MEDIA MANAGEMENT SOFTWARE

MAPP THUMBNAIL GENERATOR APPLICATION

Operation & Configuration Guide

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Introduction

The MAPP Thumbnail Generator Application automates the creation of thumbnails at the point at which new material records are created in the MAPP Database INSTANCE table.

The process uses FFmpeg™ to create a Portable Networks Graphic (PNG) formatted still image from the material in order for it to be displayed on a Morpheus UX Component (Figure 1-1).

Generated thumbnails can be displayed in any of the following Components concurrently, or in isolation, according to the configuration of Morpheus UX:

- **Editor Widget MAPP Thumbnail**

    Displayed in a column of the Editor associated to the relevant event (left side of the example UX page). The same widget can be used in the Timeplane (bottom of the example UX page).

- **HUD Widget MAPP Thumbnail**

    Displayed in a column of the HUD, associated to the relevant event (right side of the example UX page).

- **Morpheus MAPP Thumbnail**

    An independent Component that can be expanded for clearer visibility of the thumbnail for the *Programme Event*, the *Preset Event*, and the *Selected Event*. The example displays a Morpheus MAPP Thumbnail Component for each of these events (aligned centrally on the example UX page). Where a thumbnail is unavailable, such as for a live event, then the icon configured for the source can be displayed (as shown in the Morpheus MAPP Thumbnail Component for the Programme Event displaying a test card).
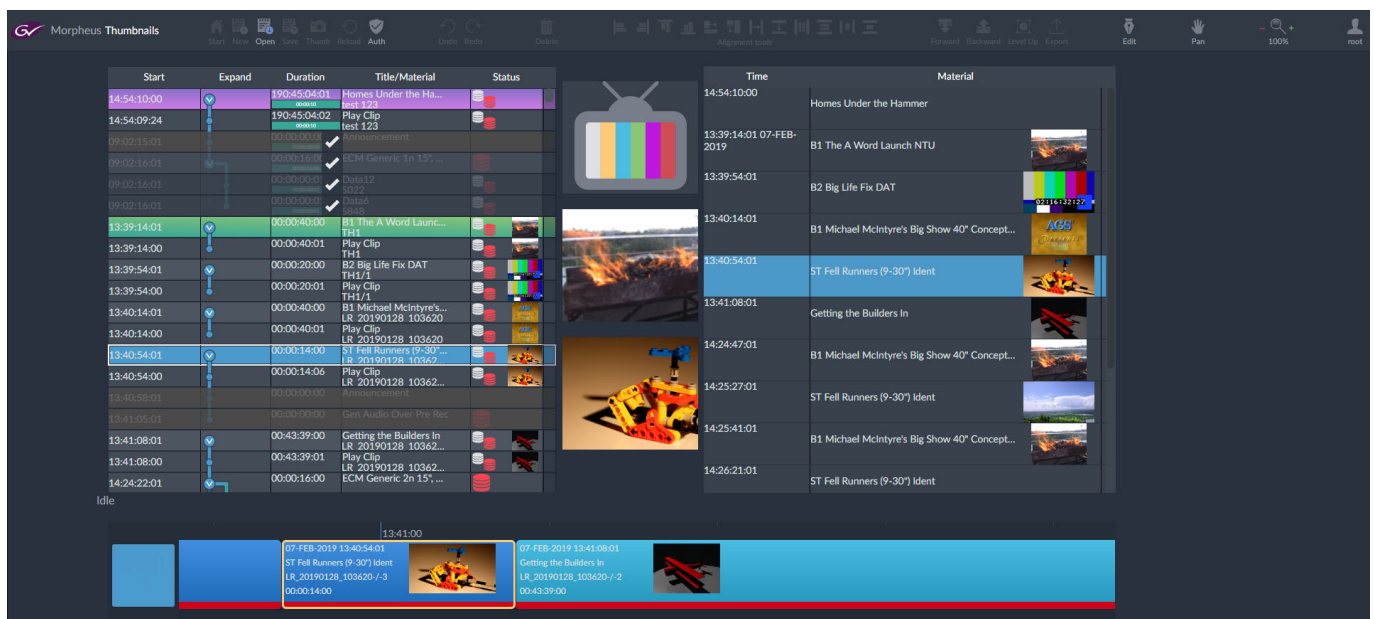
Fig. 1-1: Morpheus UX Thumbnail Components

Although thumbnail creation duties may be supported by an architecture featuring a single MAPP Thumbnail Generator Application, two or more may be used in order to share the intensive processing requirements.

Note: UX Component documentation is provided within the Morpheus UX application.

Note: FFmpeg™ is documented at www.ffmpeg.org

Note: The display of thumbnails in the Morpheus Classic Editor is not supported.

