stats.bat {divaconnectDbUser} {sysDbPassword}
   {oracleConnectionStr}
   ```

   In Linux:

   ```
   ./gather_schema_stats.sh {divaconnectDbUser} {sysDbPassword}
   {oracleConnectionStr}
   ```

   For example, in Linux execute:

   ```
   ./gather_schema_stats.sh divaconnect sysDbPass3 127.0.0.1:1521/
   lib5.world
   ```

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Configuring Services

Before configuring DIVA Connect services, see Installation Planning for a description of the DIVA Connect services and how they interact with Core and each other.

Topics:

- Configuring the ClientAdapter Service
- Configuring the ManagerAdapter Service
- Configuring the DbSync Service
- Access Rules
- AutoCopy
- Adding Script Variables to a Configuration File

Configuring the ClientAdapter Service

Configuring the ClientAdapter service involves configuring how clients connect to DIVA Connect. It also involves configuring how DIVA Connect connects to Core.

Configuring the Core Sitename

A DIVA Connect site is defined to be one Core System, and one or more of the DIVA Connect services (ManagerAdapter, ClientAdapter, DbSync). Each site is assigned a unique sitename. The site names must be configured in the DIVA Connect Database (either DIVAConnectAdmin or addSites can be used to accomplish this) before configuring the ClientAdapter. You should create sitenames that are easy to read and reflect either the physical location, or the function of the site. These sitenames will be used on each site.

Note: Sitenames are case sensitive.

Configuring Client API Ports

DIVA Connect allows configuration of the socket ports that client API applications use to connect to DIVA Connect. The ClientAdapter allows multiple API ports to be configured. Each API port is configured in one of two modes: Direct mode or MultiDiva mode. Each port can be assigned a Workflow Profile.

- Direct Mode

  In Direct mode, an incoming API connection is routed directly to an individual Core system with little added processing. The particular site that DIVA Connect routes to is configured in the ClientAdapter on a per-port basis. This functionality allows local clients to connect to a remote Core system as if it were local. The Core site to route messages to must be configured in the DivaManagers section of the ClientAdapter configuration file. Note also that a site can be configured to operate in Direct Mode only (see Configuring the Core Sitename for more information).

  Jobs in Direct mode will not be displayed in DIVAConnectUI, and can only be monitored at the Core site where the jobs are being routed.

  Some DIVA Connect workflows do not require a DIVA Connect database, DIVA Connect UI, or MultiDiva mode processing. To configure a ClientAdapter service for Direct Mode only, insure that only Direct Mode ports are defined, and that a WebServicePort is not defined. This effectively disables use of the DIVA Connect UI. An example configuration can be found in the file found here:

  Program/conf/divaconnect/templates/ClientAdapterConfig.xml.ProxyOnly.ini

- MultiDiva Mode

  In MultiDiva mode, DIVA Connect makes all Core sites appear to be one big archive system. In this mode, an incoming API job is routed directly to DIVA Connect. DIVA Connect satisfies the high-level job by consulting the DIVA Connect database and other Core systems as needed. MultiDiva Mode allows (for example) copying of content from one site to another, restores without needing to know which particular site has the content, and retries on other sites when content on the first site is inaccessible. In addition, it provides a global view of content on all sites.

  The progress of a job executed in MultiDiva mode can be monitored in the DIVAConnectUI. DIVA Connect will create its own job-level events that inform the user of:

  – How DIVA Connect will process the job

  – Jobs that are made of Core sites

  – Any errors or warnings encountered along the way

Configuring Client Web Connections

The DIVAConnectUI application and the DIVAConnectAdmin tool both make web connections to the ClientAdapter. You can configure the port that is made available for these connections in the ClientAdapter configuration file.

Configuring the REST API

The REST API can be used to send jobs and commands to DIVA Connect beginning with release 3.1.0. The same port used for the Client Web Connections (previously mentioned) is used for this API. The REST API supports only the MultiDIVA Mode as previously defined.

Configuring Workflow Profiles

A Workflow Profile is a set of parameters that defines how incoming jobs will be processed by DIVA Connect. Workflow Profiles provide a way to logically group users and systems that use DIVA Connect in a similar manner.

DIVA Connect allows one or more profiles to be created within the ClientAdapter. These profiles contain parameters that are needed by a particular set of users, or set of applications. Workflow Profiles are assigned based on where the job was received (the port where it was received - see the following section).

In the Workflow Profile you can customize information such as the list of accepted valid messages, retry parameters, site-to-site copy methods, and other attributes.

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Profiles and API Ports

A Workflow Profile can be selected by configuring the port that the Core API is connected to, by using a profile configured for a user, or by using the default (use default for API users and a configurable value for UI users).

In the API Ports section, each defined port can be assigned a Workflow Profile Name. Jobs received on the API port are processed using the assigned Workflow Profile. If no name is defined, the profile default is assumed. Ports in MultiDiva mode can have Workflow Profile Names that refer to a Workflow Profile body section further down in the ClientAdapter configuration.

If the port is in Direct mode, the Workflow Profile Name is a label only - there is no Workflow Profile body for Direct mode connections. This name, however, can be useful in Access Rules (see the following section).

In both MultiDiva mode and Direct mode, if you do not assign a name, the connection uses a Workflow Profile named default. Each workflow profile body section is configured in the ClientAdapterConfig.xml. The following sections list the types of information configurable in each Workflow Profile.

Retries and Timeouts

Some commands within DIVA Connect can be retried (for example, Restore, Copy, and Delete jobs). The parameters for the retries, including how long to retry and the retry interval are configurable here. Many commands have their own retry settings (for example, the Copy command retry parameters are completely distinct from the Delete command retry parameters). Message timeouts and connection limits can also be configured in the Workflow Profile. The retry and timeout settings are specific to the Workflow Profile in which they are defined.

Valid Messages

In each Workflow Profile, a list of messages is configured. This represents the list of valid API messages that can be accepted by this Workflow Profile. For example, if the Archive message does not appear in the list, then Archive messages cannot be sent to DIVA Connect through the API (at least for this Workflow Profile).

Site-to-Site Mappings

DIVA Connect provides a flexible way to configure how Site-to-Site transfers are performed. In each Workflow Profile, you configure mapping parameters for each transfer path (one path would be transfers from site A to site B, another would be from site A to site C, and so on). This table is consulted when Copy, Restore, or Partial File Restore commands are received.

It is useful to define the Site-To-Site mappings in the default Workflow Profile, as other Workflow Profiles can load their mappings from the default Workflow Profile. This can reduce the number of mappings in the configuration.

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Parameters

DIVA Connect supports several different transfer types. Site-to-Site Transfer Methods describes the different types. RestoreAndArchive is the default transfer type. RestoreAndMonitor requires Watch Folder Monitor, or another application that performs a similar function. ActorSiteTransfer uses the Actor to Actor feature and requires the Hole Punch Server. Other parameters include:

- Server

  The common storage location for transfer (accessible at both the source and target servers).

- Default Media

  The default archive media to use when archiving on the target site. Default Media can be used when either a temporary copy was initiated (such as by a restore), or a user launched a copy and indicated that DIVA Connect should select the media.

- Options

  The parameters to use in the restore, archive, and transfer jobs.

- FilePathRoot

  The parent directory to store the content

Directory Location

DIVA Connect constructs a directory path to store the files that is relative to the Server chosen. This relative path is constructed as follows:

```
{FilePathRoot} / {Media} / {UniqueDirName} /
```

The FilePathRoot is specified in the Site-To-Site mappings. Media will be embedded in the path only if the AppendMediaToPath option is set to true in the mappings (the default is false). Finally, DIVA Connect generates a unique directory name that is included as part of the path. This unique name has the sitename that initiated the job prepended to it.

Reloading Workflow Profiles

Parameters specified in the Workflow Profile can be changed and reloaded without restarting the ClientAdapter. Restarting the ClientAdapter service should be avoided, because it will stop all executing jobs and close all client connections. The reload can be performed within the DIVAConnectAdmin tool (see Administration for more information on DIVAConnectAdmin).

Note: The reload updates not only all of the Workflow Profiles, but also all of the Access Rules and AutoCopy configuration.

Modifying the ClientAdapter Configuration File

The following tables describe the parameters that can appear in a ClientAdapter configuration file. The file is in XML format. The default value column indicates the

value that the parameter will have if the parameter is not specified in the configuration file. The column also indicates whether the parameter is required or optional.

To create a new configuration file:

1. Navigate to the DIVA Connect home directory (where DIVA Connect is installed).
2. Navigate to the Program/conf/divaconnect/templates folder.
3. Copy the ClientAdapterConfig.xml.ini to the parent directory, but leave out the .ini extension (../ClientAdapterConfig.xml).
4. Using the tables below as a reference, edit the parameters in the ClientAdapterConfig.xml file to configure the ClientAdapter.

See Appendix: Sample Configuration Files for a sample ClientAdapter configuration file.

Top Level Parameters

Parameter	Description	Default Value
LocalSitename	The sitename of the Local DIVA Connect site.	None (required)
LogDirectory	The folder where the log files will be produced.	The log/divaconnect/ClientAdapter directory
LogLevel	The detail level at which trace file logging takes place (ERROR, WARN, INFO, DEBUG, TRACE).	INFO
SyncTimeoutSecs	The number of seconds to wait for an object to synchronize.	60
WorkerThreads	The number of worker threads in DIVA Connect thread pools. Used for tuning large configurations. If you are unsure, do not set this value.	25
AbortAllOnStartup	Stop all incomplete DIVA Connect jobs when DIVA Connect starts - even if the job has completed at the Core level. New jobs are not affected.	false
MaxClientConnections	The maximum total number of API connections allowed.	200

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Parameter	Description	Default Value
GlobalDivaconnectRequestLimit	The maximum number of pending or running DIVA Connect jobs that can be accepted into the system. When this limit is reached, DIVA Connect will start rejecting new jobs.	5000
InternalPollingRateMillis	The base rate at which sites are polled for information. Change this parameter only if slow networks and (or) systems are encountered.	4000
WebServicePort	The port used to send management messages to the ClientAdapter.	None (optional)
SSLWebServicePort	True if SSL should be enforced for web service jobs.	true
WebDefaultWorkflowProfile	Workflow profile to be used for web jobs (including DIVAConnectUI).	The default profile
LogFileLifetimeHours	Number of hours to keep log files. Files older than this will be removed at the top of the hour.	50
apiSessionTimeoutMins	Lifetime of the API session token. This should not be changed without consulting Telestream Support.	1400
MaxNetAddressesPerUser	The maximum number of network addresses per user.	2
UserAuthEnabled	If true, all DIVA Connect UI users are authenticated against user info in the database.	false
AutoCopyRulesFilename	The name of the AutoCopy rules configuration file	None (AutoCopy disabled)
AccessRulesFilename	The access rules file name. This file name is relative to the directory where the client adapter configuration file exists.	None (if not configured, no access rules will be applied)

API Ports Section

Inside of the ApiPorts tag, multiple ApiPort definitions can appear. The following table describes the parameters that can appear as part of an ApiPort definition.

Parameter	Description	Default Value
ListenPort	This is the port socket to listen on.	None (required)

RoutingMode	This identifies how to route jobs (Direct or MultiDiva).
	
	• Direct
	
	  Route to one Manager only (the Sitename parameter is required in this case).
	
	• MultiDiva
	
	  Route using DIVA Connect Workflow Commands. Jobs submitted will receive a unique Job ID by DIVA Connect.
		MultiDiva

Sitename	The site to route to if using Direct Mode. Sites are defined in the DivaManagers section (covered in the following table). This parameter is only required in Direct Mode. If defined, it must match one of the sitenames defined in the DivaManagers section.	None (required in Direct Mode)
LocalAddress	The local address used to send to this Manager (typically which network card to use). Do not specify this if you're not sure.	None (optional)
SSLSocket	Enables SSL encryption on the API socket connection (requires Core API 7.6 or greater to use).	False
WorkflowProfile	The Workflow Profile Name to use for jobs traveling through this port (see the Workflow Profile section). If it is not supplied, the default Workflow Profile will be used.	default (the default profile in MultiDiva Mode)

Core Managers Section

Inside of the DivaManagers tag, multiple DivaManager definitions can appear. The following table describes the parameters that can appear as part of a DivaManager definition.

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Parameter	Description	Default Value
Sitename	The name of the site where the Manager is installed. The sitename listed must match what was configured in the DIVA Connect database and what is configured the ManagerAdapter.xml file.	None (required)
ConnectionType	This identifies how to connect to the Manager (valid values: Socket, WebService).	Socket
Address	The Network Address (IP or internet name) of the Manager.	localhost
Port	The port where clients connect to the Manager.	None (required)
LocalAddress	The local address used to send to this Manager (typically which network card to use). Do not specify this if unsure.	None (optional)
LocalPort	The local port used. Do not specify this if you're not sure.	0

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Parameter	Description	Default Value
BaseURL	The URL of the ManagerAdapter if the ConnectionType is set to WebService; required.	None (optional)
TotalThrottleThreshold	DIVA Connect will wait until the total number of Manager jobs falls below this limit before sending more jobs. This is used when the ConnectionType is set to Socket. When the Manager exceeds the number of Jobs regardless of source (for example, DIVA Connect, SPM, local API connection) DIVA Connect will not send any more jobs until the number of Jobs on the Manager is below this threshold value.	400
SubmittedThrottleThreshold	DIVA Connect will wait until the number of jobs DIVA Connect itself has running on a Manager falls below this limit before sending more jobs. When the Manager exceeds the number of Jobs sent solely from DIVA Connect itself, DIVA Connect will not send any more jobs until the number of Jobs on the Manager sent only from DIVA Connect is below this threshold value. Zero is a valid value, causing all messages to be queued internally within DIVA Connect. The value -1 indicates there is no limit.	100

DIVA Connect Database Section

The following table describes the parameters that can appear within the DivaconnectDatabase section.

Parameter	Description	Default Value
Address	The IP Address of the database.	localhost
Port	The port used to access the database.	1521
User	The user name of the schema.	None (required)

Parameter	Description	Default Value
Password	The password of the schema.	None
DbSiteId	The Oracle SID. This value is deprecated in favor of DbServiceName.	lib5
DbServiceName	The Oracle Service Name. Can be supplied instead of DbSiteId.	None (optional)
SecureMode	A value of 1 enables SSL encryption of the database connection.	None (optional)
DbCreds	Contains the encrypted database credentials generated by DIVAConnectAdmin. This parameter cannot appear when Password is used.	None (optional)

Workflow Profile Section

The following table describes the parameters that can appear within a WorkflowProfile section.

Parameter	Description	Default Value
Name	The name of the Workflow Profile.	default
AllowDirectRemoteRestores	Allow direct transfers (to Servers) from remote Cores. Set this to false to always create a local copy of content before restoring.	true
ArchiveLoadBalanceSite	Site to be used with the Archive Load Balance feature. Must specify at least two sites (see the following Sitename parameter in this table). Use a single Sitename tag inside each.	NA
MessageTimeoutMillis	The default timeout for messages sent to Managers.	15000 (15 seconds)
TotalRequestTimeoutHours	How long to keep jobs before timing them out (in hours).	72
PreventArchiveIfInDirectory	Prevent new Archive jobs if the object exists on any site. If set to true, and the object exists on any site, jobs to archive that object will be rejected (even if the object is not present on the site you are archiving to).	true
DeleteRetryIntervalMins	The interval between retries for the Delete Workflow.	5 minutes

Parameter	Description	Default Value
DeleteRetryLimitMins	The total number of minutes for which Delete Workflow retries will continue. Delete retries will be attempted every DeleteRetryIntervalMins, for DeleteRetryLimitMins, or until the delete is successful.	0 minutes (do not retry)
DeleteWaitTimeoutMins	The total number of minutes to wait for a delete operation to complete. Set this value low for real-time deletes, and higher for batch operations.	2 minutes
IntersiteCopyRetryIntervalMins	How long to wait before retrying a copy job. This parameter applies only for Copy jobs.	5 minutes
IntersiteCopyRetryLimitMins	Keep retrying copies until this total time limit is reached (or they succeed). This parameter applies only for Copy jobs.	0 minutes (do not retry)
RestoreRetryAttempts	In the case of failure, the maximum number of retries that should be attempted (commonly, retrying with content that exists on another site).	3 times
RestoreRetryIntervalMins	The interval between retries when DIVA Connect performs a retry with the same site.	5 minutes
Sitename	This parameter identifies the sitenames to use in the load balancing feature parameter setting. See the previous ArchiveLoadBalanceSite parameter in this table.	N/A
SiteDownRequeueWaitMins	(Advanced) Maximum time a site is down before routing queued jobs to another site. Deletes are also governed by the DeleteWaitTimeoutMins parameter.	20
BackupArchiveSite	If the local site is down for an extended period (configured in SiteDownRequeueWaitMins), the site to use for archives instead of the local site. If the archive is submitted and fails on the local site, the archive will not be retried on the backup site.	None (no backup site)
ForceGlobalDeleteToSite	Converts a global delete job to a site delete at the specified site.	None (optional)

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Parameter	Description	Default Value
ViewOwnedRequestsOnly	If true, users with this profile can only view jobs issued by a user with this profile.	False
Messages	One or more Message Lists, each having a list of valid messages for the Workflow Profile.	N/A
Message	One or more valid Message Names: • AllInfo • Archive • Cancel • CloseObjectsList (legacy) • Copy • Delete • DeleteFile • GetArchiveSystemInfo • GetArrayList • GetFilesAndFolders • GetGroupsList • GetObjectsByFilename • GetObjectDetailsList • GetObjectInfo • GetObjectsList (legacy) • GetRequestInfo • GetSourceDestinationList • GetStoragePlanList • InitObjectsList (legacy) • PartialRestore • Restore • TranscodeArchived • CopyToNew At least one Message tag must be specified. AllInfo allows all informational job messages to be sent.	None (one required)
UseDefaultMappings	True if the Workflow Profile should include all of the mappings defined in the default Workflow Profile.	False

Site-to-Site Transfer Mappings (Workflow Profile)

The Mappings tag contains multiple Site-To-Site Transfer mappings. A Site-To-Site Mapping defines how an object is copied from one site to another. Each mapping contains FromSitename and ToSitename parameters. Each mapping defines how copies are performed from FromSitename to ToSitename.

Each mapping contains a Type parameter that indicates the method used to perform the transfers (see Restore Workflow for more information). The other parameters are defaults that are used in the process of executing the intersite copy.

DIVA Connect will use the FromSrcDest as a temporary storage area, and will optionally push to the target Core using the ToSrcDest. When storing the content DIVA Connect provides a unique folder name that is appended to the FilePathRoot. After storing the content in the FromSrcDest, DIVA Connect will (based on the Type parameter) either:

- Archive the content into the target site.
- Wait until the content is archived successfully at the target site.
- Complete with no further action.

Note: To avoid specifying the same mappings multiple times in the configuration, you can set the Workflow Profile parameter UseDefaultMappings. The Workflow Profile will use mappings from the default Workflow Profile.

Parameter	Description	Default Value
FromSitename	Origin sitename where objects are copied from. The value entered must match one of the sitenames defined in the DivaManagers section.	None (required)
ToSitename	Target Server sitename where objects are copied to. The value entered must match one of the sitenames defined in the DivaManagers section.	None (required)

Type	The type of transfer:
	
	• Restore
	
	    Perform Restore and mark as transferred.
	
	• RestoreAndArchive
	
	    Restore then Archive to the Target Server Core.
	
	• RestoreAndMonitor
	
	    Restore, then monitor Target Server (useful for Watch Folders).
	
	• ActorSiteTransfer
	
	    Transfer using the Actor to Actor feature.	

FromSrcDest	The Server to use in the Restore step of the Copy.	

Parameter	Description	Default Value
ToSrcDest	The Server to use in the Archive step of the Copy.	
TempDefaultMedia	The target media to assign when making a temporary or transient copy of the object (performed on some Restore operations). The value is also used (depending on configuration) when API or UI users want DIVA Connect to decide which media to use (the any keyword is used as the media). When RestoreAndMonitor is used with this variable, decide if the AppendMediaToPath option is needed.	None (required for RestoreAndArchive)
FilePathRoot	A path segment relative to the Server root. Prefixed to the unique folder name generated by DIVA Connect.	Remote
AdditionalOptions	Core Options to use in the Restore/Archive operations.	-axf 1.0 -rm -delete_fpr -allow_delete_on_source
AssignDefaultMediaOption	The strategy to use when API or UI users decide to let DIVA Connect choose which media to use for copies. This is invoked when the any keyword is used as the media. • StoragePlan Use the Storage Plan name of the source object as the default media. • StoragePlanAndSitename Prepend Source Sitename to the Storage Plan (separated by an underscore). • TempMedia Use the value of TempDefaultMedia as the media.	TempMedia

Parameter	Description	Default Value
AppendMediaToPath	True if the target media should be appended, as a subdirectory, after the FilePathRoot (and before the unique folder name). You would end up with the following: `FilePathRoot / ToMedia / UniqueFolderName` This option is useful when using the RestoreAndMonitor type with WFM, as WFM can parse the media name passed in this way.	false
Weighting	Rate this transfer path against other transfer paths based on performance, preference. Used in choosing sites for Copy and Restore. Valid range is 0-40. Be careful in using values above 20, as you will start to override other Actors such as disk versus tape, site status, and so on. Misuse of this option can cause performance issues on Restore operations, and can contribute to WAN network congestion.	Default is 10, local gets increased by 10.

Preferred Server Mappings

When DIVA Connect calculates which site to use for Restore operations, DIVA Connect typically prefers the local site, provided the Server is reachable using the local site. However, there are some cases where another site may be preferable.

The Mappings tag can contain a SrcDest tag. Within the SrcDest tag, a Name tag defines a Server name. The PreferredSitename tag indicates the preferred site to use when the Server is requested in a Restore operation. Multiple SrcDest sections can be present.

Using the Weighting Parameter

If the restore site has not been provided in the job, the preferred site is chosen by calculating a score for each site. Scores are calculated by adding points assigned as follows:

- Manager Status
  - Manager is running nominally: 60 points
  - Manager is running, but the job queue is full: 40 points
  - Manager is down: 0 points
- Is the local site: 20 points

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- The site has a disk instance: 30 points

- Can the site perform a direct restore: 20 points

- Weighting as assigned by configuration: Default is 10 points

Example:

The local and remote sites are the same with the exception that the remote site has a disk instance and the local has only tape instances. The local site will get a score of 60+20+20+10=110, and the remote site will score 60+30+20+10=120. The remote site will be selected. This may be undesirable if the remote is a cloud site, and a cost is invoked. To force the selection of the local site under these conditions, set a Weighting value of 21 to the local site by including the following in the Mappings section:

