

Media asset management system for simple spot insertion through to complete hierarchical storage management.

Pro-Bel's expertise in Broadcast Media Management has won them contracts worldwide, demanding a functional diversity that has proved the system to be the foremost media management tool in its field.

Morpheus Media Management, or M³, is a family of PC-based applications centred around a relational database. The database is specifically designed to reflect the requirements for an on-air broadcast system. The PC applications interface with a range of broadcast hardware common to TV transmission, such as video servers, cart machines and archives. Other applications provide administrative functions, material ingest and desktop browsing.

The M³ family includes components that allow the importing and exporting of metadata and material with disparate systems, ensuring that the user remains open to developing standards such as MXF, while providing a flexible approach to changes in workflow.

M³ is a totally scalable product. The same database structure supports the smallest system, requiring for instance, only ingest and playout, to the largest most complex multi-channel systems with such requirements as video server clustering and automated archiving. Components may be added or removed to the system without reconfiguration or interruption to service.

Ingest of material to the M³ environment is handled by a range of manual and automated systems. All of the systems are designed to optimise the throughput of the media whilst ensuring quality standards are maintained.

Workflow management incorporated into M³ allows material to be automatically archived after ingest, it allows low resolution proxy copies or duplicate copies of material to be made on mirrored server(s) for resilience. As part of the Morpheus automation solution, M³ ensures material is identified, located and moved with precision for timely broadcast to air.



FEATURES

- Complete solution for videotape, server-based and data archive media
- Modular, scalable and extensible
- Media transfer over LAN
- Ingest from live feeds or tape
- Powerful metadata administration tools
- List and Pre-log processing to ensure material is ready for transmission
- Metadata held in SQL relational database
- Automated quality control analysis and reporting

The system can provide automated analysis of encoded material allowing it to be quality checked without the need to manually review material, important in a multi-server environment where material with the required quality level will need to exist in many different places. Material that does not pass the automated quality check process is inhibited from air playout and transfer to other storage devices.

Live Record

For manual or timed ingest of incoming video feeds Live Record provides a powerful set of features. Comprehensive facilities are provided to quality check ingested material and if necessary trim and segment whilst ingest is in process. Timed live record allows for a predefined list of recordings to be triggered automatically from a timed list.

Features

- Live recording with clip preview and t rimming while recording
- Timed live record for unmanned ingest of live video feeds

VTR Acquisition

For ingesting material from tape, the new Acquisition Station provides full VTR controls for the reviewing and logging of material on a tape and video server. Alternatively where a tape has been previously logged it's barcode can be scanned to provide full media details to the operator. Single or multiple items may be selected by the operator for batch ingest to the video server. To aid in automated ingest from tape, a dub list can be imported from the workflow management system thus giving improved throughput for tape ingest. The Acquisition Station has the ability to ingest from non-drop frame tapes into the drop frame transmission server environment directly, removing the need for production houses to generate drop frame copies of edited non-drop frame material. Mirrored recordings are supported via automated inter server material transfers between mirrored video server storage.

Tape Preparation

To allow for new tape based material meta data to be checked into the M³ database, the Tape Preparation application allows new tape devices to be created, material to be reviewed using VTR transport controls and meta data to be added to the database that describes the new tape contents.

Automated Caching

The Multistream cache engine can acquire multiple pieces of media simultaneously from a robotic cart machine to one or more video servers. Sophisticated algorithms optimise the throughput of tapes and the use of the cart machine's VT decks. The Multistream cache engine has the ability to manipulate (shuffle) audio tracks so that the desired multilingual output is achieved when ingested to the video server.

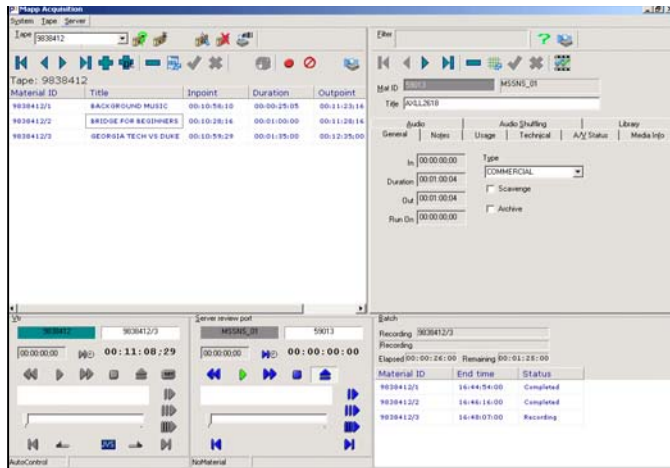
Features

- Automatic caching from multi-cassette machines
- Automated multi-stream ingest from cassette cart machines