The Thumbnail Generation Process

Automated Thumbnail Generation

The Thumbnail generation process is detailed in Figure 2-1.
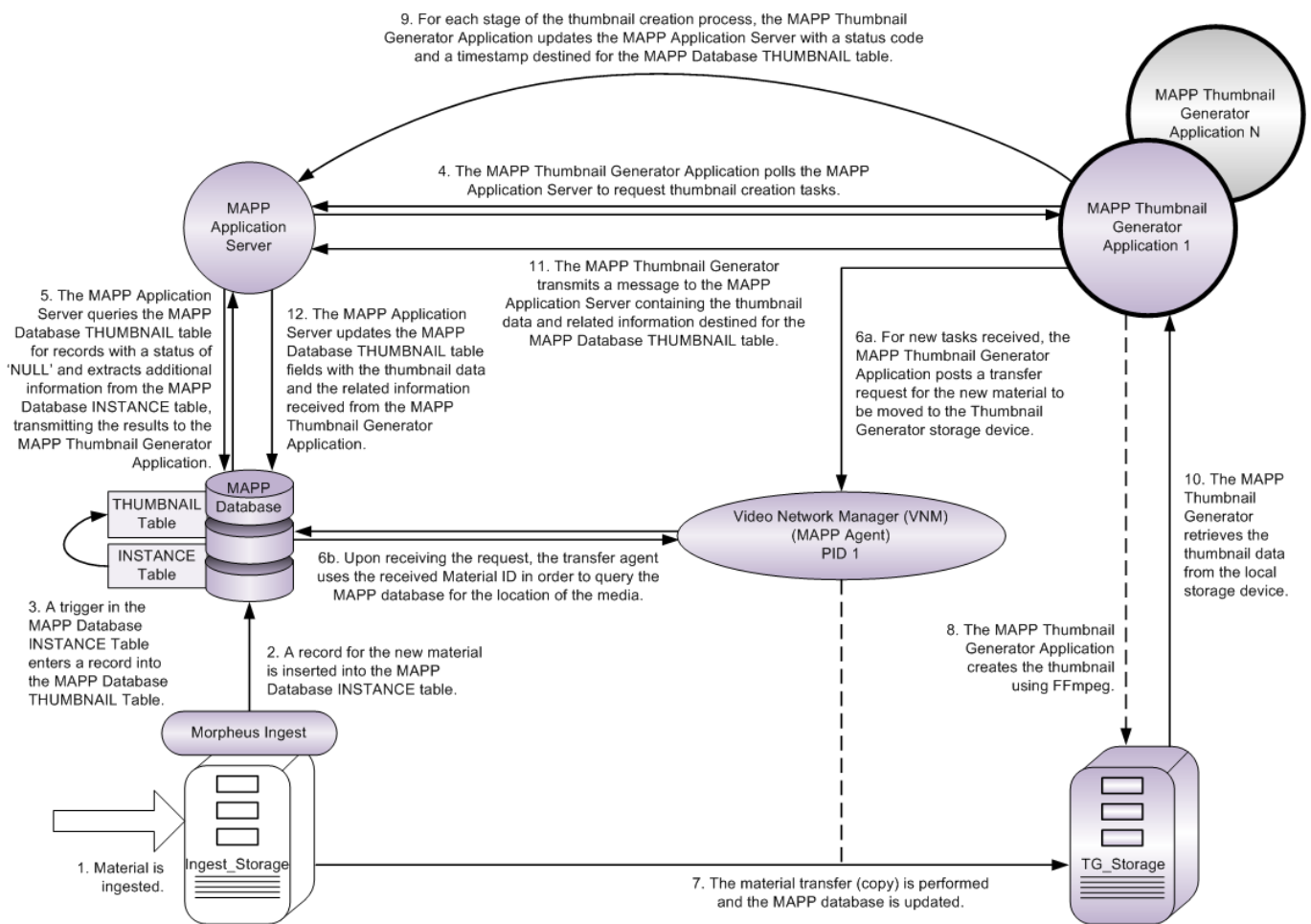
Fig. 2-1: The MAPP Thumbnail Generator Application Operational Topology

Note: Greater detail of the process is provided in the numbered steps below.

1. Material can be ingested using any appropriate method, and to any storage device.

   In the example shown in Figure 2-1, material is received by the device 'Ingest_Storage' from Morpheus Ingest.

   > Note: The initial storage device for the ingested material must be of type 'Video Server', as configured in the trigger scripts in the MAPP Database INSTANCE table. It may be optionally set to type 'S3 Bucket'.
   > For details on the trigger scripts, refer to Thumbnail Triggers.

2. A record in inserted into the MAPP Database INSTANCE table for new material, whether it is already encoded (ENCODED = 1) or if encoding is in progress (ENCODED = 0). For the encoding of material that is in progress, the record is updated upon the encoding transitioning to complete.

3. A trigger in the MAPP Database INSTANCE table inserts a record into the MAPP Database THUMBNAIL table for new material, according to preset rules. There are two triggers:

   • In the case of a new record for previously encoded material being created in the MAPP Database INSTANCE table, then the THUMBNAIL_INS_TRIG trigger is activated in order to insert a record into the MAPP Database THUMBNAIL table

   • For material encoding that is in progress, the transition to encoding 'complete' will activate the THUMBNAIL_UPD_TRIG trigger to insert a record into the MAPP Database THUMBNAIL table

   > Note: Refer to Thumbnail Triggers for further details on the trigger activation process, and to The MAPP Database THUMBNAIL Table for descriptions of the THUMBNAIL table fields.