```
<SiteToSiteTransfer>
    <FromSitename>[local site name]</FromSitename>
    <ToSitename>[local site name]</ToSitename>
    <Type>Restore</Type>
    <Weighting>21</Weighting>
</SiteToSiteTransfer>
```

Configuring the ManagerAdapter Service

The ManagerAdapterConfig.xml configuration file contains the configuration for the ManagerAdapter Service. Use the following steps along with the description of each parameter in the ManagerAdapter configuration (each of the following tables has this information) to configure the ManagerAdapter Service.

Sync Filtering By Collection

DIVA Connect can place a filter on object information that is pulled by the DIVA Connect DbSync service. This filter enables a site to select the subset of object records to be synchronized with downstream DIVA Connect systems. The filtering is configured in, and performed by, the ManagerAdapter service.

Note: Object Filters and Collection Prefix Substitution are advanced features that require careful testing to implement in production workflows. Do not add or change object filters indiscriminately.

For example, DIVA Connect system in New York is configured to use and store assets from a site in Los Angeles. The Los Angeles site administrator wants to ensure that users in New York will only see objects that match one of three categories, AVID, POST1, and POST2. Implementing the following filter through the Los Angeles site's ManagerAdapter configuration file accomplishes this:

```
<LocalSitename>LosAngeles</LocalSitename>
<ObjFilter>
     <RequestingSitename>NewYork</RequestingSitename>
     <Category>AVID</Category>
     <Category>POST1</Category>
     <Category>POST2</Category>
</ObjFilter>
```

With this filter, objects matching the specified categories will be synchronized to the DIVA Connect database in New York. Objects with other categories will not be synchronized. From the perspective of a New York site user, the only object records that exist on Los Angeles are the objects matching the configured Collection filter. Multiple ObjFilter tags may appear in the ManagerAdapter, each with a set of categories specific to a requesting site.

Note: Collection object Filters do not automatically prevent the ManagerAdapter from accepting jobs for objects not matching the filter. ManagerAdapter Access Rules prevent operations on objects that do not have certain categories.

To prevent operations on objects not matching the filter, create the following access rule in the ManagerAdapter Access Rules file:

```
<Include>
     <SourceSitename>NewYork</SourceSitename>
     <Operation>*</Operation>
```

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```
        <ReqObjectCategory>AVID</ReqObjectCategory>
        <ReqObjectCategory>POST1</ReqObjectCategory>
        <ReqObjectCategory>POST2</ReqObjectCategory>
</Include>
```

This rule will only permit jobs from New York for objects that match one of three categories, AVID, POST1, and POST2. Other categories are denied if no other Include Rules are specified. If you define access rules in the ManagerAdapter, ensure that the ClientAdapter is configured to communicate with the site in WebService mode.

Configuring Collection Prefix Substitution

There is a potential problem when using sync filtering by Collection. Continuing with the example, if New York creates an object with a Collection that is not present in the filter, and copies this object to Los Angeles, a naming conflict could occur. An object with that name could already exist on Los Angeles because the DIVA Connect system in New York does not know about those objects. One solution is providing Access Rules in New York that limit the potential categories that can be archived.

You can achieve a more flexible solution using Collection prefix substitution. This feature not only filters the entries that are synced, but adds a Collection prefix to each incoming job. This provides a namespace-like feature for archived objects at a site.

In some DIVA Connect workflows, a single site must accept objects copied from multiple sites. This can make it difficult to establish a set of unique categories for all objects in the system. Use Collection prefix substitution to address this situation. The following ManagerAdapter object filter will ensure that only objects in Los Angeles with categories beginning with NY001. are synchronized to New York's DIVA Connect database.

```
<LocalSitename>LosAngeles</LocalSitename>
<ObjFilter>
      <RequestingSitename>NewYork</RequestingSitename>
      <CategoryPrefix>NY001.</CategoryPrefix>
</ObjFilter>
```

After applying the filter, but before the object reaches the Target Server (New York), the prefix is stripped – the remaining characters serve as the Collection in the New York DIVA Connect database. For example, if the Collection of an object in Los Angeles is NY001.POST1, the resulting Collection sent to New York will be POST1. Similarly, any time the New York DIVA Connect ClientAdapter sends commands to Los Angeles, the prefix is added back.

This allows Los Angeles to store copies of all of the objects from New York without naming conflicts. This technique allows Los Angeles to serve as a Disaster Recovery site for multiple sites. New York does not need to change its naming policy. New York references objects the same way that it always has, therefore no renaming on New York is necessary. Only one Collection prefix is allowed for each requesting site.

For this to work, the DIVA Connect ClientAdapter service must be configured to connect to the remote site in WebService mode. Because objects are essentially renamed when copied to the site with a prefix substitution enabled, objects that were

copied to the site previously will not have the prefix, which can present an issue. One solution involves providing a list of additional categories that are not translated. Another solution involves having Core installation specialists rename a subset of objects in the filtered site (that is, adding the Collection prefix to the Collection of each affected object in the Core database). If you use Collection Prefix Substitution, you (will likely need to) disable Collection checking in the Core Actor configuration (contact Technical Support for instructions).

Note: If you change an object Filter, it will almost always be necessary for the downstream DIVA Connect system to perform a resync of the site. That system can accomplish this by using the DIVAConnectAdmin tool (refer to Administration).

The two types of Collection filtering can be mixed together. The following second filter (to Dallas) performs Collection prefix substitution (using DAL01) on all categories except the categories POST2 or POST3. Only object records that have the Collection prefix or have a Collection of POST2 or POST3 will be synchronized to Dallas.

```
<LocalSitename>LosAngeles</LocalSitename>
<ObjFilter>
      <RequestingSitename>NewYork</RequestingSitename>
      <CategoryPrefix>NY001.</CategoryPrefix>
</ObjFilter>

<ObjFilter>
      <RequestingSitename>Dallas</RequestingSitename>
      <CategoryPrefix>DAL01.</CategoryPrefix>
      <Category>POST2</Category>
      <Category>POST3</Category>
<ObjFilter>
```

If you use this hybrid approach, ensure that object names with categories appearing on the list (for example POST2) are not added again with the prefix (for example NY001.POST2). This policy can be enforced through Access Rules.

Modifying the ManagerAdapter Configuration File

The following tables describe the parameters that can appear in a ManagerAdapter configuration file. The file is in XML format. The default value column indicates the value that the parameter will have if the parameter is not specified in the configuration file. The column also indicates whether the parameter is required or optional.

To create a new configuration file:

1. Navigate to the DIVA Connect home directory (where DIVA Connect is installed).

2. Navigate to the Program/conf/divaconnect/templates folder, copy the ManagerAdapterConfig.xml.ini to the parent directory, but leave out the .ini extension (../ManagerAdapterConfig.xml).

3. Using the tables below as a reference, edit the parameters in the ManagerAdapterConfig.xml file to configure the ManagerAdapter.

A sample ManagerAdapter configuration file appears in Appendix: Sample Configuration Files.

Parameter	Description	Default Value
LocalSitename	The name of the local site. The sitename listed must match what has been configured in the DIVA Connect databases (local and remote), and must match what was configured in both the ClientAdapterConfig.xml and DBSyncConfig.xml files. This configuration enables the ClientAdapter and DbSync to communicate with the ManagerAdapter.	None (required)
ManagerAddress	The network address (IP or internet name) of the Core Manager.	localhost
ManagerPort	The port where clients connect to the Core Manager.	None (required)
WebServicePort	The port used to receive web messages.	None (optional)
SSLWebServicePort	True if SSL should be enforced on incoming web service connections.	True
ManagerSSLSocket	True if SSL should be used to connect to the Core Manager (Core 7.6 or greater is required).	False
AccessRulesFilename	The access rules file name. This file name is relative to the directory where the ManagerAdapter configuration file exists.	None (if not configured, no access rules will be applied)
WorkerThreads	The number of worker threads in DIVA Connect thread pools. Used for tuning large configurations. If you are unsure do not set this value.	50

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Parameter	Description	Default Value
LogDirectory	The folder where the log files will be produced.	The log/divaconnect/ManagerAdapter folder.
LogLevel	The detail level at which trace file logging takes place (ERROR, WARN, INFO, DEBUG, TRACE).	INFO
LogFileLifetimeHours	Number of hours to keep log files. Files older than this will be removed at the top of the hour.	Default: 50 Minimum: 1 Maximum: 1000

Parameter	Description	Default Value
Address	The IP Address of the Core Manager Database.	localhost
Port	The port used to access the database.	1521
User	The user name of the schema.	None (required)
Password	The password of the schema.	None (required)
DbSiteId	The Oracle SID	lib5
DbServiceName	The Oracle Service Name. Can be supplied instead of DbSiteId.	None (optional)
SecureMode	A value of 1 enables SSL encryption of the database connection.	None (optional)
DbCreds	Contains the encrypted database credentials generated by DIVAConnectAdmin. This parameter cannot appear when Password is used.	None (optional)

An ObjFilter can be defined for each requesting sitename in the ManagerAdapter. The following table describes the valid parameters for the object filter:

Parameter	Description	Default Value
RequestingSitename	The site name of the site requesting objects.	None (required)
Category	objects with the Collection provided will be synced to the requesting sitename. Multiple categories may appear.	None (optional if CategoryPrefix appears)
CategoryPrefix	The prefix will be prepended to every job received through the ManagerAdapter. Only objects with the Collection prefix will be synced to the requesting sitename.	None (optional if Category appears)

Configuring the DbSync Service

The DBSyncConfig.xml configuration file contains the configuration for the DbSync Service. Use the following steps along with the description of each parameter to configure the DbSync Service.