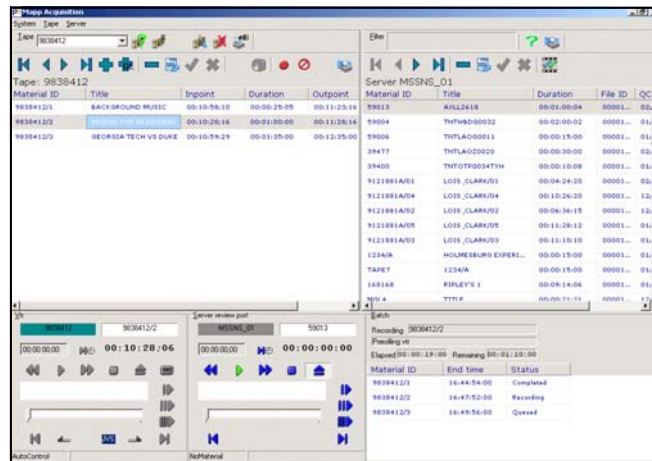
Quality Control

Pro-Bel's MACItm technology provides automatic quality control checking of acquired material. Whilst material is being acquired to the video server MACI plays out the same material to a video/audio analyser. Any errors from the analyser are logged with timecode stamps, MACI then alerts an operator to the potentially corrupt material allowing them to make the final subjective judgement as to whether the acquired material is acceptable.

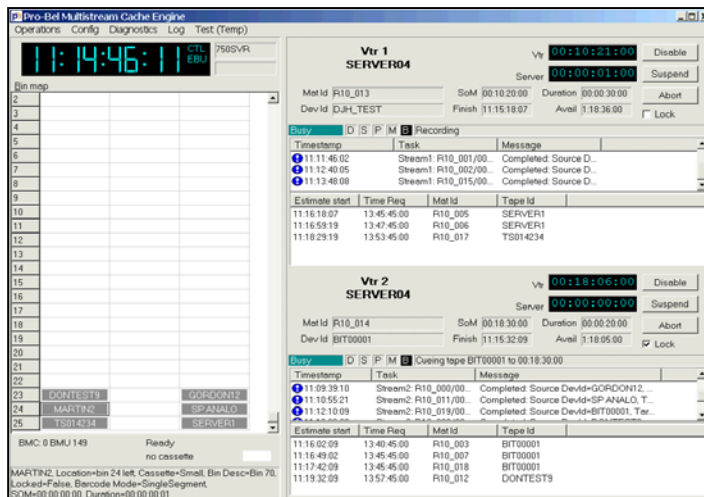
Acquisition Station - Material Form Mode



Acquisition Station - Server Contents Mode



M³ Multi Stream Cache Engine



Video Network Manager & Request Controller

The Video Network Manager orchestrates movement of material between video servers, allowing transfer between systems of both high, low and mixed bandwidths. Transfers can be instigated manually via the Request Controller application or automatically by other components in the Pro-Bel system. Video server space is managed using complex algorithms to ensure that only material that is not required for broadcast is deleted. Manual server housekeeping operations are performed in the Request Controller providing users with versatile tools for administration and transfer request manipulation.

Features

- Supports multiple concurrent transfers to optimise throughput
- Server system architecture configurations allow support for mixed bandwidth systems
- Purge list and purge selection to delete material from the video network
- Kill request execution to completely remove material from the M³ database and storage devices
- Automatic and manual mirroring of video servers
- Utilises the M³ Application Server for instantaneous reaction to transfer requests

M³ Administration

M³ administration offers a powerful user interface into the M³ Database providing the operator with tools to create, edit, delete and search material and storage device records and material meta data. As an option, the Administration Station can be configured to post material transfer requests which are satisfied by the transfer agents offered by the Pro-Bel M³ system. In the device form, printouts can be made containing information on system devices and contents of selected devices.

Features

- Barcode reader and printer support
- User group administration to restrict access of users to records with their ownership rights
- Attachment of presentation effects to be applied at the time of automated playout
- Allows editing of all metadata relating to a piece of material

Application Server

In a broadcast environment it is of the utmost importance to ensure that requests are processed in an expedient manner. The Application Server passes messages between transfer instigators and transfer agents in the system for instantaneous reaction to requests, removing the need for database polling. It is compatible with all new Pro-Bel automation products as well as being backwardly compatible with applications that only use the M³ database for transfer requests. The Application Server provides a layer of abstraction from the database to interpret messages from Pro-Bel products and third party products into database queries and updates, thus ensuring maximum database security.

M³ Database Redundancy (MDR)

MDR provides a mirrored copy of the on-air M³ database using synchronisation techniques that maintain a backup available for use in the event of PC server failure. Should a failure occur the synchronised database can be pointed to by the system applications, ensuring that transmission carries on as normal. Additionally MDR may be configured to provide a replicated, on-line copy of the M³ database to accept third party queries directly, without adding undesirable load to the main on-line M³ database.

