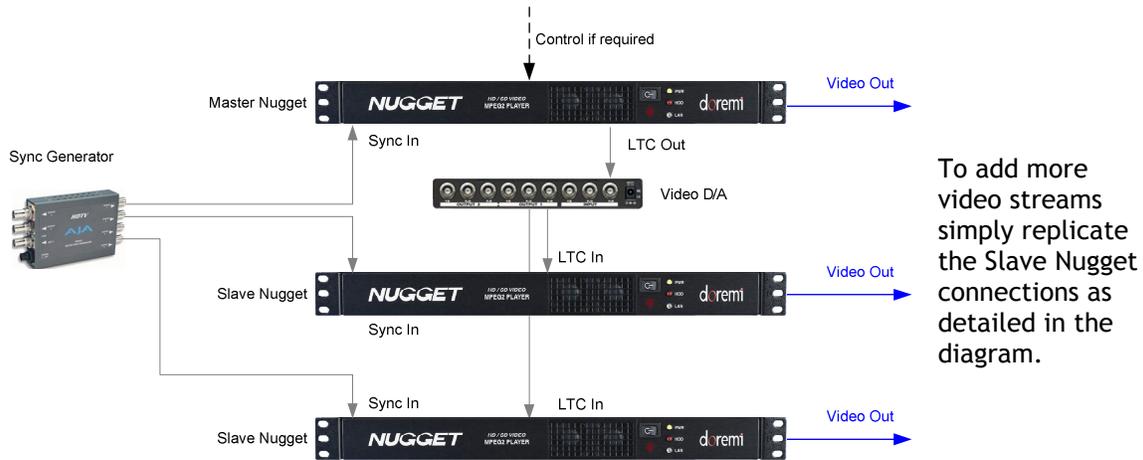


Synchronized Playback with Multiple Nuggets

The ability to play synchronized video streams is a requirement that sounds simple but with the wide variety of differing formats always provides a challenge. The Nugget players have built in features that greatly simplify the task so this application note sets out to describe the best practice method of synchronizing Nuggets Players.

The diagram below shows a typical installation consisting of three synchronized video streams each of the same format.



It is essential that the Nuggets are locked together from the same sync source as shown above and that the sync generator is set to match the format of the video content being output.

FORMAT	SYNC SOURCE	SYNC TYPE
480i, 1080i29.97, 1080p29.97 and 720p59.94	480i (NTSC) or 1080i29.97	BLS (for 480i) or TLS
576i, 1080i25, 1080p25 and 720p50	576i (PAL) or 1080i25	BLS (for 576i) or TLS
1080i30, 1080p30 and 720p60	1080i30	TLS
1080psf24, 1080p24	1080psf24	TLS
1080psf23.98, 1080p23.98	1080psf23.98	TLS

Abbreviations:

BLS=Bi-Level Sync

TLS=Tri-Level Sync

psf- Progressive Segmented Frame

To enable the Slave Nugget to EXACTLY track (chase) the Master Nugget then the LTC out of the master should be fed to the slave(s) via a distribution amplifier (D/A). An audio D/A is ideal but for ease of wiring then a video D/A can be used.

Note that if there is only one Slave Nugget then the LTC out can be fed directly to the LTC in.

Synchronized Playout with Multiple Nuggets

The Master and Slave Nuggets must be set up identically apart from the specific settings in the table below:

NUGGET FUNCTION	MASTER NUGGET SETTING	SLAVE NUGGET SETTING
Sync Source	Sync In	Sync In
Time	A-Time	A-Time
Chase	Off	On
Chase Drift	0 (Note 1)	0 (Note 1)
Auto Start	File (Note 2)	File (Note 2)
Auto Start	As Required (Note 3)	Pause
Loop Mode	As Required (Note 4)	As Required (Note 4)

Notes to the above table:

1. As frame accurate lock cannot be guaranteed in 720p formats this parameter should be set to 2. For all other formats this parameter should be set to 0.
2. Chase is a timecode following feature and therefore, only, works with single Files not Playlists.
3. If the system is to be configured as a stand alone system designed to start on power up then this function should be set to **PLAY**.
If the system is to be controlled by an external controller then this function should be set to **PAUSE**.
4. This should be set to **ON** if the system is to continuously loop either from an automatic start or a single external start command from a controller.
If set to **OFF** then the system will play to the end of the master clip and then stop.

As the Slave Nuggets chase the master then it is **ESSENTIAL** that all material has been encoded in the same format and with identical contiguous time code.

Note that if the content in the Slave Nugget is not the same length as in the Master Nugget then it will:

-  Freeze on the last frame if shorter
- OR
-  Stop on the frame with the same time code as the end time code of the master clip.

It follows that, if operating in loop mode and the clips are of a different length this will result in resynchronization at the end of the clips which may produce undesired video and audio glitches. For best performance they should have the same length.

Not shown or discussed in this application note is the use of the DoremiAM to import material into the Nuggets, manage their content or indeed be the controller for the Master Nugget.