Insure that the DbSync service is running when using the ClientAdapter. If the DbSync service is not running, some jobs that would ordinarily succeed may fail. For example, DIVA Connect restores of newly archived objects may fail, even though new DIVA Connect archive jobs may succeed.

Modifying the DbSync Configuration File

The following tables describe the parameters that can appear in a DbSync configuration file. The file is in XML format. The default value column indicates the value that the parameter will have if the parameter is not specified in the configuration file. The column also indicates whether the parameter is required or optional.

To create a new configuration file:

1. Navigate to the DIVA Connect home directory (where DIVA Connect is installed).
2. Navigate to the Program/conf/divaconnect/templates folder, copy the DBSyncConfig.xml.ini to the parent directory, but leave out the .ini extension (../DBSyncConfig.xml).
3. Using the following Parameter Description Tables as a reference, edit the parameters in the DBSyncConfig.xml file to configure DbSync.

A sample DbSync configuration file appears in .

Parameter	Description	Default Value
LocalSitename	The sitename of the local DIVA Connect site (where DbSync is running). The sitename listed must match what was configured in the DIVA Connect database and what is configured in both the ClientAdapterConfig.xml and ManagerAdapter.xml. This configuration enables DbSync to communicate with the ManagerAdapter.	None (required)
LogDirectory	The folder where the log files will be produced.	The log/divaconnect/Dbsync folder.
LogLevel	The detail level at which trace file logging takes place (ERROR, WARN, INFO, DEBUG, TRACE).	INFO
InternalPollingRateMillis	The base rate at which sites are polled for information. Change this parameter only if slow networks and (or) systems are encountered.	2000
WebServicePort	The port used to send management messages to DbSync.	None (optional)
SSLWebServicePort	True if SSL should be enforced on incoming web service connections.	true
BatchSize	The number of records to query at once when syncing site metadata.	500
DoNotSyncFileList	Advanced: Do not synchronize filenames to the DIVA Connect database – this can greatly reduce sync times and disk usage.	False
AutoCopyRulesFilename	The name of the AutoCopy rules configuration file. Note: You must specify the AutoCopy rules filename here AND in the Client Adapter config if you wish to use AutoCopy!	None (AutoCopy disabled)
LogFileLifetimeHours	Number of hours to keep log files. Files older than this will be removed at the top of the hour.	Default: 50 Minimum: 1 Maximum: 1000

DivaManager Section

Inside of the DivaManagers tag, multiple DivaManager definitions can appear. The following table describes the parameters that can appear as part of a DivaManager section.

Parameter	Description	Default Value
BaseUrl	URL of the service on the Core Manager platform to use for syncing. By default, this corresponds to the network address of the remote ManagerAdapter, qualified by the WebServicePort used by the ManagerAdapter.	None (optional)
Sitename	The official name of the site to sync object information from. The sitename listed must match what was configured in the DIVA Connect database and what is configured in both the ClientAdapterConfig.xml and ManagerAdapter.xml.	None (required)

DIVA Connect Database

Configure the DIVA Connect Database parameters as shown in the following table.

Parameter	Description	Default Value
Address	The IP Address of the database.	localhost
Port	The port used to access the database.	1521
User	The user name of the schema.	None (required)
Password	The password of the schema.	None (required)
DbSiteId	The Oracle SID (Site Identifier).	lib5
DbServiceName	The Oracle Service Name. Can be supplied instead of DbSiteId.	None (optional)
SecureMode	A value of 1 enables SSL encryption of the database connection.	None (optional)
DbCreds	Contains the encrypted database credentials generated by DIVAConnectAdmin. This parameter cannot appear when Password is used.	None (optional)

Access Rules

In DIVA Connect, you use Access Rules to control access to DIVA Connect operations, sites, and resources. Access rules can be run in three ways:

- On DIVA Connect jobs within the ClientAdapter service (in MultiDiva Mode or sent via DIVA Connect UI)
- On Core jobs within the ManagerAdapter service
- On Core jobs that enter the ClientAdapter through a Direct Mode port

To run Access Rules, you must define the AccessRulesFilename parameter in the ClientAdapter and (or) ManagerAdapter configuration file. You must supply the file name without the path - DIVA Connect assumes that the file will be located in the same directory as the ClientAdapter configuration file.

Methods of Running Access Rules

Access rulesets defined in the ClientAdapter (MultiDiva Mode) enforce access control on DIVA Connect jobs (received locally). Access rulesets defined in the ManagerAdapter configuration enforce access control on Core jobs (submitted to satisfy a DIVA Connect job). The rules in the ManagerAdapter implement policies for the site. The rules in the ClientAdapter implement policies for the system as a whole.

Access rulesets defined in the ClientAdapter (Direct Mode) enforce access control on either DIVA Connect jobs or Core jobs, depending on whether the remote system is another DIVA Connect instance, or a Core system. In this mode, additional operation types are available for use in rulesets. These operations correspond to Core-specific jobs, and are detailed below.

Archive Example

The following are examples to help get more familiar with the rules themselves. The following rule allows Archive operations for users connecting as admin or as operator from either Server DATA_EXP_PDAT1 or VID_FTP_3, and, archiving to a media of either HDFeatures or SPM (you will see that the order of the attributes is not significant), and being named with a Collection containing the word POST.

```
<Include>
    <Operation>Archive</Operation>
    <Username>admin</Username>
    <Username>operator</Username>
    <ReqMedia>spm</ReqMedia>
    <ReqObjectCategory>*POST*</ReqObjectCategory>
    <ReqSourceDest>DATA_EXP_PDAT1</ReqSourceDest>
    <ReqSourceDest>VID_FTP_3</ReqSourceDest>
    <ReqMedia>HDFeatures</ReqMedia>
</Include>
```

Copy Example

In the following two rules, guest users from the GUI Workflow Profile are not allowed to copy from core2 to core3, or vice versa.

```
<Exclude>
    <WorkflowProfile>GUI</WorkflowProfile>
    <Username>guest</Username>
    <Operation>Copy</Operation>
    <SourceSitename>core2</SourceSitename>
    <TargetSitename>core3</TargetSitename>
</Exclude>
<Exclude>
    <Username>guest</Username>
    <WorkflowProfile>GUI</WorkflowProfile>
    <Operation>Copy</Operation>
    <SourceSitename>core3</SourceSitename>
    <TargetSitename>core2</TargetSitename>
</Exclude>
```

Two rules were used here because you didn't want to explicitly restrict copy operations that occur within the same site. For instance, a user at site core2 may want to copy an object (using DIVA Connect) to a new tape - in this case the source and target sitename are both core2. If you had a single rule that contained all of the SourceSitename and TargetSitename attributes, you would exclude copies from core2 to core2 and from core3 to core3.

This is still not complete. The copy will not succeed unless there is at least one Include rule that matches.

```
<Include>
    <Operation>Copy</Operation>
    <WorkflowProfile>GUI</WorkflowProfile>
    <Username>guest</Username>
    <Operation>ApiConnect</Operation>
</Include>
```

In this case, a very general Include rule gives you what you want, the ability to copy everywhere except for core2 to core3 and vice versa. In fact, you didn't really need an Exclude rule at all. Sometimes, however, things are easier with Exclude rules. Keep in mind that if an Exclude rule matches an operation, that operation will be denied, even if one or more Include rules match.

Include and Exclude Rules

To summarize, there are two types of rules, Include and Exclude. Access is denied for all jobs unless at least one Include rule matches the operation about to be performed. However, if any Exclude rule matches, the operation is automatically rejected, regardless of any Include rules that match.

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Attribute Types

On jobs such as Delete, Copy, Restore, Partial File Restore, Cancel, and Archive, DIVA Connect runs the entire set of Access Rules set to see if the operation is permitted. It examines variables such as:

- Originator attributes

  The Workflow Profile of the connection, the user name that sent the message, the IP address of the originator.

- Job attributes

  The Server, the source/target sitenames, the requested media, comments, and so on. These are derived from the job itself. Many of these are prefixed with Req.

- Object attributes

  The media(s) the object is stored on, the storage plan, the object size, and so on. These are derived from the object being processed by an operation. Many of these are prefixed with Obj.

The following rule combines all three attribute types. It allows a user diva to perform a site delete on New York only when the object exists on Los Angeles.

```
<Include>
    <Username>diva</Username>
    <Operation>Delete</Operation>
    <SubType>SiteDelete</SubType>
    <TargetSitename>NewYork</TargetSitename>
    <ObjOnSite>LosAngeles</ObjOnSite>
</Include>
```

Rules for DIVA Connect Jobs (ClientAdapter)

DIVA Connect jobs are generated when jobs are received in MultiDiva Mode. Access rules can be created against these DIVA Connect operations. The following are details of some attributes specific to DIVA Connect jobs.

Connect Operations

The ApiConnect and WebConnect operations are special operations that must be included to establish a connection to the ClientAdapter.

- ApiConnect

  This operation governs the ability to connect to the ClientAdapter through an API client socket connection. This is required for Core API connections.

- WebConnect

  This operation governs the ability for applications to connect through web connections (DIVAConnectUI and DIVAConnectAdmin). This is required for DIVAConnectUI connections.

When these operations are matched against your rules, keep in mind that only originator attributes will be present to match against. For example, TargetSitename

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would not be matched when access rules are run during the ApiConnect operation, because the attribute is simply not present when a client connects.

SubType (for Delete)

The delete operation has a SubType field which represents a subtype of the operation. You can include the SubType field in rules along with the Delete operation, supplying multiple SubType parameters if you want. The values for Delete SubType are:

- GlobalDelete

  Matches if the delete operation being performed is a global delete of an object on all sites. This also matches a site delete operation that just happens to be deleting all remaining objects in DIVA Connect.

- SiteDelete

  Matches if the delete operation is a delete of all instances on a particular site (the name of the site can be matched in rules using the TargetSitename parameter). In addition, an operation will have this SubType if the requester is deleting a single instance, but that is the last instance of the object on that site.

- InstanceDelete

  This delete operation deletes a single instance on a site, and there are other instances on the site.

Specifying this parameter in rules is useful for enforcing the scope of the permitted delete operations.

Rules for Core Jobs (ManagerAdapter)

DIVA Connect allows access rules to be run on Core jobs as well. Access rules defined in the ManagerAdapter specify which Core operations (sent to satisfy DIVA Connect jobs) are permitted. Only the operations valid for DIVA Connect jobs can be specified in the rulesets. In ManagerAdapter rulesets, the WorkflowProfile, TargetSitename, and SubType attributes are invalid.

Similar to the ClientAdapter rulesets, the WebConnect Operation must be granted for connections to be established to the ManagerAdapter. This also extends to DbSync operations. The SourceSitename attribute corresponds to the specific site that is making a request. The ApiConnect operation is not available in ManagerAdapter Access Rules.

Rule Matching

Matching a rule involves comparing attributes in the rule against the actual values in each job, in a matching object, or job originator. Wildcards are allowed (use an asterisk (*) for wildcards). Case is insensitive for the tag names, but most values are case sensitive. The Operation tag is required in each rule. You can provide an Operation tag containing an asterisk (*) to indicate that the rule applies for all operations. However,

you should be careful when doing this because not all attributes are valid for all operations.

Distinct attributes in a rule (an Include or Exclude rule) are joined together using a logical AND in the matching process. However, a single attribute specified more than one time in a rule causes those attributes to be joined together using a logical OR in a single expression.

When matching a requested operation against an access rule, DIVA Connect determines if the attribute in the rule is applicable for the operation being performed. If not, the attribute is not used in the comparison.

Rulesets and Defaults

Rules can be grouped into Rulesets. Each Include-Exclude rule must be contained inside of Ruleset tags. Each incoming DIVA Connect operation is matched against all rulesets. Rulesets are useful because they can have attributes that serve as defaults for all rules contained inside. In the matching process, each Ruleset default attribute is folded in to each child rule - as if the attribute were specified directly within the rule. It is common to use Workflow Profile as a default attribute for Rulesets, as Workflow Profile is populated on every requested DIVA Connect operation.

The following attributes can be defaulted within a ruleset:

- User Name
- Net Address
- WorkflowProfile (in ClientAdapter rules)

Another Example

The following example allows users connected with a WorkflowProfile of GUI to view jobs and assets, and to perform deletes of individual instances on site core1. Remember that a SubType of InstanceDelete will deny any delete that would remove the last instance of a particular object on a site.

The second part of the example prohibits all connections, either web or API connections, that originate from the subnet 172.53. It will do this for any operation, regardless of its Workflow Profile.

```
<Ruleset>
     <WorkflowProfile>GUI</WorkflowProfile>
     <Include>
          <Operation>WebConnect</Operation>
          <Operation>Delete</Operation>
          <SubType>InstanceDelete</SubType>
          <TargetSitename>core1</TargetSitename>
     </Include>
</Ruleset>
<Ruleset>
     <NetAddress>172.53*</NetAddress>
     <Exclude>
```

