

# Avid Interplay Web Services

Version 2.0



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## Overview

Avid Interplay is a non linear workflow management system that is able to connect editors, producers, designers, animators, writers, assistants, administrators—even finance and legal departments—in a real-time nonlinear production environment. Interplay can be configured to automate routine tasks, track any kind of media, streamline administration, prevent unauthorized access, and accelerate turnaround at every step of the workflow, from pre-production to archive.

Avid Interplay has a feature rich toolset which includes applications designed to meet the needs of media librarians, production assistants, loggers, editors and many more. Whilst these tools meet the needs of the majority of users there is often a requirement to extend Interplay's functionality outside the bounds of its in-built toolset. For example there may be a requirement to interface with an external Digital Asset Management system, or with the media transfers provided by a Digital Delivery solution.

In order to enable third parties to integrate their solutions with Avid Interplay a web services interface is available. By exposing many of the functions that were previously only accessible through the Interplay Access application third parties can now integrate Interplay seamlessly into their customised automated workflows.



## Interplay Web Services Functionality

Interplay Web Services provide third parties with a rich set of functions to integrate tightly with an Interplay environment. Currently three main functionality areas are supported – asset management, workflow enhancement and overall infrastructure support as outlined in the following paragraphs.

### Asset Management

- Folder navigation and listing
- Folder management, including ownership and permissions
- Asset check-in, retrieval and deletion
- Metadata input and retrieval
- Managing Reservations and Restrictions
- Searching
- Managing Categories
- Locator management
- Master and Sub-clip creation
- Shotlist creation
- Headframe management
- Determining Relatives and Links
- Getting Media File details
- Retrieving MetaSync data
- Getting Streaming Media

Note that many asset management functions are only relevant to an online Interplay workgroup, some however are also applicable for an archive workgroup. Asset management functions that can be used with an archive workgroup include:

- Asset check-in
- Asset retrieval
- Metadata retrieval
- Folder navigation and listing
- Headframe management
- Searching
- File Status

Any differences in operation between archive and online workgroups are noted under the individual function descriptions.

## **Workflow Enhancement**

- Checking the status of an item prior to transfer
- Initiate transfers
- Initiate Media Services tasks
- Monitor the status of Media Services and Transfer tasks
- Control Media Services and Transfer tasks

## **Infrastructure**

- User and Group Management
- Obtaining the list of indexed workspaces
- Obtaining details of Transfer Engines and associated devices
- Obtaining configuration and version information

The sections which follow provide a detailed overview for each of the functions.

## **Folder Listing**

The direct children of any folder, including the database root node, may be listed. It is possible to restrict the listing of a folder to return only Avid assets, File assets or Folders.

## **Check In an Asset**

Avid assets are typically referenced through AAF files (see the later section), so in order to check an Avid asset into the database an AAF file is uploaded. In the case of a File asset, such as a JPEG file, Word document or Adobe Photoshop file for example the actual file is uploaded.

Note that only Avid assets may be checked into an Archive database and would typically be used only on the rare occasion when the archive solution itself may have detected that the asset has been erroneously deleted from the Archive database even though the media itself still resides in the archive itself. If the archive solution also holds a copy of the original AAF file then it can be checked in to re-establish the correct status of that asset. It would also be possible to update the Archive database in this way for material that has been migrated from another Interplay Archive via a data tape.

## **Retrieve an Asset**

Copies of both Avid and File assets can be retrieved from Interplay. The retrieve function effectively performs an Interplay "Get Latest" operation which transfers a copy of the latest version of an asset to the calling workstation. Note that this does not perform a check-out, which would lock the asset against changes until a subsequent check-in operation.

Note also that in the case of Avid media assets this function retrieves only the metadata (see the later section [About Assets and Media](#)) and not the media it references. The metadata information however can be used together with other Avid workgroup APIs to transfer or retrieve the media itself. Another example of the use of such a file might be a third party logging solution. Using the web services API it would be possible to obtain the AAF file which references the media in question, populate it with locator information corresponding to the logged shots, and then check it back into Interplay.

### **Link to an Existing Asset**

This function allows the caller to create a link to an existing Avid asset, the link being placed in a folder specified by the caller.

### **Metadata Exchange**

Metadata associated with Interplay assets is typically accessed through the use of attributes. Some attributes are designated as System attributes, and are typically read only. User attributes can both be read and written through the web services interface, which can also be used to create application specific custom attributes. Such custom attributes can be displayed by Interplay applications such as Interplay Access, they can also be seen in the bin columns of an Avid editor. It is possible to search custom attributes. Functionality is also provided to discover what custom attributes are currently defined.