Missing Material Checker (MMC)

The Missing Material Checker scans for new automation schedules, it then processes them to determine whether material is available for playout from the scheduled devices. If material is missing, but it can be automatically ingested or moved from another storage device in the system, such as a video server or archive, the Missing Material Checker will post a transfer request ensuring that the material is available in time for transmission. If material is not available a report will be produced to advise which tape the material can be found on or that the material does not exist.

Features

- Hands off schedule pre-processing to ensure material is prepared for transmission
- Manual mode for ad-hoc schedule processing
- Supports automatic video server mirroring
- Configurable format report generation

Media Browse

Automated generation of proxy clips (browse clips) can be accomplished by the Browse Transcoder application. The clips (MPEG-4, MPEG-1 etc) are stored on a central server/ transcode engine. Clip generation is via software transcoding and is faster than real-time, this alleviates the need for additional transcoding hardware and the limitation of only real-time throughput.

The proxy clip assets are stored in the M³ database ensuring metadata is readily accessible to the user via the frame accurate proxy clip player.

MAT ID	TITLE	MATERIAL TYPE
NUK GOLD BUMPER	COMMERCIAL BREAK BUMPER	JUNCTION
NUK GOLD COMM 1	COMMERCIAL 1	COMMERCIAL
NUK GOLD COMM 2	COMMERCIAL 2	COMMERCIAL
NUK GOLD COMM 3	COMMERCIAL 3	COMMERCIAL
NUK GOLD NEXT	UK GOLD 'NEXT' YES PRIME MINISTER	JUNCTION
NUK GOLD PROMO 1	UK GOLD PROMO - THE WHISTLE BLOW	JUNCTION
NUK GOLD PROMO 2	UK GOLD PROMO - MEN BEHAVING B	JUNCTION

Extended M³

A range of products for the connection of multiple systems to further extend the flexibility of the M³ product range.

The extended M³ range offers additional facilities for clients with multiple databases as well as additional interfaces to third party systems such as NLE or other media management systems. Archive compatibility is provided for use with DVD, disk array or tape archive devices.

Asset Mail

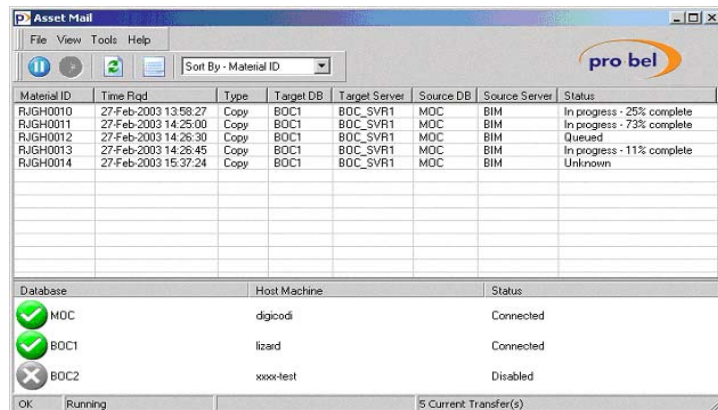
The Asset Mail application connects to multiples of M³ databases and facilitates the process of remote material copy transfers from one M³ system to another. When a transfer request originates in an M³ system for material outside of that system, Asset Mail will create a corresponding request in another M³ system for a transfer agent to satisfy it. Asset Mail will then create the relevant meta data in the local M³ database to which the clip has been copied. Whilst material is being copied, Asset Mail displays the actual percentage complete during a transfer, if required a transfer can be paused for maintenance purposes and resumed later.

Features

- Transfer between multiple M³ systems
- Interface to archives for long term storage
- Meta data import into the M³ Database
- Administration of multiple Database systems
- Material ingest monitoring across one or many systems
- Supports clip transfer from systems outside the M³ environment

Features

- Complete solution for videotape, server-based and data archive media
- Modular, scalable and extensible
- Media transfer over LAN
- Ingest from live feeds or tape
- Powerful Meta data administration tools
- List and Pre-log processing to ensure material is ready for transmission
- Metadata held in SQL relational database



The screenshot shows the Asset Mail application window. At the top, there is a menu bar (File, View, Tools, Help) and a toolbar with icons for home, back, forward, and refresh. A dropdown menu is set to 'Sort By - Material ID'. The main area contains a table with the following data:

Material ID	Time Req'd	Type	Target DB	Target Server	Source DB	Source Server	Status
RJGH0010	27-Feb-2003 13:58:27	Copy	BOC1	BOC_SVR1	MOC	BIM	In progress - 25% complete
RJGH0011	27-Feb-2003 14:25:00	Copy	BOC1	BOC_SVR1	MOC	BIM	In progress - 73% complete
RJGH0012	27-Feb-2003 14:26:30	Copy	BOC1	BOC_SVR1	MOC	BIM	Queued
RJGH0013	27-Feb-2003 14:26:45	Copy	BOC1	BOC_SVR1	MOC	BIM	In progress - 11% complete
RJGH0014	27-Feb-2003 15:37:24	Copy	BOC1	BOC_SVR1	MOC	BIM	Unknown

Below this table is another table showing the status of databases:

Database	Host Machine	Status
MOC	digicodi	Connected
BOC1	lizard	Connected
BOC2	xxxx-test	Disabled

At the bottom of the window, there is a status bar showing 'OK Running' and '5 Current Transfer(s)'.