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```
                <Operation>ApiConnect</Operation>
                <Operation>WebConnect</Operation>
            </Exclude>
        </Ruleset>
```

Ruleset Parameters

The following table describes the parameters that can appear under the Ruleset section.

Parameter	Description	Default Value
WorkflowProfile	This attribute, defined in the ClientAdapter configuration, is the name of a workgroup or set of applications that access DIVA Connect. This attribute is made part of every rule in the ruleset.	None (optional)
Username	The user name passed in the API or specified in the web job. This attribute is made part of every rule in the ruleset.	None (optional)
NetAddress	The network address (IP or internet name) of the remote connection. This may be the address of a gateway or router and not the address of the originator. This attribute is made part of every rule in the ruleset.	None (optional)
Exclude	A rule that denies permission if it matches the DIVA Connect operation.	None (optional)
Include	A rule that allows permission if it matches the DIVA Connect operation.	None (optional)

Include/Exclude Rule Parameters

You can specify rule attributes that appear in jobs. For example, ReqMedia will match the media and (or) storage plan specified in a job (operation).

Similarly, you can specify rule attributes that match against the archived object that the job is processing. For example, if a certain object is specified in a delete operation, ObjHasMedia will match any media that is currently part of that archived object regardless of media passed in the job.

The following table describes the parameters that can appear in an Include or Exclude rule section.

Parameter	Description	Default Value
Operation	The name of the DIVA Connect operation to match: • Archive • Copy • CopyToNew • Restore • PartialRestore • TranscodeArchived • Delete • DeleteFile • Cancel • ApiConnect • WebConnect • ChangeConfig There are additional operations available for Core operations in Direct Mode: • InsertTape • EjectTape • AssociativeCopy • TransferFiles • ServerDelete • ChangePriority	None (optional)
Username	The user name of the connected API user and (or) service user.	None (optional)
WorkflowProfile	The ClientAdapter profile name.	None (optional)
NetAddress	The IP address of the API application and (or) user.	None (optional)

Parameter	Description	Default Value
SourceSitename	The source sitename of the operation. Some operations do not have a source sitename (for example, Archive has a Server as the source). If the job is retried on another site, this value will change, and the entire rule will be reevaluated. When this attribute appears in ManagerAdapter rules, this matches the site that submitted the job.	None (optional)
TargetSitename	The target sitename of the operation. Some operations do not have a target sitename (for example, Restore has a Server as the target, not a site). If the job is retried on another site, this value will change, and the entire rule will be reevaluated.	None (optional)
SubType	Multi Core Mode operation type (Delete command has GlobalDelete, SiteDelete, and InstanceDelete).	None (optional)

Parameter	Description	Default Value
ReqObjectName	The name of the object that is being processed.	None (optional)
ReqObjectCategory	The Collection of the object (in Core this is part of the formal name of the object).	None (optional)
ReqSourceDest	The Server specified in the job.	None (optional)
ReqComments	The comments field in the job.	None (optional)
ReqMedia	The media that was requested as part of the operation/job (sitename should not be appended). Keep in mind that Storage Plan can be passed as the requested media.	None (optional)
ReqOptions	The options field in the job.	None (optional)
ReqPathRootPat	The file path root in the job. Asterisk (*) matches up to the next forward slash (/), double-asterisk (**) matches all characters.	None (optional)

Parameter	Description	Default Value
ObjOnSite	Matches if the object exists on the specified site.	None (optional)
ObjNotOnSite	Matches if the object is NOT on the specified site.	None (optional)
ObjHasMedia	Matches any media on any site.	None (optional)
ObjHasStoragePlan	Matches storage plan on any site (ObjStoragePlanSite can restrict to one site).	None (optional)
ObjStoragePlanSite	Restricts specified storage plan to a specific site.	None (optional)
ObjHasSizeGbLessThan	Matches if total object size in fractional GBs is less than the specified value.	None (optional)
ObjHasSizeGbGreaterThan	Matches if total object size in fractional GBs is greater than the specified value.	None (optional)
ObjSourceDest	Matches the original Server stored in the asset database.	None (optional)
ObjPathRootPat	The file path root in the job. asterisk (*) matches up to the next forward slash (/), double-asterisk (**) matches all characters.	None (optional)

AutoCopy

AutoCopy is a feature that can automatically copy or restore assets after they are archived. AutoCopy rules are evaluated when new content is detected at a site. The rules can trigger one or more restore or copy tasks that are executed according to a schedule. AutoCopy rules can also be evaluated in batch mode against all assets.

AutoCopy Rulesets

AutoCopy rulesets control which new objects will be restored or copied, and with what settings. You can define multiple rulesets in the AutoCopy configuration file (see Creating a New AutoCopy Configuration File).

Each ruleset contains the following:

- A set of Include/Exclude rules

  These act as "if" statements that describe which assets that should be restored or copied, and which should not (for a list of valid parameters, see Parameters).

- A single Action section

  This acts as a "then" statement that determines what site to copy to, or what Server to restore to (for a list of valid parameters, see Parameters).

A new asset matches a ruleset when at least one Include rule matches and no Exclude rule matches. DIVA Connect uses the parameters in the ruleset Action section to generate either a copy or restore task. AutoCopy rules can create tasks for assets originating from any DIVA Connect site (not just the local site).

The format and behavior of AutoCopy Rules loosely match the behavior of Access Rules (see Access Rules). Like Access Rules, repeating the same attribute within a rule creates an "OR" condition for the attribute. However, unlike Access Rules, a newly archived object can match multiple rulesets, and consequently create multiple copy or restore tasks.

AutoCopy rules are evaluated:

1. When a new asset it is archived at a particular site, or

2. On all existing assets, when you select the Run Rules on Existing Assets option in the DIVAConnectAdmin utility (see Managing the AutoCopy Queue with DIVAConnectAdmin).

Sample AutoCopy Rulesets

Example: Basic AutoCopy Ruleset

This ruleset will copy object assets from NewYork that have a storage plan of SP_MEDIA1 and are less than 300GB in total size. If a match occurs, DIVA Connect will create a copy in the LosAngeles site with a media of LTArch_DVT_M2 and a priority of 50.

```
<Ruleset>
    <Include>
```

```
<SourceSitename>NewYork</SourceSitename>
    <ObjHasStoragePlan>SP_MEDIA1</ObjHasStoragePlan>
    <ObjHasSizeGbLessThan>300</ObjHasSizeGbLessThan>
</Include>
<Action>
    <Operation>Copy</Operation>
<Sitename>LosAngeles</Sitename>
    <Media>LTArch_DVT_M2</Media>
    <Priority>50</Priority>
</Action>
</Ruleset>
```

Example: Complex AutoComplex Ruleset

The following ruleset will copy assets from Dallas that have a Collection starting with "POST" (but not having an object name of AV_49082_DVT). It will also copy objects archived in NewYork that have the following:

1. An original Server of either Interplay_001 or Interplay_002, and

2. An object name starting with AV_ and ending with _DVT, but

3. Not a name of AV_49082_DVT and a Collection of POST.