Metadata associated with assets in an Archive database is read only, it is not possible to modify any metadata associated with an archived asset.

## Retrieving MetaSync XML

Avid MetaSync is a technology associated with the Avid editor family that enables XML formatted data to be referenced on the timeline and edited as if it were a media segment. MetaSync empowers workflows such as subtitling, close captioning and interactive functionality. The GetMetaSyncXML function allows the metasync data to be retrieved from a sequence.

## Managing Restrictions and Reservations

Reservations are effectively “delete protections” that may be placed on a folder to prevent the assets it contains being deleted inadvertently. Folders associated with newly created projects are automatically reserved by the system. If an asset, or copy of an asset, exists in a reserved folder anywhere in the database then it will not normally be possible to delete that asset. Calls to support the addition, removal and listing of reservations are provided.

Restrictions are timecode delimited flags associated with individual media assets and are typically used to identify material that may have restricted rights. Any attempt to use such restricted media typically results in a warning message being presented to the operator. Calls to support the addition and listing of reservations are supported.

## Searching

Searches can be made using web services which are very similar to those offered by the advanced search capability of Interplay Access. Searches are performed by setting criteria for one or more attributes, with the criteria linked by logical operators such as AND and OR. The precise criteria that can be applied depends on the nature of the attribute, e.g. whether it is text, date/time, etc. The search criteria currently available are:

- EQUALS: The attribute value must be an exact match
- NOT\_EQUALS: The attribute value can be anything except an exact match
- CONTAINS: The search phrase must be contained somewhere in the attribute value
- NOT\_CONTAINS: The search phrase must not be contained anywhere in the attribute value
- LESS\_THAN: Useful for date-based searches to find matches before the given date and time
- LESS\_THAN\_OR\_EQUAL\_TO: Like LESS\_THAN, but inclusive of the passed in date and time

- GREATER\_THAN: Useful for date-based searches to find matches after the given date and time
- GREATER\_THAN\_OR\_EQUAL\_TO: Like GREATER\_THAN, but inclusive of the passed in date and time

Note that searching takes place within a defined folder location and includes all folders below it. Note also that the web services search applies to a single database only, it does not search simultaneously across multiple workgroups nor pass the criteria to an external federated search plug-in.

## **Managing Categories**

Categories enable groups of related Interplay assets to be easily identified and located. Calls are provided to list both the categories currently defined in the system and those associated with a given asset, as well as assigning categories to an asset.

## **Folder Creation**

The API allows a third party solution to create new folders within the Interplay database. Folders may be created singly, or by multiple paths. In both cases it is possible to specify nested paths for the folders which are to be created. Interplay Web Services will create automatically any intermediate level folders that are required.

## **Folder Management**

Functions are provided for the management of folder ownership and database roles, i.e. enabling more precise control over the access rights that individual users and groups have to specific folders in the database.

## **Moving Assets**

Any asset, whether it is an Avid asset, File asset or even an entire folder, can be moved to a different location in the database. This function could be used as part of a workflow management operation, in which assets are moved to different folders as a project progresses, e.g. unassigned, in progress, waiting review, approved, etc.

## **Duplicating Assets**

This call allows an asset, either Avid or File, to be duplicated (i.e. copied) to another location in the database. In the case of an Avid asset, such as a sequence, a new sequence having all the characteristics of the original is created but with its own unique identification. This can enable workflows which require, for example, new sequences to be created from a pre-existing template. The Duplicate call also allows an optional set of metadata



attributes to be associated with the new item, thus making it a relatively easy task to customise the newly created asset.

## **Deleting Assets**

A Delete Assets call provides a rich set of asset deletion functions. Using the call assets can be deleted and, optionally, the media associated with them. Further when media deletion is requested it is possible to specify which media resolutions are to be deleted.

The Delete Assets call can also be invoked in a simulation, or "information only" mode. In this mode the call does not delete any assets but will return a list of all those assets and associated media files that would have been deleted had the command been executed. This could allow the caller to verify the accuracy of the delete operation, e.g. by seeking user confirmation, before executing the operation.

The Delete Assets call may also be used to delete empty folders from the database.

## **Locator Management**

Three functions are provided in support of locator management: get, save and remove.

Get Locators retrieves a list of all the locators associated with a designated clip. Save locators can be used either to add new locators to a clip or modify existing ones whilst remove locators deletes existing locators from the designated clip.