4. The MAPP Thumbnail Generator Application periodically polls the MAPP Application Server, at the interval configured for **Poll Interval**, in order to request one or more thumbnail creation tasks, up to the limit configured for **Max Jobs**. Where two or more MAPP Thumbnail Generator Applications are active, each will poll the MAPP Application Server for tasks, thereby sharing the thumbnail creation requirements.

   > Note: **Poll Interval** is configured on the MAPP Tab.

   > Note: **Max Jobs** is configured on the Thumbnail Generation Tab.

   > Note: The MAPP Thumbnail Generator Application will not poll the MAPP Application server whilst the value of **Max Jobs** is at its limit.

5.   The MAPP Application Server performs the following actions:

   a)   Queries the MAPP Database THUMBNAIL table for records with a status code of 'NULL'.

   b)   Compares the MATERIAL_IDs in the MAPP Database THUMBNAIL table to those in the MAPP Database INSTANCE table in order to find the record therein with the most recent RECORDED_DATE.

   c)   Obtains the entries for the LONG_FILE_ID and the TIMECODE_IN from the MAPP Database INSTANCE table and inserts the values into the task message.

   d)   As long as one or more MATERIAL_IDs have a status code of 'NULL', then that which has the most recent RECORDED_DATE is transmitted to the requesting MAPP Thumbnail Generator Application in the task message.

   Note: A task message may reference a number of soft segments that will each require a thumbnail; additional processing time will therefore be required. The thumbnail generation process does not differentiate between a task for soft segments and a task for a single clip.

6.   Once the MAPP Thumbnail Generation Application has received a new task message from the MAPP Application Server, the following actions are taken:

   a)   The MAPP Thumbnail Generator Application posts a request to the transfer agent (**Transfer Agent Process Id** on the MAPP Tab) for the material to be copied from its current location ('Ingest_Storage') onto a predetermined device (**Device Id** on the MAPP Tab) in order to undergo processing.

        In the example shown in Figure 2-1, Video Network Manager (VNM) is the transfer agent and 'TG_Storage' is the destination device.

   b)   The MATERIAL_ID is included in the request, and is used by the transfer agent to query the MAPP Database for the location of the source material. Where thumbnails for soft segments are required, the transfer agent will query the MAPP database using the LONG_FILE_ID instead of the individual MATERIAL_IDs in order for a single material transfer to be performed.

7.   Having established the location of the required source material from the MAPP Database INSTANCE table, the required material is copied from 'Ingest_Storage' to 'TG_Storage' and the MAPP Database INSTANCE table is updated with its new location.

   Note: If the transfer agent belongs to a PID chain, the request may subsequently be posted to a different agent.

8.   Following completion of the material transfer to 'TG_Storage', the MAPP Thumbnail Generator Application invokes FFmpeg™ to create a thumbnail with the predetermined characteristics configured on the Thumbnail Generation Tab.

9. Distinct stages of the thumbnail generation process are reported to the MAPP Application Server in the form of status codes; they are transmitted to the MAPP Database THUMBNAIL table for registration against the MATERIAL_ID that is being processed.

   Additionally, a timestamp is transmitted from the MAPP Thumbnail Generator Application to the MAPP Application Server in order to indicate that a task is being processed. The timestamp is stored as the value of LAST_MODIFIED in the MAPP Database THUMBNAIL table. The value is used to monitor the health of a MAPP Thumbnail Generator Application during the processing of a task (for additional information, refer to The MAPP Database THUMBNAIL Table).

10. Once the thumbnail has been created, the MAPP Thumbnail Generator instructs the MAPP Application Server to inspect the value of OFFSET-REQUESTED for the MATERIAL_ID in the MAPP Database THUMBNAILS table; if it was modified whilst the related task was being processed then the task will restart from stage 8 above.

    If the value of OFFSET_REQUESTED is unchanged (i.e. it is identical to the value of OFFSET_PROVIDED) then the binary thumbnail data is retrieved from the local storage device by the MAPP Thumbnail Generator Application. The original source material and the thumbnail .PNG file remain on the local storage device.

11. The MAPP Thumbnail Generator Application transmits a message to the MAPP Application Server containing the binary thumbnail data and its associated information.

    > Note: A single thumbnail will be created with an association to a MATERIAL_ID; consequently, for any instance of content that shares a MATERIAL_ID (where identical content exists on different storage devices, for example) it will also share the same thumbnail.

12. The MAPP Application Server updates the record for the material in the MAPP Database THUMBNAIL table with the fields received from the MAPP Thumbnail Generator Application in the previous stage.

    The binary thumbnail data is stored in the MAPP Database 'DATA' field for retrieval by a Morpheus UX Component.

    > Note: For information relating to the MAPP Database fields, refer to The MAPP Database THUMBNAIL Table

    > Note: For information relating to the Morpheus UX Components, refer to the Introduction in this document.

13. This stage is not illustrated in the diagram.

    If the value of OFFSET-REQUESTED for a particular MATERIAL_ID is modified after the Thumbnail Generator Application has finished processing the related task then the STATUS in the MAPP Database THUMBNAILS table will be set to 'NULL' and the process will restart from stage 1 above.

    For additional information on this stage, refer to Thumbnail Regeneration Process.