Archive Controller

The Archive Controller application is an M³ transfer agent that manages an Avalon storage Archive. It manages transfers into and out of the archive, deleting files as requested and reconciling archive orphans (files that are in the archive but not in the M³ database). The Archive Controller application connects to an M³ database and is integrated into the hierarchical storage management system processing transfer requests instigated by other M³ applications and transfer agents.

Material Preparation Manager

In order for material to be available on the fastest media type, ahead of a schedule being loaded into the automation system, the Material Preparation Manager processes schedules and 'pre-stages' the material. System configurations allow for material either being available from the fastest media within an archive or alternatively at the desired playout server. If material is not available in the system an exception report can be generated by the user, the content of which is configurable ensuring that all material required for transmission is ingested in ample time for transmission. In order that multiple Preparation Managers can operate in a system a single pre-stage module is used per M³ database to ensure that contentions do not occur.

M³ Import Station

The M³ Import Station provides a means of importing material meta data into the M³ database from a number of flat file formats. This allows for new tape and tape contents to be recognised within the M³ database when required for automated ingest. In addition to this, using the M³ Data Interchange Format, additional database information can be imported including sub event data for use with the Digital Content Controller to allow control of unlimited numbers of sub events by automation.

Super Administration

To maintain consistency in a multi-database system it is essential to be able to administer meta data pertaining to material within all of the systems. Super administration provides this functionality by interfacing to the Application Server in each system, allowing searching and editing on a global basis.

In order to delete material from the entire facility where multiple M³ databases are used, the Super Administration can import or generate 'kill lists' for execution. These are passed to transfer agents within the system responsible for deletion, these report back to Super Administration on the success of the deletion, note that material that is loaded into an automation system for transmission is locked and cannot be deleted.

Supervisory Display

The Supervisory Display provides a means for operators to view statistics relating to various ingest processes within either single or multiple M³ systems. Firstly cache errors and MACI (automated Quality Control) errors are displayed allowing an operator to produce a report and act on them either by manually performing the QC operation or replacing the material. Secondly, successful ingest for MACI or manual QC can be displayed and a report of successful material throughput generated.

M³ Gateway

Where material is moved onto a server within the M³ database by a third party system, the M³ Gateway comes into operation. Following notification of material on a video server being added, deleted or modified, M³ Gateway responds by performing a query of the material meta data. The M³ database is then updated with the meta data thereby allowing the playout and transfer of this material by the Pro-Bel automation system. If the update notification is not supported by the video server, M³ Gateway can be configured to poll the server periodically.

The screenshot displays the 'Super Admin' application window. At the top, there are tabs for 'Operations', 'Diags', and 'Purge'. Below these are 'Browse' and 'Purge Status' buttons. A 'Find Material' section contains search criteria: 'Material id' (01/%), 'Material type' (checked: TAPE, NONE, COMMERCIAL, JUNCTION, LIVE REC, PROGRAMME, STILL), 'Sparger than' (00:00:00.00), 'Date criterion' (none), 'Title' (empty), 'Longer than' (00:00:00.00), and 'Date' (04/09/2002). A 'Search' button is present. Below the search filters is a table of 'Items' with columns: Material id, Title, Duration, MaterialType, Additional, and Presentation. The table lists several items, with '01/21/LX/N' selected. To the right of the table is a 'Presentation' panel with fields for 'Subtitle ref', 'Reviewed by' (GCH), 'Status', 'Run on', 'Filed on' (12/07/2002), 'Purge date' (30/12/1899), 'Episode no' (0), 'Tapes', and 'Aspect' (1.0). Below the items table is an 'Instances' table with columns: Pod, Device Id, Last Aired, Delete After, Type, Additional, and Technical. The table lists instances for PDD1 through PDD4. To the right of the instances table is a 'Technical' panel with fields for 'Source dev' (BBC TENDER T), 'Last Used' (15/07/2002 18:41), 'Usage count' (0), 'Recorded' (15/07/2002), 'Timescode in' (00:00:00:00), 'Quality Check', 'Format' (MOTION JPEG), and 'Location' (PRO-BEL SALE).

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