Starting with Interplay Web Services 2.0 a more advanced form of locator data was introduced. Prior to 2.0 locators were identified by timecode or frame offset together with a simple numerical index. Version 2.0 introduced a unique identifier for each locator. As a result two sets of locator management functions are available, referencing either pre-, or post- 2.0 releases.

## **Master Clip Creation**

The Create Master Clip function effectively enables a placeholder clip to be created. The clip has no media but does have essential metadata such as duration and start timecode. The media will typically be "added" later (at this time, batch capture is the only supported method for adding media later).

## **Sub-Clip Creation**

The Create Sub-clip function allows a new sub-clip to be created in the Interplay database. The sub-clip references a designated master clip together with the desired offset into the clip and the duration of the sub-clip. Additionally a headframe may be provided and it is also possible to set user metadata for the sub-clip.

## **Shotlist Creation**

Interplay Web Services provides the ability for users to create shotlists, i.e. Avid Sequences composed of multiple clip segments linked by cuts only transitions. Typically essential metadata for the sequence will be provided, such as start timecode, any locators, etc. together with a list of references to master clips stored in Interplay together with their IN points and durations.

## **Headframe Management**

Two functions are provided for headframe management. These allow a new headframe to be provided for an Avid asset together with the ability to retrieve the existing headframe.

When used with an Archive workgroup it is not possible to update the headframe, only retrieve it.

## **Determining Relatives and Links**

Frequently it is desirable to determine either which assets are used in a particular sequence or with which sequence(s) a particular asset is associated. A single FindRelatives call delivers this functionality.

Another related requirement is to be able to locate all the instances of a given asset in the Interplay database. For example newly ingested material is typically checked in to an ingest catalogue, later the item may be used in a project and therefore is checked in as part of the project bin, each instance of the asset being effectively an alias pointing to the asset itself. A FindLinks call is provided to locate all such references.

## **Determining Media File Locations**

Sometimes when dealing with master clips it is necessary to locate the actual media files which constitute the clip. A GetFileDetails call is provided for this purpose. In addition to the location, other details, such as track, status, and format, are returned for each file.

## **Locating Browse Material**

Interplay 2.0 introduced a Wide Area Network browsing capability based on the use of QuickTime streaming media with a total audio/video bandwidth of just under 1Mbs. Using Interplay Web Services a third party can retrieve a reference to the QuickTime streaming asset, and thus integrate Interplay browsing within their own application.

## **Listing Indexed Workspaces**

Related to the location of the media files are the shared storage workspaces currently indexed by the Media Indexer. A call is provided to list those workspaces and is particularly useful for developers creating ingest solutions.

## User and Group Management

Interplay Web Services provides a rich set of functions for the management of users and groups. The functions include the ability to:

- Create new users
- Modify existing users
- Create new user groups
- Modify existing user groups, e.g. permissions such as Read, Read/Write, etc.
- Delete existing user groups

Note that in order to modify users the web services client must have administration rights. Also, in the same way as for those created by the Interplay Administrator application, users themselves have *no access rights* until they are associated with one or more groups.

## Listing Resolutions

The Get Resolutions query returns a list of all the media resolutions associated with a given asset and is a useful precursor to a call to delete assets. Parameters associated with the Get Resolutions call can restrict the results to online resolutions only and/or provide detailed information about the different resolutions.

## File Status

The SetFileStatus call is specifically provided for use with an Archive database. It allows the archive solution to update the status of any files that are associated with a particular asset, e.g. some audio data associated with a master clip has been permanently deleted from the archive. On completion of the call the displayed status of the archive item will be updated to reflect the true archive condition. This call is intended for synchronisation purposes only.

## Workflow Automation

Several functions are provided to manage workflow automation including both Interplay Transfer and Media Services functionality.

## Transfer Functionality

Two transfer functions are provided offering send to playback and send to workgroup transfers. The send to workgroup function sends designated assets to a remote workgroup with the option to specify the destination workspace. Send to playback sends an Avid sequence to a specific playback device. Note that the CheckSequencesReadyForXfer should be called before attempting a send to playback transfer as it is not always possible to guarantee the success of such an operation. Many factors can influence this, including

one or more referenced assets being offline in the resolution required, or effects needing to be rendered. For details of the APIs that are available to developers to implement the requisite Interplay Transfer interface for a specific device see <http://www.avid.com/us/partners/apis.aspx> for more details.