14. This stage is not illustrated in the diagram.

    Once a task is completed, and no concurrent change has been made to OFFSET_REQUESTED, then the Thumbnail Generator Application will perform the following actions:

    • Posts a request to the transfer agent to delete the source media file from the local storage device (TG_Storage in the example shown)

    • Directly deletes the original thumbnail .PNG file from the local storage device (TG_Storage in the example shown)

    • Sends a request to the MAPP Application Server to remove the record of the instance of the source media, existing on the local storage device (e.g. TG_Storage), from the MAPP Database INSTANCE table

Thumbnail Regeneration Process

An alternative thumbnail to that which already exists can only be created by modifying the value of OFFSET_REQUESTED in the MAPP Database THUMBNAIL table.

The value of the offset can be modified in several ways, as follows:

- Using the MAPP Database administration tool

- In the Acquisition application when previewing the source media file

- Directly in the MAPP Database THUMBNAIL table (not recommended)

If the value of OFFSET_REQUESTED is modified, the following occurs:

- The STATUS in the MAPP Database THUMBNAIL table is set to 'NULL' in order to indicate that a new thumbnail is required (i.e. the thumbnail creation task is in a waiting state pending the availability of a MAPP Thumbnail Generator Application to process it)

- Once the thumbnail has been created, the value of OFFSET_PROVIDED is set to that of OFFSET_REQUESTED.

- The record for the previous thumbnail in the MAPP Database THUMBNAIL table is overwritten by the new one.

Using the
MAPP Thumbnail Generator Application

Installation and Startup Procedures

IMPORTANT: Dependencies exist for the installation and functionality of this product - refer to the release notes.

The installation procedure performs the following tasks:

- Installs the MAPP Thumbnail Generator Application

- Installs the FFmpeg™ executable

The software is supplied as an .MSI Windows Installer Package.

1. Double click on the **Setup** file in order to launch the 'Thumbnail Generator Setup Wizard'.

2. Agree to the licence.

3. Select the installation folder - it is recommended that the default installation folder is used.

4. Select one of the two installation procedures:

   - **Everyone** (the default)

     Installs the application for use by all user accounts that are configured on the host system.

   - **Just Me**

     Restricts the application to be available exclusively for the account used by the installer.

5. Launch the application from the shortcut.

   The installation procedure places a shortcut on the desktop for each user (according to the selection made in stage 4 above), and one in the installation folder, a shortcut for which is accessible using the **Start** button (when the default installation folder is selected in stage 3 above, the shortcut can be found in the 'Grass Valley' folder).

   Desktop shortcut:

Note: Once installed and configured, this application will immediately start generating thumbnails for all media that has a record in the MAPP Database INSTANCE table.

Configuration of the MAPP Thumbnail Generator Application

The configuration consists of adding properties on individual tabs for specific environments, as follows:

- The MAPP Tab must be configured in order to set up access to the MAPP Application Server and a media transfer agent

- The Thumbnail Generation Tab combines all of the configurations that are required for the creation of thumbnails using FFmpeg™

- The Logging Tab provides for the definition of the folder to which the application will write operational messages

> Note: Properties are not case sensitive.