```
<Ruleset>
    <Include>
        <SourceSitename>Dallas</SourceSitename>
        <ObjectCategory>POST*</ObjectCategory>
    </Include>
    <Include>
        <SourceSitename>NewYork</SourceSitename>
        <ObjSourceDest>Interplay_001</ObjSourceDest>
        <ObjSourceDest>Interplay_002</ObjSourceDest>
        <ObjectName>AV_*_DVT</ObjectName>
    </Include>
    <Exclude>
  <ObjectName>AV_49082_DVT</ObjectName>
  <ObjectCategory>POST</ObjectCategory>
</Exclude>
<Action>
        <Sitename>LosAngeles</Sitename>
        <Media>LTArch_DVT_M1</Media>
        <Priority>35</Priority>
        <DelayMins>1440</DelayMins>
    </Action>
</Ruleset>
```

In the case of a match, DIVA Connect will copy the new object (from either NewYork or Dallas) to the LosAngeles site one day after the copy task is created.

AutoCopy Queue

The AutoCopy queue is a list of copy or restore tasks waiting to be executed. The MaxRequests parameter limits the number of AutoCopy jobs executing at one time. By default, DIVA Connect uses a combination of task priority and the last retry date to determine which tasks to schedule next. For additional scheduling options, see Scheduling AutoCopy Tasks.

What happens on a copy if the Object is already present on the target site?

If an AutoCopy task's object name and Collection matches an asset on the target site, and is stored on the target media, DIVA Connect will not create a copy, and will mark the task as succeeded.

If the object already exists on the target site, but is not stored in the target media, DIVA Connect, again by default, performs a local copy to Tape Group operation at a local site. However, if the AutoCopy parameter AllowLocalCopy is set to false, DIVA Connect will not generate a copy job, and instead will mark the task as succeeded.

Finally, if the -replaceTarget parameter is selected (either in AutoCopy rules or the options field of an API job), AutoCopy will delete the object from the target site before copying it back to the target site.

When are tasks removed from the queue?

After an AutoCopy task succeeds in copying or restoring an object, the task is complete, and DIVA Connect removes the task from the queue. For example, if an object is copied to a site, and later the object is deleted from the site, there will be no action taken to re-copy the asset to the target site. If an asset is deleted from all sites, the corresponding entries in the AutoCopy queue are also deleted.

What happens when a job fails?

If Autocopy schedules a restore or copy job and the job fails, AutoCopy will create new jobs at regular intervals until one succeeds. You can define RetryTotalLimit and RetryDelayMins to control the retry attempts.

This retry is distinct from the retry options available in the Workflow Profile, which can retry some of the steps within a job without terminating the job. For example, when issues occur on the target Core site during an intersite copy, the archive step of the transfer can be retried without repeating the download to the target site. In contrast, the AutoCopy retry creates a brand-new copy job with a distinct job ID. You can combine the two types of retry to provide an effective and reliable method of transfer.

Managing the AutoCopy Queue with DIVA Connect UI

- Viewing AutoCopy Assets

  To view AutoCopy assets, set the Has AutoCopy Task filter to True in the asset search panel (see Searching Assets). This returns all assets that have an AutoCopy task either waiting to be scheduled or running. On the asset detail panel, you can see the tasks for an asset, as well as any Jobs. You can view the details of a running job on the DIVA Connect UI Jobs screen.

- Canceling AutoCopy Tasks

  To cancel tasks, select the assets that have tasks you want to remove, and then select Cancel Tasks from the Action menu. By default, this cancels all tasks associated with the assets. A dialog box is displayed allowing deletion of all, or some,

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tasks associated with the assets. Tasks originating from a particular site, or tasks having a specific target media can be canceled. DIVA Connect cancels a task by removing the task from the AutoCopy queue. Canceling has no effect on any copy jobs that may be currently running.

Managing the AutoCopy Queue with DIVAConnectAdmin

- Pause/Unpause and Clear AutoCopy Tasks

  Using DIVAConnectAdmin, you can pause and unpause the scheduling of new jobs. Pausing or unpausing will not effect jobs that AutoCopy has already spawned. You can also use DIVAConnectAdmin to clear all tasks in the AutoCopy queue. See the Top-Level Menu Item table.

- Evaluate AutoCopy Rules Against Existing Assets

  You can select Run Rules on Existing Assets option in the DIVAConnectAdmin utility to generate copy tasks for any existing asset that matches the AutoCopy rulesets. See the Top-Level Menu Item table. Starting with DIVA Connect 3.1 this option now accepts an optional file name. If a file is entered, then the rules rulesets from this file will be evaluated. If no file is specified, the AutoCopy rulesets specified in the ClientAdapterConfig will be used.

An AutoCopyRules file used for this feature uses only the <Ruleset> section. The top-level parameters are not used and must be specified in the file that is referenced in the ClientAdapterConfig and DbSyncConfig files.

Caution: **Running AutoCopy rules on existing assets can result in thousands of copy tasks added to the AutoCopy queue.**

Routing Copy or Restore Jobs to the AutoCopy Queue Using Core API

Restore or Copy jobs sent to DIVA Connect (running in MultiDiva mode) via the Core API normally execute immediately. However, there is an option to route jobs to the AutoCopy queue for scheduling. The job becomes a task in the queue, allowing an application to schedule thousands of restores or copies at once, just by using the Core API. These jobs may take weeks to complete.

To route a job to AutoCopy, provide the -autocopy flag in the options field of a Copy or Restore command sent via the Core API. Partial Restore is currently not supported. DIVA Connect will use the parameters in the job to generate the task. The -autodelaymins parameter will delay the activation of the task for a specific number of minutes.

Routing Copy or Restore Jobs to the AutoCopy Queue Using DIVA Connect UI

You can optionally route DIVA Connect UI copy or restore jobs to the AutoCopy queue. This facilitates the scheduling of thousands of copies at one time from a remote application.

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Scheduling AutoCopy Tasks

When tasks make it into the queue, AutoCopy can then schedule them for execution. The following are a few features that can be used to schedule tasks that are in the AutoCopy queue. These features can make the best use of available tape, disk, and cloud resources.

Schedule by Tape

When copying or restoring large numbers of tape-based assets, tape library mounts, dismounts, and positioning can become significant. For items in the queue, the Schedule by Tape feature will group together assets that exist on the same tape, and use these groupings to schedule copies. This can help minimize the total time to restore tape-based assets.

To enable the feature, set the NumTapesToSchedule parameter to a value greater than zero.

The NumTapesToSchedule parameter indicates how many tapes to schedule concurrently (it does not indicate the number of tasks or assets to schedule). This value should be set to the maximum number of tape drives to dedicate to copying or restoring. DIVA Connect selects a list of tapes to copy, picks assets from each tape, and then schedules them in a round-robin fashion, until it reaches the MaxRequests limit. The outbound job priority is set using the ScheduleByTapePriority parameter. Using Schedule By Tape will always override any priority specified in AutoCopy rules, as priority affects job ordering in Core.

When executing schedule by tape, the Copy tasks normally execute a restore job at the source site, followed by an archive at the target site. In the event the source site has disk instances as well as the selected tape instance, Core may select the disk instance. This may be ok, but it also may lead to the tape getting dismounted only to be mounted again for the next asset. To avoid this, and reduce the number of mounts and dismounts, starting with release 3.1 the RestoreInstanceOnCopyTape parameter may be used to send a restore instance job to the source site. The tape instance will then be selected even if a disk instance exists.

NumTapesToSchedule must be set to put the Auto Copy in Tape Priority and enable the Restore Instance feature.

Additionally, you can set up Schedule by Tape to run only during off-peak hours, if desired. See the following section.

Off-Peak Time Window

Using AutoCopy, you can define a daily "off-peak" time window during which DIVA Connect can execute more jobs at one time (or less jobs, if desired).

The daily start time (OffPeakStartTime) and stop time (OffPeakStopTime) define the off-peak window. If either values are omitted (or they are the same), no off-peak period will occur.

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By configuring OffPeakNumTapesToSchedule you can run the Schedule by Tape feature during off-peak hours. See above for more information.

Configuring AutoCopy

The AutoCopy configuration file (AutoCopyRules.xml) contains:

- AutoCopy Configuration Parameters
- AutoCopy Rulesets

If you modify the AutoCopy configuration file while the system is running, select the Reload Workflow Profile / Rules option in DIVAConnectAdmin to inform DIVA Connect of your changes without restarting services (see the Top-Level Menu Item table).

Creating a New AutoCopy Configuration File

1. Navigate to the DIVA Connect home directory (where DIVA Connect is installed).
2. Navigate to the Program/conf/divaconnect/templates folder.
3. Copy the AutoCopyRules.xml.ini to the parent directory, but leave out the .ini extension (../AutoCopyRules.xml).
4. Using the tables below as a reference, edit the parameters in the AutoCopyRules.xml file to configure the AutoCopy feature.
5. To activate AutoCopy, you must add a reference to the AutoCopy config file in both the ClientAdapter and DbSync configuration files. The AutoCopyRulesFilename parameter indicates the name of the AutoCopy file. The services assume the AutoCopy file is in the same directory as the other service configuration files.

Caution: **Be careful when adding the AutoCopy file to the ClientAdapter and DBSync configuration files. Errors in the AutoCopy file may prevent the services from starting, in the same way as errors in the ClientAdaptor or DBSync configuration files.**

Creating a New BatchAutoCopy Configuration File

Create the BatchAutoCopy the same as the AutoCopy Configuration file, using items 1 - 4 in the previous section, except in item 3, use BatchAutoCopyRules.xml.ini as the template. Note that the top level configuration items are not included in this file. These parameters continue to be specified by the AutoCopy rules defined in ClientAdapterConfig and DbSyncConfig. This file may be specified when using the Run Rules on Existing Assets option in the Manage AutoCopy Menu of the Admin tool.

AutoCopy Configuration Parameters

The following table contains the configuration file top-level parameters used to customize scheduling behavior. The default value in the Data Type/Default column indicates the value that the parameter will have if it is not specified in the configuration file.

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Parameter	Description	Data Type/Default
MaxRequests	Maximum simultaneous AutoCopy jobs to schedule at one time (during normal processing).	Integer (default: 10)
NumTapesToSchedule	Turns on Schedule By Tape if greater than zero; Schedule this number of tapes at a time.	Integer (default: 0=disable scheduling by tape)
AllowLocalCopy	Allows local copies using AutoCopy. If true, and the asset already exists at the target site, a local copy to the target media will be scheduled (provided the object is not already stored on that media).	Boolean (default: true)
DefaultWorkflowProfile	The DIVA Connect Workflow Profile to use when submitting copy jobs.	String (default: default)
ScheduleByTapePriority	Copy job priority to use when Schedule by Tape is enabled. Schedule by Tape overrides the priority specified in AutoCopy rules.	Integer (default: 40)
RestoreInstanceOnCopyTape	If true the restore job of a copy (tape priority) will use restoreInstance.	Boolean (default: false)
RetryTotalLimit	Maximum number of retries for an AutoCopy task.	Integer (default: 3000)
RetryDelayMins	After an AutoCopy job fails, the minimum delay before another attempt.	Integer (default: 15 minutes)
DiskRequestReserve	How many jobs of the total to be reserved for disk-based assets, when scheduling by tape.	Integer (default: 1)
OffPeakStartTime	Time to start the off-peak period	Time of day (HH:MM, local 24hr) (default: none: no off-peak period)
OffPeakEndTime	Time to end the off-peak period	Time of day (HH:MM, local 24hr) (default: none: no off-peak period)

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Parameter	Description	Data Type/Default
OffPeakMaxRequests	Maximum simultaneous AutoCopy jobs to schedule during the off-peak period.	Integer (default: 40)
OffPeakNumTapesToSchedule	Number of tapes to schedule during off-peak hours.	Integer (default: 0=no scheduling by tape)
ConsecTapeErrorThreshold	Number of errors before abandoning a tape (when scheduling by tape).	Integer (default: none)

Include/Exclude Rule Parameters

AutoCopy rulesets determine which assets should replicate to other sites. Each ruleset contains if portions (the Include sections of each ruleset), and a then portion (the Action section of each ruleset). See AutoCopy Rules above for examples of rules and actions.

Parameter	Description	Data Type/Default
SourceSitename	Matches the sitename where the asset was archived.	String
ArchivedMoreThanDays	Matches if asset was archived more than this many days ago.	Integer (number of days)
ArchivedLessThanDays	Matches if asset was archived less than this many days ago; useful if a DIVA Connect database resync occurs.	Integer (number of days)
ObjectName	The name of the asset.	String
ObjectCategory	The Collection of the asset (part of the formal name of the asset).	String
ObjComments	The comments field in the new asset.	String
ObjHasMedia	Matches the media to which the asset has been archived.	String
ObjSourceDest	Matches the Server where the object was archived from.	String
ObjHasStoragePlan	Matches storage plan of new asset.	String

Parameter	Description	Data Type/Default
ObjHasSizeGbGreaterThan	Matches if the asset size is greater than this number (in fractional GBs).	Decimal (in GBs)
ObjHasSizeGbLessThan	Matches if the asset size is less than this number (in fractional GBs).	Decimal (in GBs)
ObjPathRootPat	Matches the original file path root of the archived object. Glob matching (* matches up to next /, ** matches all).	String

Parameter	Description	Data Type/Default
Sitename	The name of the DIVA Connect site to copy to.	String (required)
Media	The target archive media to copy to.	String (required)
Priority	The priority of the job.	Integer (1-100; default: 50)
DelayMins	The time to wait in minutes before scheduling the task.	Integer (default: 0)
Operation	The name of the operation (Copy or Restore).	String (default: Copy)
ReplaceTarget	True if the copy should replace that already exists on the site.	Boolean (default: false)
SourceDest	The Server to restore to.	String (1-96)
FilePathRoot	The FilePathRoot to use in the restore.	String
Options	The options to use for the copy/restore.	String
CreateRestoreFolder	True if a uniquely named top-level folder should be created for each object.	Boolean (default: false)
WorkflowProfile	The DIVA Connect Workflow Profile to use when submitting copy jobs.	String (default: DefaultWorkflowProfile)

Adding Script Variables to a Configuration File

DIVA Connect allows variable substitution in configuration files to make configuring multiple script files easier. When the pattern ${variable_name} is encountered in an XML Value (variables are not valid in Tag Names), the value of the variable is substituted when the DIVA Connect reads the script. The value can be taken from an environment variable or assigned directly within the script.

If the Variable Name in the script is named the same as an Environment Variable, the value of that variable will be substituted in the script. Alternatively, you can define variable values at the top of each script using the Variable tag. The syntax is: <Variable name="LocalSitename" value="core1"/>. When DIVA Connect reads a configuration script, it checks to see if any variables that are used within the script have been set at the top. If not, it then looks for an Environment Variable with the same name as the variable.

For ease of use, a script file named divaconnectEnv.conf has been created within the DIVA Connect home directory, in the Program\conf\divaconnect\wrapper subfolder. Variables can be centrally defined in this configuration file and will be available to all of the DIVA Connect services. If the values are changed and the service is restarted, the changes will be reread. Refer to the divaconnectEnv.conf file for sample variables.

Using the User Interface

Topics:

- Prerequisites
- Starting the DIVAConnectUI
- Viewing Assets
- Viewing Jobs
- Copying an Object
- Restoring an Object
- Canceling Tasks
- Modifying the Configuration File

Prerequisites

To use the DIVAConnectUI application:

- The ClientAdapter must be configured and running on the server side.
- To perform intersite copies within DIVAConnectUI, ensure that the ClientAdapter Site-To-Site mappings are configured.
- Configure and run the DbSync service to view the most up-to-date asset information.

Note: DIVA Connect 2.x does not supports the Core System Management App; use the DIVAConnectUI instead. DIVA Connect 2.x does not forward or support System Management App messages in either MultiDiva or Direct Mode.

Starting the DIVAConnectUI

To start the DIVA Connect UI application in Windows, click the provided shortcut link. This link is located in the DIVA Connect home directory, in the Program/divaconnect/ bin subfolder. This shortcut can be copied to the Windows Desktop or Windows Start menu.

On Linux, open a terminal window and call the DIVAConnectUI.sh script to start the DIVAConnectUI.

Refer to Performing Installation for details on how to install the DIVAConnectUI.

Connecting to DIVA Connect

After starting the DIVA Connect application:

- Click either the Jobs or Assets tab to open a prompt for the DIVA Connect server URL.
- Enter the URL of the DIVA Connect server, and then click OK.
- By default, the URL corresponds to the host name of the ClientAdapter, followed by a colon, followed by the ClientAdapter WebServicePort. The value that you enter will be persisted in the DIVAConnectUI properties file.

    For example: https://127.0.0.1:9801

- If userlogin=true in divanetui.properties, a basic authentication dialog will open to accept a username and password. See Add a User, for information on adding users to the database. A username and password are required only if UserAuthEnabled at the TOP_LEVEL of ClientAdapterConfig is true.
- If a connection error occurs, a message will appear in the lower right corner of the screen. Clicking the Change URL button will prompt for a new URL.

Viewing Assets

To display a list of assets, click the Assets tab. The first 100 assets will be listed in the left pane. The asset name will be shown in blue, followed by the object Collection.

By default, assets are presented in Object Name order. Select an asset to view details displayed on the right pane.

Asset Details Panel

The Asset Details panel is divided into three sections: the Global object Parameters at the top, the Sites Table in the middle, and the Asset Filenames table at the bottom. The following are descriptions of some parameters and sections on the Asset Details panel:

- Object Parameters

    The parameters at the top of the Details panel include the total size of the object, the archive date, the number of copies (instances), and comments.

- Last Verified Date

    This represents the last time that the object was checksum verified on tape, at any site. If no tape instances exist, only then will it return the last time the object was verified on disk. If the object was never verified on archived media, the field is blank.

- Alerts

    Any object alerts will be displayed directly underneath the Comments field. For instance, if DIVA Connect detects that two sites have objects with the same name, but different content, an alert will appear.

- Active Tasks & Jobs

    On the Asset Details panel, the text above the Sites Table indicates any DIVA Connect tasks or jobs currently active on the selected object. Each task will have the hours that the task has been active, or, the number of hours until the task becomes active. DIVA Connect jobs will have the job type and id displayed. It is useful to view this field before issuing copies or deletes. This value is refreshed only when you press the Search button (see Searching Assets).

- Sites Table

    Each site that contains instances of the object is displayed in the site table. Each site can contain one or more object instances. Objects for each site have a Storage Plan and initial archive dates (which can be used in the Search panel).

    A site icon resembling a house indicates that the site is the local site. A purple site icon indicates that the site's assets are display-only, and jobs cannot be run on them. A site icon resembling a globe indicates that the site is not local.

- Asset Filenames Table

    The file names that comprise the archived asset appear below the site table. The file names are organized into pages, and ordered according to the order that they were

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archived. The file names for complex archived objects cannot be displayed in this panel.

Searching Assets

DIVAConnectUI contains powerful object search capabilities. Click the **Search** button on the left to open the Asset Search panel.

The Asset Search panel allows many ways to search for assets. Some parameters are selectable, meaning that you can select both an attribute and value. Each value entered poses an additional restriction on the assets returned. Wildcards are permitted in all search fields except the date and time fields.

The following is a list of some parameters used for searching assets:

- Archive Date Search

   DIVA Connect allows the user to search on the date that an object was archived to a Core site. A start and end date and time range can be specified that narrows the search to objects that have an archive date in range. Click the calendar icon to select a date, and then modify the time value in the text field to the desired time. an object may have multiple archive dates (one for each site), and this query searches for any that exist within the range.

- Object Name / Collection

   An asset name is composed of two fields, Object Name and Object Collection. The Collection is the second half of the formal name of an object. Additional object names and/or categories can be queried using user-selectable query terms (see Other Search Parameters below).

- Site Search

   You can search for objects that are either on a site, not on a site, or have a tape copy on a site. This is useful for determining, for example, which objects need to be copied to other sites.

- Event Search

   You can search jobs for a particular type of job event. The drop-down contains some commonly searched events.

- Other Search Parameters

   You can also search on other parameters such as file name, object size, comments, Object Name and Collection, tape barcode, and media.

   You can select the same parameter (for example media) multiple times and provide different values. By default, these multiple values are joined with all other values in the query using a logical AND. For example, if you search on Sitename=Site A and Sitename=Site B, your search will return objects that are present on both Site A and Site B.

   However, if you select the OR Like Query Params check box, the multiple values are joined together using a logical OR. For example, you can search for objects that have a media of POST1 OR PLAYOUT (or both).

- Checksum Failures

  You can select to display Checksum Failures. This returns all assets that have encountered checksum failures as part of Core operations, such as Restore and Copy. The particular site that experienced the failure is marked with an alert icon in the site table. There are no query parameters for this search (use the default value of true).

- Missed Deletes

  You can select to display Missed Deletes. This returns all assets where a delete was attempted, but could not be processed. The sites that experienced the missed delete are marked with a gray X in the site table. You provide a time duration in days, which is subtracted from the current date and used to filter the query to return only the most recent missed deletes.

- Has AutoCopy Task

  You can select all objects that have an AutoCopy task associated by setting the value to True. Setting the value to False will select objects that have no tasks.

- Ordering

  You can sort the objects based on Object Name (the default), Collection, Archive Date, and Object Size. You may see significantly slower query performance when using some optional sort methods.

Cutting and Pasting Asset Details

Many of the values in the Asset Details panel can be copied to the clipboard by double-clicking on the values. In the Asset Search panel, right-clicking on a text field reveals a menu. This menu contains a paste option, which allows items from the clipboard to be pasted into the text field. Alternatively, you can use Ctrl-V to paste the information.

Viewing Jobs