### **Transferability Status Checking**

Interplay Web Services includes a CheckSequencesReadyForXfer call which can be used to query a sequence prior to attempting an automated send to playback. The call will report whether the sequence is indeed ready to be sent, and if it is not will indicate the reason why.

## **Media Services Functionality**

Several functions are provided to manage media services tasks, including creation, control and deletion.

### **Creating Media Services Jobs**

Two functions are provided to create a new media services job, and typically reflect the functionality that is provided by Interplay Access. The first function allows a job to be created based on a previously defined profile (obtained through the use of the list profiles function described below) whilst the second allows the specific parameters to be defined on a per job basis.

### **Controlling Jobs**

Three functions are provided here to pause, resume and retry jobs. These functions are currently only supported on Interplay Transfer jobs.

### **Job Management**

Two job management functions are available to cancel and delete jobs respectively.

### **Job Status**

All automation tasks, including those for Interplay Transfer, return a job ID as part of a successful initiation. The job ID can be passed to a Get Job Status function which will report the status, e.g. running, paused, etc. as well as the percentage completion, for the specified job.

## **Obtaining Configuration Information**

A number of calls provide information about the system to which the web services currently interfaces, including the Web Services system itself, the Interplay (and Archive if used) systems to which it connects as well as other system elements such as Interplay Transfer, Interplay Media Services and ISIS storage environments.

### **Basic Configuration**

Two routines provide basic information about the Interplay and Web Services environment. The first provides basic information about the workgroup(s) supported by the web services implementation, and includes the name(s) of the workgroup(s) and the addresses of the associated Interplay and Archive engines. This call does not require any credentials and can be used by integrators to assist in their own configuration tools and UIs.

The second call is more specific and returns version information for a designated workgroup, including the installed version of Interplay Web Services, the Interplay Engine and Archive Engine if present.

### **Storage Information**

A single function allows all indexed workspaces in the workgroup to be determined.

### **Interplay Transfer Information**

Two functions are also provided here. The first returns a list of all Interplay Transfer engines configured in the workgroup, the second lists all the ingest, playback and workgroup devices configured on a given engine.

### **Interplay Media Services Information**

A single function allows a third party to discover all the profiles currently defined in the associated media services environment. Typically the call will specify which media service(s) profiles are required, e.g. archive, transcode, etc.

## About Assets and Media

Note that many functions are concerned with assets that, in their turn, reference actual media which is typically located on associated Avid shared storage. Whilst Interplay Web Services allow access to the assets which reference the media, they do not currently provide direct access to the media itself, such access would typically be achieved through the use of one of Avid's workgroup APIs (<http://www.avid.com/us/partners/apis.aspx>) or through the use of the Avid MediaToolkit (<http://www.avid.com/us/partners/amt.aspx>).

Virtually all Avid media assets are referenced within Interplay through AAF files. AAF (Advanced Authoring Format) files can be created using a public Open Source toolkit which is available from the Advanced Media Workflow Association (<http://www.amwa.tv/>) formally known as the Advanced Authoring Association.



## Supported Standards

Interplay Web Services are based on SOAP 1.1 and are compatible with the most commonly used web services frameworks. Avid has tested the services for interoperability with:

- .Net 2.0
- Sun Metro for Java (JAX-WS)

Note that since web services are well adopted, Interplay WS is likely to work with other frameworks and languages like Java Axis 2.0, Python, Perl and others, although these have not been specifically tested by Avid.

## Web Services Deployment

Interplay web services are currently deployed as SOAP services running on an Apache Tomcat server. The web services installer installs the server together with all relevant supporting files. Note that the location of the web services server should be chosen carefully in order to avoid any adverse effect on Interplay operation. Avid Professional Services will be happy to advise as to the most appropriate location for a particular installation.

## Server Requirements

Whilst there are no specific hardware requirements to support Interplay Web Services a modern Windows machine (~2GHz, 2+ GB RAM) in the same network as the Interplay Engine is required, typically configured as a Windows Server. Note that an appropriately

higher performance server should be supplied if it is also required to host additional interfaces such as iNEWS Web Services. For testing and development, Interplay WS can run on the Interplay Engine itself, but this is not supported for production environments.

## **How to obtain Interplay Web Services**

The Interplay web services API is available to developers on request. Requests should be made using the web form available at

[http://avid.formbin.com/forms/avid-avid\\_web\\_services\\_signup](http://avid.formbin.com/forms/avid-avid_web_services_signup)