To access the configuration tabs, click on **System** in the Thumbnail Generator Application window (Figure 3-1).
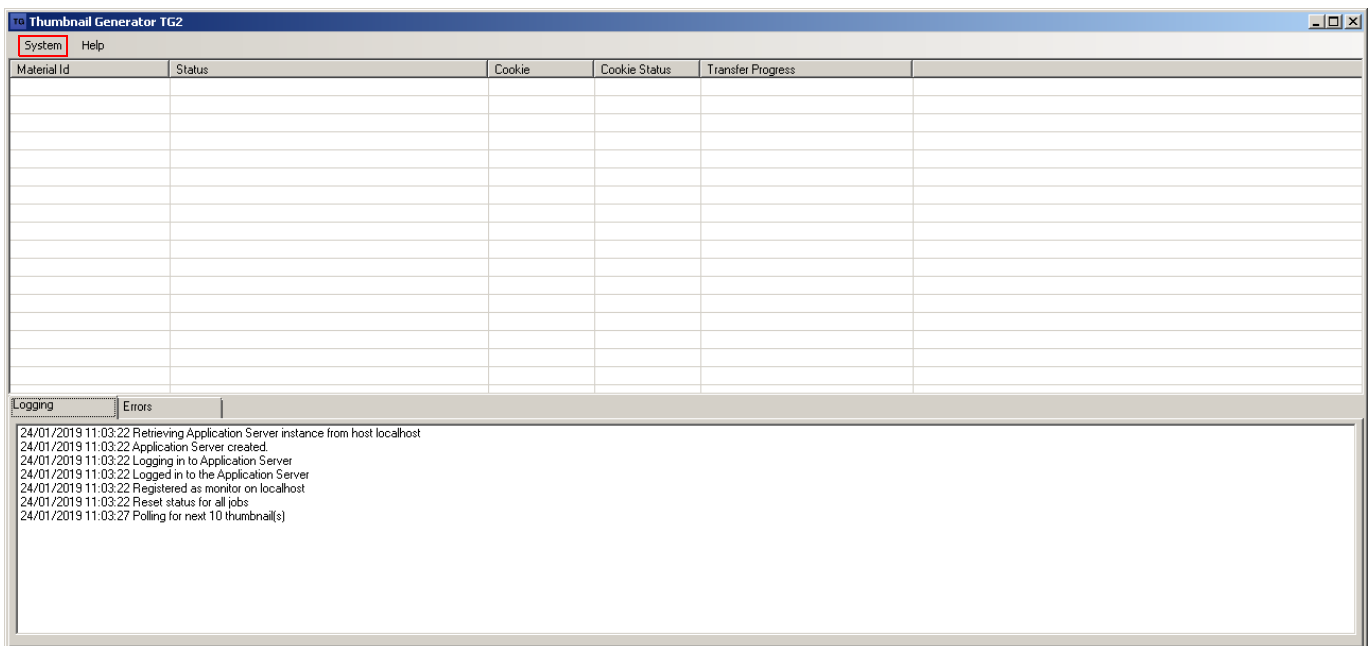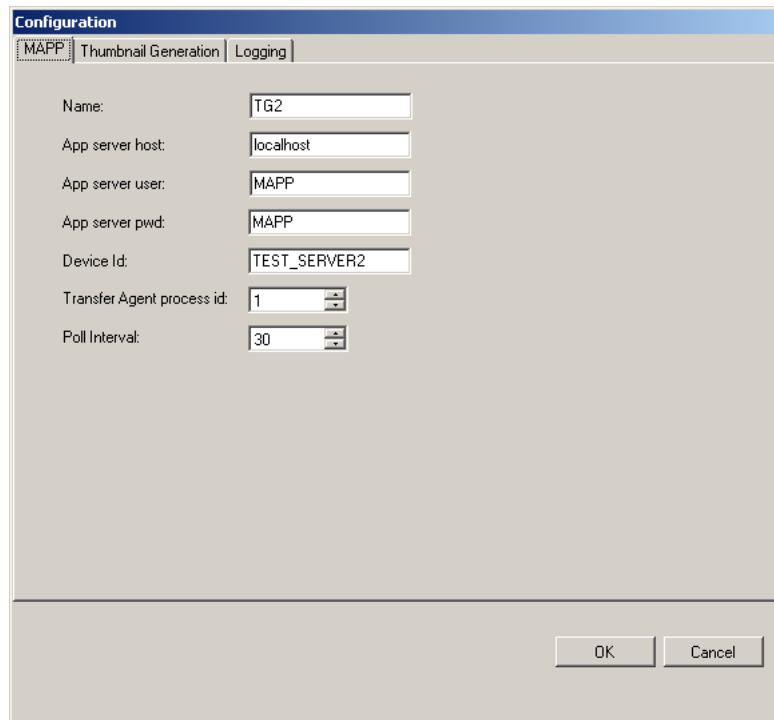

Fig. 3-1: MAPP Thumbnail Generator Application

MAPP Tab

The configuration parameters concerning the MAPP environment.

Click on **OK** to save.

Fig. 3-2: MAPP Tab

- Name

> Enter a unique name to identify the MAPP Thumbnail Generator Application. The given name will be written into the AGENT_NAME column of the MAPP Database THUMBNAIL table against tasks that it has been allocated.

- App Server Host

> Enter the name of the MAPP Application Server host machine, allowing this MAPP Thumbnail Generator Application to request tasks.

- App Server User

> Enter the username login credential for access to the MAPP Application Server.

- App Server Pwd

> Enter the password login credential for access to the MAPP Application Server.

- Device Id

A MAPP device ID.

Enter the ID of the device onto which the source media will be copied in order for the MAPP Thumbnail Generator Application to create a thumbnail using FFmpeg™.

The agent defined as the **Transfer Agent Process Id** (below) will automatically receive an instruction from the MAPP Thumbnail Generation Application to copy the source media file from the storage device following ingest to the location configured as **Device Id**.

The device 'TG_Storage' is used as an example in Figure 2-1.

- Transfer Agent Process Id

Enter the Process ID (PID) of the MAPP transfer agent that will be sent the instruction to transfer the source media to the device configured as **Device ID** (above), for the purpose of generating a thumbnail.

> Note: The configured agent may not actually perform the transfer request as it may be forwarded to another agent in a PID chain (if one exists).

An example of a MAPP transfer agent is Video Network Manager (VNM), as shown in Figure 2-1.

> Note: The PID is a unique number that is applied to a MAPP service (or service instance) as an identifier - no two MAPP services or service instances should be configured with the same PID. It is used by MAPP services and service instances only in order to identify one from another within the MAPP environment.
>
> PID chains are created when a MAPP service, that is targeted to process a message, is configured to reference another service; for example, in the case of the original target service being unable to perform the requested processing. The second service may also be configured to reference a third service, and so on.

- Poll Interval

Default = 30 seconds

Recommended = 30 seconds

Enter the frequency, in seconds, at which the MAPP Thumbnail Generator Application will poll the MAPP Application Server for thumbnail creation tasks.

Thumbnail Generation Tab

The configuration parameters that are communicated to the FFmpeg™ application for the generation of a thumbnail.