Click the Jobs tab to display a table of DIVA Connect jobs in the left panel. This table is ordered by the date that each job was submitted. Each job in the table shows where content is moving from, and where it is moving to (if applicable). A label with an (SD) appended means that the content is moving from or to a Server. Otherwise, the content is moving from or to a DIVA Connect site.

Viewing Job Progress (Live Updates)

Jobs are enabled for live updates when DIVAConnectUI starts. If the job that is queried is currently executing, the progress of the job will be automatically updated on the screen. Filters can be applied to reduce the number of jobs that are dynamically updated on the screen. Live progress updates can be stopped by providing an end date and time in the Filter panel. See Filtering Jobs.

Viewing Job Details

You can view the details of the job by clicking a job in the table. The details include information such as the priority of the job, the quality of service, source and target sitenames, and media (if applicable). In addition, a list of job-level events are displayed. These events show the steps that DIVA Connect takes to satisfy the job, and the errors encountered along the way.

Canceling Jobs

Right-clicking a job in the job table will show the Cancel option. If a job is canceled, another job (a Cancel job) is generated that will show the status of that Cancel attempt.

Filtering Jobs

DIVAConnectUI contains powerful job filter capabilities. Click the Filter button on the left to open the Job Filter panel.

The Job Filter panel contains parameters used to filter the list of jobs. Two of the parameters are user-selectable. Each value entered poses an additional restriction on the assets returned. Wildcards are permitted in all search fields except the date and time fields and Job ID field.

Note: Unlike the Asset Search panel, you cannot search on the same attribute more than once.

The following are some search terms that can be applied to the list of jobs:

- Job ID

  DIVA Connect jobs are uniquely identified by a Job ID. DIVA Connect allows filtering on Job ID or the name of the object being processed.

- Job Submission Date

  A start and end date and time range can be specified that returns only jobs that have been submitted with the date range specified. Click the calendar icon to select a date. The current local (computer) time is automatically populated in the text field. You can modify the time value in the text field to the desired time. If an end date and time is supplied, no status or progress updates will be provided on screen. Delete the end date and time to enable live updates again.

- Job Type

  Filters can be created on the type of job. Each type can be individually enabled or disabled. In this way, filters can ensure (for example) that only Archives and Deletes appear in the list.

- Job Status

  Filters can be created on the Job Status. In this way, filters can ensure (for example) that only jobs that are either Pending or Running are displayed.

- Other Search Parameters

  You can also filter on other parameters such as Media, Unmanaged Storage Repository, Object Name, Collection, and Comments. Finally, you can search for jobs that were generated by an AutoCopy task.

Cutting and Pasting Job Details

Many of the values in the Job Details panel can be copied to the clipboard by double-clicking on the values. In the Job Filter panel, right-clicking on a text field reveals a menu. This menu contains a Paste option, which allows items from the clipboard to be pasted into the text field. Alternatively you can use Ctrl-V to paste the information.

Copying an Object

DIVA Connect can copy objects from one site to another, or it can copy the object to different archive media on the same site (by creating a new object instance).

1. Within the Asset Table, select the objects to copy.

2. Above the Asset Table, select Copy from the drop-down menu.

   A dialog box will appear showing the selected objects.

3. Select a Target Site, Media/Storage Plan, and Priority.

   – If the object already exists on the site you are copying to, DIVA Connect will create another instance with the archive media that you select. In this case, specifying a Media/Storage Plan will cause the copy job for that object to fail, as the object on that site already has a Storage Plan.

   – If you select Selected By DIVA Connect for the Media/Storage Plan option, DIVA Connect will choose an appropriate media for the copy. If the object already exists on the site you are copying to, DIVA Connect will not create another instance on that site.

   – You can choose to run the job immediately, or place it on the AutoCopy queue for scheduling.

4. Select whether the copy should be run right away, or sent to the AutoCopy queue for batch execution.

   Click Submit.

5. Click either Monitor Jobs or Close.

   If you choose Monitor Jobs, you will be taken to the Jobs View where you can monitor the DIVA Connect Copy jobs for each object that you selected.

Deleting an Object

You can delete an object from a given site, from all sites, or from a specific media on a site.

1. Within the Asset Table, select the objects to delete.

2. Above the Asset Table, select Delete.

3. Select a Target Site, Media, and Priority.

   You can select a specific site, a specific media, or all sites.

4. Click Submit.

5. Click either Monitor Jobs, View Assets in AutoCopyQueue, or Close.

   If you choose Monitor Jobs, you will be taken to the Jobs View where you can monitor the DIVA Connect Delete jobs. If you choose View Assets in AutoCopy Queue, you will be taken back to the Assets View, but will filter on assets having AutoCopy tasks.

Restoring an Object

objects can be restored to a particular Server using the following procedure:

1. Within the Asset Table, select the objects to restore.

2. Above the Asset Table, select Restore. A dialog box appears showing the selected objects.

3. Enter a Server and select a Priority.

4. Optionally, enter restore options in the Options field, and (or) a directory path destination relative to the Server.

5. Check the box if you would like DIVA Connect to create a top-level directory for each object.

6. Choose whether you want to run the restore right away, or send it to the AutoCopy queue for batch execution.

7. Click either Monitor Jobs or Close.

   If you choose Monitor Jobs, you will be taken to the Jobs View where you can monitor the DIVA Connect Restore jobs for each object selected.

Canceling Tasks

You can delete/cancel tasks that have been scheduled on assets. Select one or more assets, and select the Cancel Tasks action. You have the option of canceling all tasks associated with the asset, or limit it to a particular target site or media (or both).

Modifying the Configuration File

The standard DIVAConnectUI startup script is configured to load a properties file upon startup. You can find this configuration file within the DIVA Connect home directory (Program/conf/divaconnect/divaconnectui.properties).

Note: DIVAConnectUI needs write permissions on the properties file, as it records each change to the URL or username directly in the properties file.

You can configure a default URL in this file. This URL should refer to the ClientAdapter's network address and WebServicePort (configured in ClientAdapter.xml). Local web servers and routers may change the address and (or) port needed in the URL.

In this file, you can configure the following parameters:

- logLevel

  DIVAConnectUI writes a log file, and you can change the default logging level by changing the logLevel parameter.

- divaconnectUrl

  This represents the URL that connects to DIVA Connect (the ClientAdapter service). Every time the URL is changed in the application, it is updated here in the configuration file.

- numObjectsToQuery

  The maximum number of objects per page to retrieve in the Assets View.

- numRequestsToQuery

  The maximum number of jobs to retrieve in the Jobs View.

- username

  The user name (for example, diva) to pass to DIVA Connect, which can be used in Access Rules.

- userlogin

  This value is true if the UI should prompt for a username/password before attempting to connect (default: false).

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Administration

Topics:
- Using the DIVAConnectAdmin Utility
- Job Processing and Queuing

Using the DIVAConnectAdmin Utility

DIVAConnectAdmin is a simple command-line tool that has options for administering DIVA Connect. You can only run this utility on the server where the ClientAdapter and DbSync services are running.

To start the utility, open a command window, and then navigate from the DIVA Connect home directory to the Program/divaconnect/bin subdirectory. Type one of the following commands to start the utility:

Windows:

DIVAConnectAdmin.bat {ClientAdapterWebUrl} {DbSyncWebUrl}

Linux:

DIVAConnectAdmin.sh {ClientAdapterWebUrl} {DbSyncWebUrl}

Note: If you do not supply the URL arguments, the utility will assume that the ClientAdapter and DbSync services are running locally, and will prompt for the ClientAdapter and DbSync service ports.

The following table describes the DIVAConnectAdmin options, selectable through a menu system.

Top-Level Menu Item	Tasks	Description
DIVA Connect Database...	Create Initial DIVA Connect DB	Runs sqlplus scripts to create a DIVA Connect database schema.
DIVA Connect Database...	Add Sites	Adds one or more site definitions to the DIVA Connect database.
DIVA Connect Database...	UpgradeDB Utility	Utility to upgrade the DIVA Connect database to the latest revision.
DIVA Connect Database...	Analyze Schema	Runs a script to analyze the DIVA Connect database. Useful after a large initial DBSync run.
DIVA Connect Database...	Set Tuning Parameters	Sets database tuning parameters for specific datasets.
DBSync...	List Synced Sites	Generates the list of the sites in which asset information is being synchronized. It will also display the synchronization status of each site. If a site is in an initial sync state, the percentage complete will also be displayed.

Top-Level Menu Item	Tasks	Description
DBSync...	Resync a Site	Resynchronizes all object records from a particular site to the DIVA Connect database. **Caution: This option will delete all asset records in the DIVA Connect database (for the selected site) before resyncing them. In addition, AutoCopy rules will be run again on each resynchronized object.**
DBSync...	Resync an object	Updates object records for a specific object at a specific site.
Sites...	Show Site Parameters	Displays Core site parameters, including the number of queued jobs to the site, number of jobs (sent by DIVA Connect) running on each site, date of last communication with the site, and the throttling parameters.
Sites...	Set Site Parameters	Allows the user to set the Core throttling parameters: The SubmittedThrottleThreshold controls how many jobs Core should send to a site before waiting (for one of them to complete). The TotalThrottleThreshold is similar, but is based on how many total jobs are running on the Core site. DIVA Connect will wait until the total Core jobs drops below this number (before sending the next job). If Access Rules are defined, this option requires access to the ChangeConfig operation.
Sites...	Add Sites	Adds one or more site definitions to the DIVA Connect database.
Services...	List DIVA Connect Services/Status	Lists the DIVA Connect services that were installed from this installation directory.
Services...	Start/Restart a DIVA Connect Service	Starts (or restarts) a DIVA Connect service.
Services...	Stop a Service	Stops a DIVA Connect service.
Services...	Install a new DIVA Connect Service	Installs a DIVA Connect service.

Top-Level Menu Item	Tasks	Description
Services...	Uninstall a Service	Uninstalls a DIVA Connect service.
AutoCopy...	Pause AutoCopy Scheduling	Pauses AutoCopy scheduling. This has no effect on jobs that have been created from the tasks.
AutoCopy...	Unpause AutoCopy Scheduling	Unpauses AutoCopy scheduling.
AutoCopy...	Clear Entire Queue	Clears the entire AutoCopy queue.
AutoCopy...	Evaluate Rules on Existing Assets	Evaluates the AutoCopy rules on all existing assets. Take care with this option, as thousands of tasks could be generated.
Reload Workflow Profiles/Rules	Reload Workflow Profiles	Causes all Workflow Profiles to reload. It will also reload any Access Rules or AutoCopy Rules that are defined. If Access Rules are defined, this option requires access to the ChangeConfig operation.
Logs...	Get Log Level for ClientAdapter	Lists the log level of the ClientAdapter services.
Logs...	Set Log Level for ClientAdapter	Dynamically changes the log level (valid values are ERROR, WARN, INFO, DEBUG, TRACE).
Logs...	Get Log Level for DbSync	Lists the log level of the DbSync service.
Logs...	Set Log Level for DbSync	Dynamically changes the log level (valid values are ERROR, WARN, INFO, DEBUG, TRACE).
Users...	Add a User	Adds a DIVA Connect user and password to the DIVA Connect database. Insure that the ClientAdapter parameter UserAuthEnabled is set to true, and set the user's DIVA Connect UI property file parameter userlogin to true.
Users...	Delete a User	Delete a user from the DIVA Connect database.
Users...	List Users	List the users that have been created.
Users...	Change Password	Changes the user's password. The password will expire in 180 days.

Top-Level Menu Item	Tasks	Description
Misc...	List API Socket Connections	Lists all Client DIVA Connect API connections, including those in Direct Mode.
Misc...	Kill an API Socket Connection	Provides an option to end a particular API connection, identified by ID.
Misc...	Generate Unique ID	Generates a unique id that can be used as a username, for example.
Misc...	List Cleanup Statistics	Lists statistics for the assets that need to be purged after transfers occur.

DIVA Connect creates the following types of log files:

- Trace Logs

  Located within the DIVA Connect home directory in the Program/log/divaconnect subfolder. Each of the DIVA Connect services (ManagerAdapter, DbSync, and Client-Adapter) create their own subfolder underneath the Program/log/divaconnect folder and generate their log files in that subdirectory.

- Wrapper Service Logs

  These logs output messages related to startup and shutdown of the windows service. This is the place to look if the service is not starting correctly. These logs are within the DIVA Connect home directory in the Program/log/divaconnect subfolder. They will be named similar to the Wrapper.conf file, but with a .log file name extension (for example, ManagerAdapterWrapper.log).

- GUI Logs

  Errors that occur in DIVAConnectUI will appear on the client computer, not on the server side. The logs appear in the Program/log/divaconnect/gui subfolder.

DIVA Connect will package logs older than one hour into zip files, and retain two days worth of logs for review.

Job Processing and Queuing

The following sections discuss queuing and processing of DIVA Connect jobs.

DIVA Connect Job Queuing

DIVA Connect can accept more jobs than downstream Core systems can process with job queues. DIVA Connect enforces a maximum number of jobs that can be queued and (or) running internally (the default is 5000), using the GlobalDivaconnectRequestLimit parameter. DIVA Connect will start rejecting jobs if this limit is reached. The DIVA Connect ClientAdapter service maintains a queue for each site. You can configure DIVA Connect to feed jobs to sites slowly, or to send jobs to sites all at once (where they will likely be queued by Core).

If a job is queued to a Core system, and the Core system is restarted, all Jobs will be terminated. DIVA Connect behaves differently - DIVA Connect stores each job in a database. If the ClientAdapter service is restarted, DIVA Connect reads the pending and Jobs and restarts them. However, not all jobs will be restarted this way. For example, delete jobs will never be reissued after the service restarts. If recovering jobs on startup is not desired, the ClientAdapter AbortAllOnStartup parameter can be set to terminate all jobs in the queue at startup.

DIVA Connect jobs are distinct from tasks in the AutoCopy queue. For more on Copy jobs and AutoCopy tasks, see AutoCopy.

DIVA Connect Job Throttling

By default, DIVA Connect will send one hundred jobs to a site before stopping and waiting for one of the jobs to complete. The parameter that controls the limit is SubmittedThrottleThreshold, which is configurable in the ClientAdapter on a per site basis. It can also be changed at run-time through the DIVAConnectAdmin utility. In addition, DIVA Connect can throttle jobs based on the total number of jobs running on a Core site (using the TotalThrottleThreshold parameter). You can set either parameter to -1 to indicate that no throttling should be performed. You can also set the value to 0, indicating that no jobs in the queue should be sent to Core. This can be useful in certain situations.

If a DIVA Connect job is queued to a particular site for more than a few seconds, DIVAConnectUI will display the position of the job in the queue. If another job is queued with a higher priority than the first, it will likely have a higher position in the queue. If the job fails and is retried, the job will be queued again (although it will get a priority boost from being in the system for a long time).

Delete jobs associated with queuing and timeouts are treated differently than other jobs. The DeleteWaitTimeoutMins parameter controls how long DIVA Connect waits for a delete to complete before timing out the operation. The default is two minutes, but can be increased to be more in line with other commands.

DIVA Connect Retries

Some DIVA Connect operations can be retried automatically within DIVA Connect. There are two type of retries in DIVA Connect. The first are AutoCopy retries on Copy or Restore tasks. AutoCopy will automatically spawn new jobs when one fails, until a job is successful. The other type of retries are applied at the Workflow Profile level -- without respawning a new job. With Workflow Profile retries, Copy, Restore, Partial File Restore, and Delete jobs can be retried. Restore & Partial File Restore jobs can be retried a configurable number of times, where Copy and Delete jobs are retried over a configurable time interval. These retries are modified at run-time without restarting the ClientAdapter (see Configuring Workflow Profiles for more information).

If a site is down, and jobs are queued to that site, DIVA Connect will wait for SiteDownRequeueWaitMins minutes for the site to become operational. If that configured time period elapses, and retries are configured, DIVA Connect will attempt to retry the job, possibly on another site. If retries are not configured the job will terminate.

Core API Support

This chapter highlights DIVA Connect's Core API support, and provides information on how to supply DIVA Connect specific information using the Core API. This chapter is intended to be used with either the Core C++ API, Core Java API, Core Web Service API documentation, or the REST API (see the REST API Programmer's Guide for detailed information).

Core API credentials can be used to authenticate users configured in the DIVA Connect database. Users configured with a Workflow Profile will use that profile for the session. This feature is only available on secure C++ and Java API connections and with the REST API. Use <UserAuthEnabled> in the ClientAdapter <Ports> section. See Configuring Client API Ports for more information on how to set up authorized API connections, and Using the DIVAConnectAdmin Utility, Add a User task in the table for information on adding users to the database.

Topics:

- DIVA Connect API Version Compatibility
- Operations on Archived Content
- Other Supported Commands
- Unsupported Jobs
- Return Codes
- HTTP Return Codes

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DIVA Connect API Version Compatibility

DIVA Connect supports a subset of the full Core API command set. Some Core API commands (such as EjectTape) will be rejected in DIVA Connect MultiDiva Mode. DIVA Connect does support client connections from Core API clients releases 7.3 and earlier. Any new features added to the API after 7.3 will not supported by DIVA Connect.

Invoking Core API calls against a DIVA Connect server is largely the same as invoking calls against Core. However, there are some differences - DIVA Connect sometimes accepts the well-known Core API parameters in a slightly different way. In addition, the content of fields returned by DIVA Connect may be slightly different from Core, or have a different format. This section highlights those differences.

DIVA Connect requires that connected Core sites be installed with Core 7.3.1 or later. Core sites may then be upgraded independently without requiring an upgrade to DIVA Connect.

Operations on Archived Content

This section highlights jobs that involve the transfer (or deletion) of archived content, including Archive, Restore, Delete, and Copy. These commands can be invoked through the Core API. Some can also be invoked from the DIVAConnectUI. Refer to the Core C++ API Programmer's Guide in the Core Documentation library for more information on what each command within the Core API does.

Note: In DIVA Connect MultiDiva Mode, DIVA Connect jobs often require a few additional pieces of information that are not needed by other jobs issued directly to Core.

DIVA Connect jobs often require additional information because DIVA Connect can access multiple sites. For instance, you can use the Copy command in DIVA Connect to copy content from one Core system to another. DIVA Connect needs to know, at a minimum, what the target site is. However, the Core API CopyToGroup command does not contain a target site parameter. The sections below detail how to specify this additional information. For more information on configuring DIVA Connect MultiDiva Mode, see Configuring Client API Ports.

The following table identifies the Core API Content Jobs that are supported by DIVA Connect. Clients that issue these jobs are provided a Job ID in return, which can periodically query the status of the job.

Job	Behavior in DIVA Connect
Archive	Enables digital assets from a Server (such as FTP or CIFS file system) to be transferred to, and stored in, the local Core site, or optionally, another chosen site. For more information, see Archive Jobs.
Restore Restore Instance	Enables a DIVA Connect object to be restored (transferred) to a Server (such as FTP or CIFS). You can specify the site and (or) instance to restore, or let DIVA Connect choose the best site. DIVA Connect decides whether it should (1) restore an object from the local Core, (2) directly restore an object using a remote Core, or (3) pull an object from a remote Core and then transfer it to the chosen Server. A Restore Instance allows a specific instance at a specific site to be restored. If a failure occurs, you can configure DIVA Connect to retry on other sites. For more information, see Restore Jobs.
Partial Restore Partial Restore Instance	Partially restore an object in a manner similar to a full restore. If issuing a partial file restore on a remote system, that Core site must be configured for partial restore in a manner similar to the local site. For more information, see Partial File Restore Jobs.
Copy (CopyToGroup)	Copy content from one Core site to another (an Intersite Copy), or create another instance of an object on new media at a Core site (equivalent to issuing a CopyToGroup on a single Core system). A specific instance can be copied to a target site. You can configure DIVA Connect to retry for a given time period. For more information, see Copy Jobs.
Delete DeleteInstance	Delete content from all sites, a specific site, or delete a specific instance on a specific site. If objects are locked on sites to be deleted, you can configure DIVA Connect to retry for a given time period. For more information, see Delete Jobs.

Archive Jobs

An Archive job transfers content from a Server (configured in Core) to a Core media (disk, tape, or cloud). The API caller arranges for the transfer to be made, but does not actually transmit the content. The Core API arranges for a transfer to occur from the Server to Core. This differs from a web-based cloud API where the content is transferred

directly from the requester through HTTPS. By default, DIVA Connect archives to the local site.

Archive jobs issued to DIVA Connect are similar to those directly to Core, but with a few additions. Normally, DIVA Connect will archive to the local site. However, you can archive directly to another site in one of two ways:

- By providing the -site {sitename} option in the options field. An example would be -site core1.
- By prefixing a Target Server sitename to the media parameter in the archive job. For example, sitename1_TapeGroup1 indicates a Target Server site called sitename1, and a media of TapeGroup1.

DIVA Connect does not support continuous retries for Archive commands, but does support a BackupArchiveSite option, which provides an alternate archive site in case the primary site is down.

Archive Load Balancing

DIVA Connect 3.2.0 adds a new Load Balancing feature for Archive Jobs. This feature distributes archives, in a round-robin fashion, to selected sites. Each site must be configured to have a connection to the same Source(s) that will be used by jobs to be load balanced.

Currently Archive Jobs are sent to the Local site unless a site has been specified in the job. There are no retries by default. However, if a BackupArchiveSite has been configured the job will be retried one time at this site.

Archive jobs will be assigned to configured sites in a round robin fashion when the Load Balance feature is enabled. The Load Balancing feature will be enabled only when the following is true:

1. The site has not been specified in the job.
2. At least 2 sites must be configured for Archive Load Balance.
3. The media (or storage policy) exists for each of the sites to be considered.

If this list is false, site selection will revert to the legacy approach.

If the job fails to complete, a retry is attempted at the next site configured for load balance.

For example, add the following to the <WorkflowProfile> section of the ClientAdapterConfig.xml to load balance between Site1 and Site2:

```
<ArchiveLoadBalanceSite>
      <Sitename>Site1</Sitename>
</ArchiveLoadBalanceSite>
<ArchiveLoadBalanceSite>
      <Sitename>Site2</Sitename>
</ArchiveLoadBalanceSite>
```

Restore Jobs

A Restore job allows the client to restore content that exists in the archive system. The content arrives at the particular Server chosen in the job. The Core API arranges a transfer from a Core site directly to a Server (such as FTP or CIFS disk). This differs from a web-based cloud API where the content is transferred directly to the requester through HTTPS.

When restoring content using DIVA Connect, the caller need not know which particular Core system has the content. And if failures occur retrieving content from one Core site, another Core site can automatically be consulted to retrieve the content.

DIVA Connect supports restoring to any Server on any DIVA Connect site. DIVA Connect will retrieve content from other sites as needed to satisfy the job, ultimately transferring the content to the target Server.

Restore jobs issued to DIVA Connect are similar to those issued directly to Core, but with a few additions. Normally, DIVA Connect chooses the best site to restore from. However, DIVA Connect enables a client to specify the specific site to use for the restore. There are several ways this can be done:

- -site

  Normally, DIVA Connect will choose the site from which to restore. However, you can attempt a restore from a particular site by providing the -site [sitename] option in the options field of the job. If in fact the content is not located at the chosen site, the operation will fail.

- Instance Id

  If you need complete control over the Source Server, you can provide an instance number in the restore job. This will allow you to choose the Source Server site, and the Core instance to restore from (see the following section). This instance id can be obtained by performing a getObjectInfo() API call, or by viewing the object in DIVA Connect UI.

In both of these cases, retries are disabled.

Restore Workflow

To satisfy a restore job, DIVA Connect uses the restore methods in the following table. DIVA Connect will dynamically select which restore workflow to use based on parameters such as the target Server and the source object. To decide which site to use for restores, DIVA Connect asks a series of questions, including:

- Is the object available on the local Core System?
- Does the object have a disk instance?
- Is the Server accessible from the remote Core System?
- Is the Server accessible from the local site?
- Is Core running on the Source Server or Target Server site?
- Is one site preferred over another in the configuration file?

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Method	Description
Local	Used when an object exists on the local site. The local site is the Core System sitename to which you are sending messages. A local Core System is also considered part of the local site.
Direct Remote	DIVA Connect can arrange to have a remote Core system perform a restore operation. It will do this only if the target Server is also configured in the remote Core system. The Server names must match, and they must both refer to the same server or disk (and path on that disk, if applicable). When available, DIVA Connect prefers this method over performing a Restore using Intersite Copy.
Using Intersite Copy	If content is not local, and if a remote Core system cannot directly restore to the target Server, DIVA Connect can arrange for the content to be delivered in two hops. First, the remote Core restores to a Server shared between the source and target sites. Then, the local Core will archive the object, and finally, restore to the target Server. This way future jobs for the content will be retrieved much quicker. If it is desired to always perform remote restores by creating a nearline copy, set AllowDirectRemoteRestores to false in the Workflow Profile.
Using Intersite Transfer	In certain cases, when DIVA Connect is not able to perform a direct remote restore, DIVA Connect will deliver the content in two hops (as Restore using Intersite Copy) but will not actually archive the content locally. One such case involves Partial File Restore. First, DIVA Connect will instruct the Source Server Core to transfer the content to the Server accessible by both the source and target Core sites. Then, the local Core site will transfer the content to the target Server without archiving it.

Attribute	Description
Options	• -autocopy Providing this option adds the job as a task on the AutoCopy queue. This means that the job is not immediately executed. Instead, Auto-Copy schedules the task and ensures that it completes. • -autodelaymins If -autocopy appears, this parameter delays the execution of the task by at least this amount (in minutes). • -site This option will indicate a site to be used as the source for the restore. Normally, DIVA Connect will select the best site for the restore.

Unmanaged Storage Repository Servers

DIVA Connect will allow you to restore to a Server that is available on any site. DIVA Connect assumes that if a Server exists with the same name on two sites, both configurations point to the same physical Server\Device\Path. Users must be careful with the names that are assigned to Servers across the sites.

If a remote Core system cannot directly restore to the target Server, DIVA Connect can arrange for the content to be delivered in two hops (see Restore Using Intersite Transfer). DIVA Connect will arrange this only if the Server is the preferred site for the particular Server (see Preferred Server Mappings).

Retries

You can configure the Restore command to retry several times if the first restore fails. If the content to be restored exists on multiple sites, DIVA Connect will automatically retry the restore with those sites. You can configure the maximum number of retries. In some cases, DIVA Connect will decide to retry with the same site before moving on to other sites. In this case, DIVA Connect will examine the RestoreRetryIntervalMins value to determine how long to wait before retrying with the same site.

Limitations

- DIVA Connect supports a subset of the Core API. Refer to this chapter for a list of the supported messages.
- DIVA Connect has limited support for Multi Restore. DIVA Connect does not allow Multi Restores for remote Servers, and does not allow viewing or monitoring of multiple Servers through the UI.
- DIVA Connect does not support peer-to-peer site relationships.

Partial File Restore Jobs

In addition to full restores of content, DIVA Connect also supports Partial File Restores.

DIVA Connect determines the site where the content is located, and arranges to have the portion restored.

If an object exists on a remote Core system, and the target Server for the restore is not accessible by a remote Core system, DIVA Connect transfers the content in two steps - first using the remote Core to get the content to the local Core (without transferring the entire object), and then using the local Core to restore the content to the target Server.

As with restore, you can specify the instance number or -site parameter to perform a restore from a specific site, or specify retries when the initial site fails. And also as with restore, restoring to multiple Target Servers within the same restore job is not supported.

Copy Jobs

A Copy job creates a new instance of archived content from an existing instance. DIVA Connect allows content to be copied from one Core site to another. The Core API CopyToGroup command (1) copies an object from one Core site to another, or (2) simply creates a new instance on a single site. For copies, DIVA Connect needs to derive some parameters that are not available in the Core API. The following table describes these parameters.

Derived Attribute	Description
Target Sitename	Indicates which site the object should be copied to.
	Target sitename does not exist as an architected field in the Core API. You can convey this to DIVA Connect in one of two ways:
	• -site Option
	By providing the -site [sitename] option in the options field. An example would be -site sitename1.
	• Sitename Media Prefix
	By prefixing a Target Server sitename to the media parameter in a copy job (with an under-score (_) separating the two fields). For example, sitename1_TapeGroup1 indicates a copy Target Server site called sitename1, and a media of TapeGroup1).
	If you specify no sitename, the local site will be assumed. The -site keyword will work only with an API release 7.3 or greater.

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Derived Attribute	Description
Additional Options	• -autocopy Providing this option adds the job as a task on the AutoCopy queue. This means that the job is not immediately executed. Instead, AutoCopy schedules the task and insures that it completes. • -autodelaymins If -autocopy appears, this parameter delays the execution of the task by at least this amount (in minutes). • -replaceTarget If the object already exists on the target site, delete the content and re-archive the object. • -fromSite The site to copy from • -site The site to copy to
Media	Media indicates the type of media to use to store the copied object. DIVA Connect also enables providing a Core Storage Policy as a media name. Storage Plan will work only if the copy is an intersite copy. You can prefix the target sitename to the media to indicate the target sitename as well. If you are not sure which media to provide, you can provide a media of any to let the system choose which media to store to on the target site. For example, a media of core1_any copies to site core1, but DIVA Connect chooses the media. The default that DIVA Connect provides may not be appropriate for some use cases. If the object is already on the target site, and any is specified, the system will simply return success.
Source Sitename	Normally, DIVA Connect will choose the site to copy from. However, if you need complete control over the Source Server, you can provide an instance number in the copy job. This implicitly enables choosing the Source Server site, and which Core instance to copy from (see the following section). This id can be obtained by performing a getObjectInfo() API call on the object to be copied. Additionally, -fromSite can be passed to indicate the specific site to copy from.

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Site-to-Site Transfer Methods

In a DIVA Connect Copy job, if the Source Server site is the same as the target site, DIVA Connect can simply issue a CopyToGroup to the target Core site. For intersite copies, DIVA Connect enables configuring the method used to perform these copies. For each source and target sitename pair (for example, site1 to site2), the following table lists the available transfer methods.

In addition to the copy method, each source and target sitename pairing contains the actual Servers used for the common storage area. The default target media (for RestoreAndArchive), options parameters (passed to Core), and other parameters are also configurable.

Type	Description
RestoreAndArchive	With this option, DIVA Connect restores content from the source site, to a Server that is common to the source and target sites. Then, DIVA Connect instructs the target Core System to archive the content now in the common storage area. This is an alternative to using Watch Folders.
RestoreAndMonitor	Using this method, DIVA Connect will perform the copy by first restoring the content to a specific Target Server. DIVA Connect will then turn to monitoring the target Core system to determine when the content is successfully archived on the target site. The job will successfully complete only when the content is successfully archived on the target site.
	This of course relies on another process or program that will take the content and archive it into the target Core system. This option is useful in combination with Core Watch Folder Monitor software. Each WFM folder is configured to archive using a preselected media - meaning that when WFM is employed for copies, the media parameter is effectively ignored.
Restore	Using this method, DIVA Connect will perform the copy by restoring to a specific Target Server, and then returning success. This method does not Confirm that the content has been successfully archived into the target site, and will likely cause failures if Restore Using Intersite Copy workflows are attempted.
ActorSiteTransfer	This method uses the Actor to Actor feature of Core. The workflow is similar to RestoreAndArchive, except the Restore from the Source Server and the Archive to the Target Server are executed simultaneously. The transfer takes place between Actors on the two sites. No temporary instance is created.
	This option requires that a HolePunchServer service is running and usable by both sites. The Server must be specified as diva_bridge.

The DIVA Connect Copy command will return success if an instance of the object already exists in the target site on the requested media. Core will terminate the job in this case.

Local Copies

If an object is requested to be copied to a site where the object already exists, but does not have the requested media, DIVA Connect will create another instance of the object on that site using the media specified in the job. The exception to this is if any is supplied as the media. In this case, DIVA Connect will not create another instance.

Selected By DIVA Connect (media of any)

In DIVAConnectUI, there is an option to have DIVA Connect assign the target media on a Copy operation (use a media of Selected By DIVA Connect). You can accomplish the same thing in a Core API job by specifying a media of "any" in the Copy job. DIVA Connect will use its configuration to determine which media to use for the copy (see Site-to-Site Mappings for more information).

When "any" is passed, and the object already exists on the target site, DIVA Connect will not create another instance of the object. No further action will be taken, and the job will succeed.

Retries

DIVA Connect also supports periodic retries on copies. If enabled in the Workflow Profile, DIVA Connect will retry copy operations that failed. In the Workflow Profile, you can configure how long DIVA Connect will retry the job, and the wait period between retries. See Configuring Workflow Profiles for more information.

Delete Jobs

A Core Delete job allows the caller to remove an archived object. A DIVA Connect Delete job, by default, will delete the object from all Core sites. A DIVA Connect DeleteInstance job can delete one or all instances from a single Core site. So in reality, DIVA Connect can perform three kinds of deletes. The following table describes the delete types and parameters they require.

Type	Derived Attributes	Description
Global Delete	N/A	Deletes all object instances on all sites. In the API, not specifying a media or instance id in the job will cause the specified object to be deleted from all sites.
Instance Delete	Target Sitename	Deletes a single object instance on a particular site. In the API, specify an instance id or a media to delete a specific object instance from a specific site. If you specify an instance id, you are targeting a specific instance on a specific site. Passing media or options parameters are not necessary. If you specify a media, DIVA Connect needs to know the site you would like to delete from. You can specify the site in one of three ways: • Media Sitename Prefix You can prefix the sitename to the media. For example, siteA_tapeGroup1 tells DIVA Connect to delete the instance on siteA having a media of tapeGroup1. If you do not provide a sitename, the local site will be assumed. • -site Option Provide -site [sitename] in the options field, and supply a media. This is supported with Core API 7.3 or later. • Media (with no site) You pass the media with no site. In this case, the local site will be assumed.
Site Delete	Target Sitename	Deletes all instances of an object residing on a particular site. This can be accomplished in one of three ways: • Use DIVAConnectUI You can delete all instances on a particular site by issuing a Delete command from the DIVAConnectUI. • Sitename/Media of any Issue DeleteInstance through the API by providing the sitename and a media of any in the media field (for example, siteA_any). • -site Option Specify a sitename by providing -site [sitename] in the options field. This is supported with Core API 7.3 or later.

Site Delete (media of any)

As mentioned in the previous table, if a sitename is supplied and a media of any, this will cause all instances of the object to be deleted from the selected site. This can also be accomplished by passing -site [sitename] in the options field.

Last Instance

DIVA Connect will not allow an Instance Delete to succeed when attempting to delete the last instance of an archived object (the last instance that exists in the DIVA Connect database, that is). In this case a Global Delete or Site Delete job will need to be issued. Note however that a Site Delete will allow the last instance or instances to be deleted! You can use Access Rules to protect against Instance Deletes or Site Deletes that are effectively Global Deletes (see Access Rules for more information).

Also, if a user issues a delete directly to Core, there may be a time window where DIVA Connect cannot ensure that the last instance is preserved.

Retries and Cancels

If a Delete is received by DIVA Connect, and DIVA Connect is currently performing an Intersite Copy of the object, the DIVA Connect job that spawned the copy will be canceled. The copy could be the result of a Copy command, or, it could be the result of a Restore command that performs a copy to satisfy the restore. Other types of DIVA Connect jobs will not be canceled.

If a Core job is being executed on behalf of a DIVA Connect job, Core locks the object and prevents it from being deleted. So, if an object is locked before DIVA Connect can send a delete message to Core, the delete job will fail.

DIVA Connect supports periodic retries on deletes when deletes fail. If enabled in the Workflow Profile, DIVA Connect will keep trying to delete on sites where (for example) instances/objects to be deleted are locked. You can configure within DIVA Connect how long to retry.

Other Supported Commands

The following table identifies Core API commands that do not specifically process or transfer archived content. These commands obtain information about objects or jobs and are not assigned a job ID.

Job	Description	Behavior in DIVA Connect
Cancel	Cancel a DIVA Connect job.	The -site option does not apply for this command.
GetObjectInfo	Use the DIVA Connect Database to get information about an archived object. DIVA Connect returns all instances of the object on all DIVA Connect sites. You provide the Object Name and Object Collection DIVA Connect uses the DIVA Connect database to return information about the archived object. In the GetObjectInfo() response, DIVA Connect prepends the sitename to the media parameter of each instance of an object.	The -site option is not supported for this command.
GetRequestInfo	Retrieve information regarding a DIVA Connect job from the DIVA Connect database. **Note:** The Additional Information parameter has limitations. The additional information is provided by Core and represents information from the last Core job processed. The information does not reflect the other sites in the DIVA Connect network.	When DIVA Connect receives a GetRequestInfo() call, it provides information about DIVA Connect jobs, not Core jobs (although the DIVA Connect jobs often involve invoking one or more Core jobs). The -site option does not apply for this command.

Job	Description	Behavior in DIVA Connect
GetPartialRestoreRequestInfo	Returns Partial Restore offsets for a completed job. If the format for the offsets was specified as timecodes, the offsets that are actually used may differ (somewhat) from what was specified in the job. After the Partial File Restore job is complete, you can use this command to obtain the actual offsets of the restored files.	This is a special purpose command that is valid only as follows: • The job number to be queried must be a Partial File Restore job that has been successfully completed. • The format specified in the Partial File Restore job must be a timecode type. This command is therefore not valid when the format of the job was folder-based or DPX.
GetFilesAndFolders	Retrieve information directly from Core about the files and folders within a particular archived object.	Accepts the -site option to query a specific site, or no site to let DIVA Connect choose (recommended).
GetObjectDetailsList	Retrieve information from Core regarding objects and object events. DIVA Connect retrieves the object information directly from each Core system one site at a time, in a round-robin fashion, one batch per site. Each batch contains information from one Core site. If the same object exists on two sites, you will receive the object twice (once for each site), once in each batch. **Note:** The order of the returned entries is not guaranteed. If one Core site is down, GetObjectDetailsList() will return an error and processing of the command will stop.	You can retrieve information from one site by prefixing the sitename to the media field separated with an underscore (_). If you do not want to query on media, but still want to retrieve information from one site, you can supply just the sitename in the media field. This command does not accept the -site option.

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Job	Description	Behavior in DIVA Connect
GetObjectsList	Queries the DIVA Connect Database to get a list of Object Name and Collections (InitObjectList, CloseObjectList).	There is limited support for this command within DIVA Connect. Tape information queries are not supported; and there are limits on number of simultaneous queries. The -site option is not supported.
GetArrayList	Returns a List of Array Names from all sites including the disks that form each array, and returning the current disk capacities.	The -site parameter, passed in the options field, can return information for a specific site.
GetGroupsList	Returns a list of Tape Group Names from all sites. The sitename is prefixed to the Tape Group Name.	This command does not have an options field. As a result, the -site options are not supported.
GetSourceDestinationList	Returns a list of Source and Target Server information from all sites.	In the returned list, the sitename of the Source or Target Server is prefixed to the Source or Target Server name separated by an underscore (_). The -site parameter, passed in the options field, can return information for a specific site.
GetArchiveSystemInfo	Retrieves the status of a single Core site (by default, the local site is returned). It does not return a global view of all sites.	The -site parameter, passed in the options field, selects which site to gather information from. For example, -site core1 will route the GetArchiveSystemInfo job to the Manager designated with the sitename core1 and return Archive System Information for core1 only.
GetStoragePlanList	Retrieves the list of storage plans that are defined in all configured Core sites.	In the returned list, the sitename of the Storage Plan is prefixed to the Storage Plan name, separated by an underscore (_). The -site parameter, passwd in the options field, returns information for a specific site.

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Job	Description	Behavior in DIVA Connect
GetObjectsByFilename DeleteFile	The Core AMC product uses calls (for internal use only). The workflows supported in this release are limited to those where all desired Core AMC objects exist on the local site. Replicas of the content can exist and be restored from other sites.	DIVA Connect invokes these commands on the local site. If the local site is down, GetObjectsByFilename is invoked on another site. Limited sequence support.
getVersion	Returns the DIVA Connect build and server versions.	
GetTapeInfo	Retrieves detailed information about a particular tape.	DIVA Connect will accept a barcode as an argument, and send this message to the local site. If a sitename is prefixed to the barcode (separated by an underscore character), DIVA Connect will send the job to a particular site.
TranscodeArchived	This creates a transcoded copy of a particular asset, and stores it as a new asset.	The -site parameter, passed in the options field, selects which site to route the job to (the default is the local site). This command cannot be used to transcode to another site.
CopyToNew	This creates a copy of a particular asset, and stores it as a new asset.	The -site parameter, passed in the options field, selects which site to route the job to (the default is the local site). This command cannot be used to copy to another site.

Unsupported Jobs

For application compatibility reasons, these commands will always return success, even though DIVA Connect will take no action to satisfy them.

- Change Priority
- Lock Object
- Unlock Object
- Link Objects
- Require Instance
- Release Instance

Return Codes

DIVA Connect returns status codes that are similar to what Core returns. However, DIVA Connect will sometimes accept jobs that Core would fail immediately, because DIVA Connect often does not have the information needed to perform checking until later during job processing.

In addition, DIVA Connect will return the ACCESS_DENIED status for many commands. This status is not returned by Core. DIVA Connect will reject jobs that do not pass Access Rules checks, and rejects messages not configured in the WorkflowProfile. For compatibility purposes, API release 5.8 and earlier return INVALID_PARAMETER status instead of ACCESS_DENIED.

HTTP Return Codes

In addition to the previous return codes the REST API will provide the following HTTP return codes:

200 Success

This does not necessarily mean the operation will complete successfully. It just means all required fields were found and the operation was accepted by DIVA Connect.

400 Bad Request

An invalid parameter was found.

401 Unauthorized

DIVA Connect accepted the command, but the DC user is not authorized to perform the operation.

403 Forbidden

Most likely an incorrect or expired Bearer token.

404 Object Not Found

DIVA Connect was unable to locate the object.

406 Not Acceptable

DIVA Connect did not return the expected response. This could happen if the DC user authentication is enabled, but no valid DC user is logged in.

500 Internal Server Error

This could be due to malformed job body.

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Troubleshooting

The following are common errors that can occur in a DIVA Connect installation. For instance, although tag names in configuration files are not case sensitive, the values typically are (for example, sitenames), and can cause errors.

Problem	Possible Resolution
A DIVA Connect service does not start	• When installing a service, make sure to pass the name of the adapter's wrapper.conf file and not the name of the adapter's configuration file. • Make sure to place the configuration file in the parent directory of the templates folder, and remove the .ini extension. • If there are errors reading the configuration file, they will appear in the wrapper logs. These logs are placed in the DIVA Connect home directory, in the Program/log/divaconnect folder, and will be named similarly to the Wrapper.conf file, but with a .log file name extension. • You must run the addSites script before attempting to start the ClientAdapter or DbSync. • Are the sitenames consistent between the database and the configuration files? If not, services may not start and (or) not function properly.
DIVA Connect job is returning access denied	• Ensure that the correct Workflow Profile is configured for the port you are connecting on. Ensure that the job is permitted in the list of valid Messages section of the Workflow Profile. • If you are using Access Rules, ensure that ApiConnect appears in an Include rule. If you are using DIVAConnectUI, ensure that WebConnect appears.
Intersite copy operations fail with errors referring to Source and Target Server names containing MISSING_MAPPING_TO	• Ensure that the job is being assigned the Workflow Profile that you expect by checking the configuration. • The ClientAdapter Site-To-Site Transfer configuration may be missing the from Source Server or to Target Server.

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Problem	Possible Resolution
No jobs are being sent successfully to a Core site, even though they can be viewed in DIVA Connect	• Ensure that the localSitename in the ManagerAdapter configuration files correctly reflect the site that they are serving (and are not cut and pasted from somewhere else). Check that the localSitename is correct in the ClientAdapter and DbSync configurations. Check that the sitenames used are consistent with those defined in the DIVA Connect database. • Check that the network address and port of the Core Manager you want to send to is correct in the ClientAdapter configuration.
In Access Rules, after defining an Exclude rule, the operation is being rejected in all cases.	• Remember that for any operation to succeed, there must exist one Include rule for the operation in question. • Pay attention to any defaulted parameters in the Ruleset, such as WorkflowProfile, and change them accordingly.
Cannot connect to DIVA Connect	• Ensure that you have specified the correct URL of DIVA Connect. By default, this is the address of the computer that the ClientAdapter is running on, at the port defined in the WebServicePort parameter of the ClientAdapter configuration. • Make sure to specify the port in the URL (if applicable), and specify https if secure connections are enabled.

Problem	Possible Resolution
UI is no longer updating progress of existing jobs, or not showing new jobs.	• Check the lower-right corner of the DIVA Connect GUI to determine if a connection error has occurred. If this is the case, click the Jobs or Assets buttons to re-spawn the connect dialog box. • Perhaps you have provided an end time in your job query. This indicates to DIVAConnectUI that live updates should not be shown, and no progress should be updated for current jobs. To enable live updates, just delete the end time filter. • Finally, check the Job Filters pane to ensure that there are not any Job Type or Job Status filters enabled (likewise for Start and End time).
Newly archived objects are not showing up in the Assets View	• Check that the DbSync service is running. Check the configuration, ensuring that the network addresses are correct. You may need to ensure that the ManagerAdapter on the site that you are syncing is configured and running. • If the configuration is correct and problems persist, it may be advisable to initiate a resync of that site through DIVA Connect's Admin utility.
A Copy, Delete, Cancel operation in the UI is returning access denied.	• Ensure that the correct Workflow Profile is configured in the WebDefaultWorkflowProfile in the ClientAdapter. Ensure that the job is permitted in the list of valid Messages section of the Workflow Profile. • If you are using Access Rules, ensure that WebConnect appears in an Include rule.

Appendix:
Sample Configuration Files

TOPICS:

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ClientAdapter Sample Configuration

```xml
<config>

        <!-- TOP-LEVEL -->
    <LocalSiteName>core1</LocalSiteName>
        <LogLevel>INFO</LogLevel>
        <MaxClientConnections>50</MaxClientConnections>
      <WebServicePort>9801</WebManagementPort>

        <!-- ADAPTER PORTS -->
    <AdapterPorts>
            <AdapterPort>
                <ListenPort>7100</ListenPort>
                <RoutingType>Direct</RoutingType>
                <Sitename>core1</Sitename>
            </AdapterPort>
            <AdapterPort>
                <ListenPort>7101</ListenPort>
                <RoutingType>MultiDiva</RoutingType>
                <WorkflowProfile>default</WorkflowProfile>
            </AdapterPort>
      </AdapterPorts>

    <!-- CORE MANAGERS -->
    <DivaManagers>
            <DivaManager>
                    <Sitename>core1</Sitename>
                <ConnectionType>Socket</ConnectionType>
                    <Address>127.0.0.1</Address>
                    <Port>9000</Port>
            </DivaManager>
            <DivaManager>
                    <Sitename>core2</Sitename>
                <ConnectionType>WebService</ConnectionType>
                    <BaseUrl>https://172.16.3.59:8101</BaseUrl>
            </DivaManager>
      </DivaManagers>

        <!-- DIVA Connect DATABASE -->
        <DivaconnectDatabase>
            <Address>127.0.0.1</Address>
            <Port>1521</Port>
            <User></User>
            <Password></Password>
        </DivaconnectDatabase>

    <!-- WORKFLOW PROFILES -->
        <WorkflowProfile>
                <Name>default</Name>
            <RestoreRetryAttempts>3</RestoreRetryAttempts>
            <Messages>
                    <Message>Copy</Message>
                    <Message>Archive</Message>
                    <Message>Restore</Message>
                    <Message>Delete</Message>
                    <Message>Cancel</Message>
                    <Message>AllInfo</Message>
```

```
                            <Message>PartialRestore</Message>
                    </Messages>

                            <!-- SITE TO SITE TRANSFER CONFIG -->
                            <Mappings>
                                    <SiteToSiteTransfer>
                                    <!-IF transferring…-->
                                            <FromSitename>core1</FromSitename>
                                                    <ToSitename>core2</ToSitename>
                                    <!-THEN use these…-->
                                                    <FromSrcDest>viva</FromSrcDest>
                                                    <Type>RestoreAndArchive</Type>
                                            <ToDefaultMedia>disk_001</ToDefaultMedia>
                                                    <ToSrcDest>arch</ToSrcDest>
                                    </SiteToSiteTransfer>
                            <SiteToSiteTransfer>
                                    <!-IF transferring…-->
                                            <FromSitename>core2</FromSitename>
                                                    <ToSitename>core1</ToSitename>
                                    <!-THEN use these…-->
                                                    <FromSrcDest>viva</FromSrcDest>
                                                    <Type>RestoreAndArchive</Type>
                                            <ToDefaultMedia>disk_002</ToDefaultMedia>
                                                    <ToSrcDest>arch</ToSrcDest>
                                    </SiteToSiteTransfer>
                            </Mappings>
                    </WorkflowProfile>
            </config>
```

ManagerAdapter Sample Configuration

```
        <config>
                <!-- TOP-LEVEL -->
                 <LocalSiteName>core1</LocalSiteName>
                <ManagerAddress>127.0.0.1</ManagerAddress>
                <ManagerPort>9000</ManagerPort>
                  <LogLevel>INFO</LogLevel>
                <WebServicePort>9800</WebServicePort>

        <!-- Manager DATABASE -->
            <ManagerDatabase>
                        <Address>127.0.0.1</Address>
                <Port>1521</Port>
                        <User></User>
                        <Password></Password>
            </ManagerDatabase>
        </config>
```

DbSync Sample Configuration

```
<config>
        <!-- TOP-LEVEL -->
            <LocalSiteName>core1</LocalSiteName>
        <LogLevel>INFO</LogLevel>
          <WebServicePort>9802</WebServicePort>

            <!-Sites to SYNC -->
        <DivaManagers>
                <DivaManager>
                        <Sitename>core1</Sitename>
                            <BaseUrl>https://127.0.0.1:9800</BaseURL>
                </DivaManager>
                    <DivaManager>
                      <Sitename>core2</Sitename>
                            <BaseUrl>https://172.16.3.59:9800</BaseURL>
                    </DivaManager>
        </DivaManagers>

        <!-- DIVA Connect DATABASE -->
          <DivaconnectDatabase>
                <Address>127.0.0.1</Address>
                <Port>1521</Port>
                <User></User>
                <Password></Password>
          </DivaconnectDatabase>
    </config>
```

Glossary

AXF (Archive Exchange Format)

A vendor-neutral format, supported by Core, for storing content on various mediums (including tape and disk). It can store many files and directories in a single file (container) much like a ZIP file.

Content Job

System operations that handle archived content — Archive, Copy, Delete, Restore.

DIVA Connect Home Directory

The file system directory where DIVA Connect is installed. DIVA Connect can be installed in its own directory (recommended), or within the Core home directory.

DIVA Connect Object (Asset)

An archived object describes digital content in the archive system. A DIVA Connect object is a set of archive objects, archived at one or more Core sites, sharing the same name (Object Name and Collection pair). Each object on a particular site can have one or more copies (object instances).

DIVA Connect Site

A sitename uniquely identifies a DIVA Connect site, which is defined as exactly one Core installation and one or more DIVA Connect services.

Watch Folder Monitor

The Core Watch Folder Monitor service monitors content that is being written to disk in a folder. It then performs the operation assigned to that folder (Archive, Restore, Copy, and so on) to the content (placed in the folder) into a Core system after the content has been completely written top the folder location.

Intersite Copy

An operation that copies content from one Core site to another, archiving the content to the target site.

Intersite Transfer

An operation that moves content from one site to another, but does not archive the content to the target site.

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Media

A name that represents a set of archive media (disks or tapes) in a Core system. There exists one media per copy of an asset.

MultiDiva Mode

When an API client is connected to DIVA Connect in MultiDiva mode, multiple Core sites appear to the client as one large archive system.

Site-to-Site Mapping

Describes how DIVA Connect will copy objects from one site to another.

Server

Contains information necessary to communicate with a connected server or disk. You transfer content to and from Core through these servers and disks. Examples are Video servers, FTP servers, and disk arrays.

SPM (Storage Policy Manager)

You can configure the Core SPM (Storage Policy Manager) service to automatically perform an operation when content arrives at a Core site (such as restore or copy).

Workflow Profile

A set of parameters that defines how incoming jobs will be processed by DIVA Connect. Multiple profiles can be created and mapped to input ports.