> Note: Thumbnails are generated in the Portable Networks Graphic (PNG) format only.
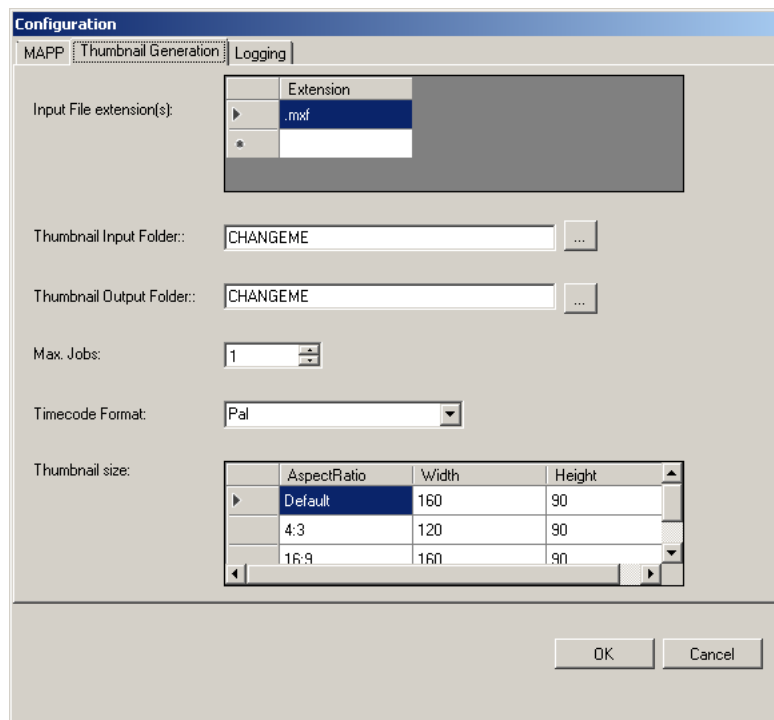
Click on **OK** to save the configuration.

Fig. 3-3: Thumbnail Generation Tab

- Input File Extension

Default = .mxf

Select the extension of the source media filename from which the thumbnail will be generated: click on the box in the left column adjacent to the required extension. If the required extension is not available, then follow the instructions below.

The arrow (▶) indicates the currently selected input filename extension, whereas the star indicates that the field is configurable.

- Create a new file extension:

  Left-click on the empty text field adjacent to the star, type the filename extension (including the dot).

- Edit an existing filename extension:

  Left-click on the extension to edit and overtype with the new entry.

- Delete a filename extension

  Right-click on the extension and click on the displayed **Delete** button.

It is not necessary to identify the filename itself as the MATERIAL_ID is contained within the request retrieved by the MAPP Thumbnail Generator Application and is communicated automatically to the FFmpeg™ application.

- Thumbnail Input Folder

Specify the path for the source media file from which the thumbnail will be generated. Use one of the two following methods:

- Type the path directly into the text field using the following UNC format:

  \\<servername>\<share>

  Where *<servername>* is that specified as **Device Id** on the MAPP Tab (the file will have been transferred to the folder specified here ahead of the thumbnail generation).

- Use the ellipsis button (...) to browse to the required folder.

- Thumbnail Output Folder

Specify a destination folder for the completed thumbnail. The MAPP Thumbnail Generator Application will copy the binary thumbnail data from the specified folder to the MAPP Application Server before being deposited into the MAPP Database THUMBNAIL table.

Use one of the two following methods:

- Type the path directly into the text field using the following UNC format:

    \\<servername>\<share>

    Where <servername> is that specified as **Device Id** on the MAPP Tab.

- Use the ellipsis button (...) to browse to the required folder.

Note: The thumbnail file is given a randomly generated name as its existence is temporary.

- Max. Jobs

Default = 1

Recommended = 1

Using the spin control, specify the maximum number of tasks that the MAPP Thumbnail Generator Application is permitted to retrieve from the MAPP Application Server and retain for processing before requesting more. The processing of at least one task must be completed before the MAPP Thumbnail Generator Application will retrieve another from the MAPP Application Server.

The processing of a task begins in the order in which it was retrieved from the MAPP Application Server; once a transfer request for the source material has been posted, the processing of the next message is begun. There is no prioritisation thereafter, as processing will resume in the order in which the source media transfers complete.

- Timecode Format

Default = PAL

From the drop-down menu, select one of the following:

- **DropFrame**

- **Film**

- **NonDropFrame**

- **PAL**

- Thumbnail Size

Default = 'Default' (width 160, height 90)

Define a set of aspect ratios that correspond to those of the source media from which a thumbnail will be created, and associate each to a desired thumbnail size in pixels. The following aspect ratios are preconfigured:

Aspect Ratio	Width	Height
Default	160	90
4:3	120	90
16:9	160	90

The FFmpeg™ executable will automatically analyse the source media and match the aspect ratio to one of the configurations - the associated height and width is then applied to the thumbnail. If no match is found in the 'Aspect Ratio' column then the 'Default' is applied.

If the desired aspect ratio is not available, then follow the instructions below.

- Create a new aspect ratio:

  Left-click on the empty 'Aspect Ratio' text field adjacent to the star, enter a unique name then type in the required width and height.

- Edit an existing aspect ratio:

  Left-click on the aspect ratio to edit and overtype with the new unique name. Modify the width and height as required

- Delete an aspect ratio:

  Right-click on the aspect ratio and click on the displayed **Delete** button.

Logging Tab

All events pertaining to the thumbnail generation process are logged, from the request to fulfillment, such as:

- Application activity and connectivity

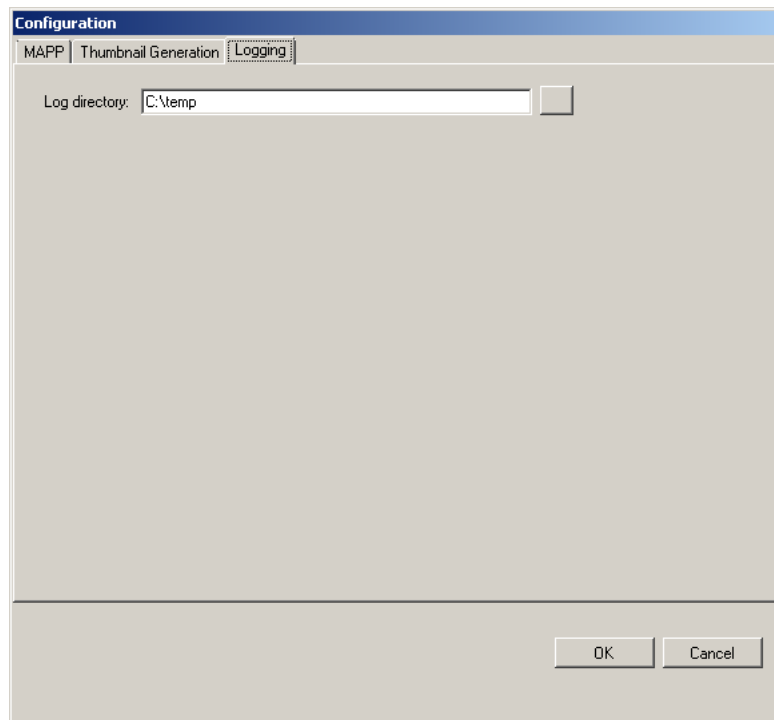- Thumbnail generation activity

- Database updates

Fig. 3-4: Logging Tab

- Log Directory

Use the ellipsis button to select a path for a folder in which the log file will be created.

A new log file is created daily with the following default name:

ThumbnailGenerator[<Name>].log

At midnight, a date stamp is appended to the filename automatically:

ThumbnailGenerator[<Name>].logYYYY-MM-DD

Note: *<Name>* is that configured for the MAPP Thumbnail Generator Application on the MAPP Tab.

Click on **OK** to save the configured path.

Thumbnail Triggers

The following triggers exist in the MAPP Database INSTANCE table to act upon specific changes therein in order to start the thumbnail generation process. The triggers are only executed upon changes to records in the MAPP Database INSTANCE table.

- **THUMBNAIL_INS_TRIG**

  A trigger to evaluate the *insertion* of a record for new media into the MAPP Database INSTANCE table in order to establish whether or not to create an entry thereof in the MAPP Database THUMBNAIL table for the purpose of creating a new thumbnail.

  Trigger behaviour is as follows:

  - For a new record that is inserted into the MAPP Database INSTANCE table with the ENCODED field set to 0, then it is ignored.

  - For a new record that is inserted into the MAPP Database INSTANCE table with the ENCODED field set to 1, then a record is added into the MAPP Database THUMBNAIL table if one does not already exist with the same MATERIAL_ID.

  > Note: The THUMBNAIL_INS_TRIG trigger will only execute once for any single MATERIAL_ID.

- **THUMBNAIL_UPD_TRIG**

  A trigger to evaluate the *update* of a record for existing media in the MAPP Database INSTANCE table in order to establish whether or not to add a record in the MAPP Database THUMBNAIL table for the purpose of creating a new thumbnail.

  Trigger behaviour is as follows:

  - If ENCODED transitions from 0 to 1 then a new record is entered into the MAPP Database THUMBNAIL table, but only if the MATERIAL_ID does not already exist therein.

Once either trigger has executed, a record is added into the MAPP Database THUMBNAIL table consisting of the following fields:

- **MATERIAL_ID**

  A single MATERIAL_ID is specified unless the message relates to soft segments, in which case each is identified by a unique MATERIAL_ID.

- **OFFSET_PROVIDED**

  Set to 10 frames (00000010)

- **OFFSET_REQUESTED**

  Set by default to 10 frames (00000010) and applied to the creation of the thumbnail. Regarding soft segments, the same offset is applied to each.

- **LAST_MODIFIED**

  Set by default to 'UTC Now' (date and time), unless a value exists for RECORDED_DATE in the MAPP Database INSTANCE table, in which case that is set.

The MAPP Database THUMBNAIL Table

Thumbnails are stored in the MAPP Database THUMBNAIL table.

Fig. 3-5: MAPP Database THUMBNAIL Table

The table has the following fields:

- **MATERIAL_ID**

  The MATERIAL_ID of the source media file.

- **AGENT_NAME**

  The unique name of the MAPP Thumbnail Generator Application that managed the thumbnail creation process - it is configured as **Name** on the MAPP Tab of the MAPP Thumbnail Generator Application.

- **STATUS**

A unique code that indicates the state of the thumbnail generation process as follows:

Status Code	Description
NULL	The task is in a waiting state pending the availability of a MAPP Thumbnail Generator Application to process it.
1	**Send**: following a request from a MAPP Thumbnail Generator application, the MAPP Application Server has transmitted the task for processing.
2	**Received**: the MAPP Thumbnail Generator Application has confirmed receipt of the task.
3	**Copying**: the MAPP Thumbnail Generator Application is currently processing the task, including requesting a transfer agent to copy the required source material to the storage device configured as **Device Id** on the MAPP Tab (documented herein).
4	**Completed**: the thumbnail generation process was successful.
5	**Failed**: the thumbnail generation process was unsuccessful.

The MAPP Thumbnail Generator Application will update the MAPP Database (via the MAPP Application Server) with the status code associated to the processing stage that has been reached for each thumbnail generation task.

Note: The status fields can be cleared using the MAPP Database admin tool.

- **DATA**

The binary thumbnail data.

- **OFFSET_PROVIDED**

The Nth frame from the first frame in the source media file that was actually processed by the FFmpeg™ executable in order to create the thumbnail.

If the value of OFFSET_REQUESTED is modified in order to generate a thumbnail from a different frame in the source media file, then the value of OFFSET_PROVIDED will remain unchanged until the new thumbnail generation process has been completed; once completed then the value of OFFSET_PROVIDED will be set to that of OFFSET_REQUESTED.

- **OFFSET_REQUESTED**

  Default = 10 frames

  The Nth frame from the first frame in the source media file that is to be processed by the FFmpeg™ executable in order to create the thumbnail.

  The default offset is configured in the trigger script that alerts the MAPP Application Server to generate a message destined for a MAPP Thumbnail Generator Application, and is applied to all thumbnail creation tasks.

  The value of the offset can be modified in several ways, as follows:

  - Using the MAPP Database admin tool

  - In the Acquisition application when previewing the source media file

  - Directly in the MAPP Database THUMBNAIL table (not recommended)

  If the value of OFFSET_REQUESTED is modified after a thumbnail has been created, then the STATUS in the MAPP Database THUMBNAIL table will be set to 'NULL' in order to indicate that a new thumbnail is required (i.e. the thumbnail creation task is in a waiting state pending the availability of a MAPP Thumbnail Generator Application to process it).

- **LAST_MODIFIED**

  A date and timestamp that indicates when the current thumbnail was created.

  It is initially set to 'UTC Now' (date and time), unless a value exists for RECORDED_DATE in the MAPP Database INSTANCE table, in which case that is set.

  The LAST_MODIFIED field is used by the MAPP Application Server to monitor the health of a MAPP Thumbnail Generator Application that is currently processing a task. If a timestamp update from the MAPP Thumbnail Generator Application that is processing a specific task is not received within a period of 5 hours (default), then the MAPP Application Server will assume that it has failed. The STATUS value for the task will therefore be set to 'NULL' in order for it to be available to an alternative MAPP Thumbnail Generator Application for processing.

The Thumbnail Task Message

Following a request from a MAPP Thumbnail Generator Application, the MAPP Application Server will return a task message with the following content:

- **LONG_FILE_ID**

  Obtained from the MAPP Database INSTANCE table.

  Although the MATERIAL_ID is included in the task message and is used by the transfer agent to query the MAPP database for the location of the source material, when thumbnails for soft segments are required the MAPP database will be queried by the transfer agent using the LONG_FILE_ID instead of a number of individual MATERIAL_IDs in order for a single material transfer to take place.

  > Note: The transfer agent may be that defined as **Transfer Agent Process Id** on the MAPP Tab, or another agent where a PID chain exists.

- **MATERIAL_ID**

  Obtained from the MAPP Database THUMBNAIL table.

  A single MATERIAL_ID is specified unless the message relates to soft segments, in which case a MATERIAL_ID is specified for each.

- **OFFSET_PROVIDED**

  Obtained from the MAPP Database THUMBNAIL table.

  Set to 10 frames (00000010)

- **OFFSET_REQUESTED**

  Obtained from the MAPP Database THUMBNAIL table.

  Set to 10 frames (00000010) and applied to the creation of the thumbnail. Regarding soft segments, the same offset is applied to each.

- **TIMECODE_IN**

  Obtained from the MAPP Database INSTANCE table.

  The position from which the OFFSET_REQUESTED is measured. If the message relates to soft segments, a TIMECODE_IN is provided for each.

Grass Valley Technical Support

For details of our Regional Customer Support Offices please visit the Grass Valley website and navigate to Support> Contact Support.

https://www.grassvalley.com/support

UK Office

The department is staffed from 9.00am to 5:30pm Monday to Friday (excluding UK public holidays.

Outside these times, calls will be delivered to voicemail for follow up on the next working day.

Additional support is available outside these hours by purchasing a support contract, details of which are available from the Grass Valley website and through the account manager.

Customers with an existing support contract should call their personalised number, which can be found in the contract, and be ready to provide the contract number and details.