Long-term Power Down for Dolby Cinema Products

Special attention should be given to certain products when it becomes necessary to power down for an extended period of time. This guide provides recommendations on leaving Dolby Digital Cinema equipment without power and what precautions should be taken to avoid issues once equipment is brought back into use. The information in this document is subject to change.

Products that require attention

Any device that contains a Media Block requires a battery backup in order to maintain the security identity when power is removed (server or projector is turned off).

Some devices have **rechargeable** batteries that receive a charge when power is applied but will start to discharge as soon as power is removed. If the battery reaches a discharged state, the security identity is lost, and the device can no longer be used for playback of encrypted content. When this happens, the Media Block will need to be replaced or sent back to Dolby for repair. Powering up this equipment regularly will charge the battery and prevent the security identity loss.

Some Media Blocks have **non–rechargeable** batteries. Long periods of time when power isn't supplied by the server or projector will slowly discharge the battery. Keeping this equipment powered will prevent the backup battery from being discharged. The following chart shows Dolby equipment and rechargeability information.

Product	Type of Battery Circuit	Battery life before potential security identity loss	Recommended power up interval
DSP100	Rechargeable	1-3 years	1 day every 1 month*
CAT862	Rechargeable	1-3 years	1 day every 1 month*
CAT745 (original battery)	Non-Rechargeable	1-3 years	N/A
CAT745 (with replacement battery)	Non-Rechargeable	7-10 years	N/A
Dolphin 1.0 and 1.2	Non-Rechargeable	1-5 years**	N/A
Doremi IMB	Non-Rechargeable	1-5 years**	N/A
IMS1000/2000/3000	Rechargeable	9 months	1 day every 2 months
CAT1600/CP850	Non-Rechargeable	3.5-4 years	N/A
CP650	Rechargeable	6 months	1 day every 4 months
* These devices have a rechargeable battery that holds approximately 6 months of charge, there is a non-rechargeable battery backup that will maintain the Media Block after the rechargeable battery is drained. Long "off" periods will adversely affect the time until the security identity is lost.			
** The battery life for these Media Blocks depends on when the battery was last replaced. If the current battery is nearing its 4-year replacement window, Dolby recommends replacing it.			

Table 1

Note that the table above assumes that the cinema is closed, and all equipment is powered down. Recommended figures quoted above are considered conservative and take into consideration extremes in temperature, component aging and variations in battery performance.

Products that are not shown in the table above are considered safe to leave without power for extended periods. This includes:

- Cinema Audio Processors (CP650[1], CP750, CP950)
- Servers without an internal Media Block (DSS100, DSS220, ShowVault)[2]
- Digital to Analog Converters (DAC3201, DAC3202, AUD-D2A)
- Dolby Multichannel Amplifiers
- Accessibility Equipment (receivers should be charged prior to reopening the cinema)
- Dolby TMS 5.0**

([1]) The CP650 uses a super-capacitor on the CAT774 board in order to maintain its settings after power loss. This super-capacitor will hold its charge for approximately 6 months, so it is recommended to power up the CP650 for 24 hours within a 4-month period.

([2]) For all rack mounted servers, the motherboard has a battery for the backup of all BIOS settings and system date and time. These are CR2032 coin cell batteries and need to be replaced approximately every 5 years, however they can be replaced even after failure without loss of functionality. If the server halts its boot cycle with the error 'CMOS checksum failure' at the POST screen, replace the motherboard battery.

Media Block batteries can be replaced in some devices, others have batteries that are soldered directly to the board and cannot be replaced. If Media Blocks are powered down for long periods, the replaceable battery should be changed out before the long power down.

Replaceable Batteries

The following table shows each device that has a replaceable battery, the type of battery installed, and the model of battery to use as a replacement.

Product	Battery type	Approximate battery lifespan	Recommended Replacement Interval
Dolphin 1.0 and 1.2	CR1220	5 years	Every 4 years
Doremi IMB	BR3032	5 years	Every 4 years
CAT1600/CP850 (SN F4940714 and higher)	Tadiran TLH-5902	3.5-4 years	Every 3 years

Table 2

Note that the table assumes an approximate duty cycle of 18 hours on, 6 hours off. Recommended figures quoted above are considered conservative and consider extremes in temperature, component aging and variations in battery performance.

Maintenance precautions

Before powering down equipment in the above list for an extended period, it is recommended to take the following precautions:

All devices: If the products have been in regular use in the cinema (either powered up permanently or shutdown overnight) it is considered safe to leave them powered down for the durations listed in table 1. If the product is new/unused, consider that it may have been in stock without power for an unknown period of time. It is recommended to apply power for 48 hours before putting the unit back into storage.

Dolphin 1.0 or 1.2/Doremi IMB: After 4 years of use, the system will alert the user that it is time to replace the battery in a Dolphin or Doremi IMB. The system does not monitor the battery voltage, it only keeps watch on the last time that the battery was replaced. You can look at the MAINTENANCE LOG to see when the last battery replacement was recorded.

After replacing the battery, ensure that the event is recorded in the MAINTENANCE LOG to reset this timer. If you are putting a Dolphin/IMB into long term storage, check first that the battery is not close to requiring replacement.

Dolphin Battery Replacement Instructions: https://dolby.box.com/v/Dolby-Dolphin-Batt-Replace

Doremi IMB Battery Replacement Instructions: https://dolby.box.com/v/Doremi-IMB-Batt-Replace

CP850: The current battery voltage of the CP850 can be seen by downloading a set of logs from the CP850 WebUI.

You can then either upload the log to the Dolby log analyzer at http://loganalyzer.dolbycustomer.com/ or you can unzip the archive and open the file */tmp/info/SECURITY_STATUS* in a text editor. This file will contain the line:

Battery Voltage (V):

The battery can be considered healthy if it is between 3.3 and 3.7 volts. At 3.2 volts the battery should be changed (or the CAT1600 replaced) as soon as possible.

CAT1600 Battery Replacement Instructions: https://dolby.box.com/v/Dolby-CP850-Batt-Replace

Other Tasks

This may be the perfect time to perform server chassis maintenance. See the document here for Doremi servers: https://dolby.box.com/v/Doremi-Server-Maint

Returning to Operation

At the end of a long-term shutdown, there are some things to consider. These steps should be taken two weeks, or as early as possible, before reopening to provide time to get replacement equipment if necessary.

NOTE: Contact your management for instructions on returning your cinema to operation. Follow your company's policies and the recommendations of the equipment manufacturers. The recommendations below may include steps for equipment not made by Dolby and are presented for guidance only.

If you find a problem: In some cases, you might find a problem with one or more pieces of cinema equipment. Contact your technical support team in the event there are issues to have a technician work to resolve problems. If any equipment or electrical wiring looks damaged or dangerous, contact someone to help.

USEFUL RESOURCE: In the steps below, Dolby recommends testing encrypted content playback to ensure that the Media Block is still functioning correctly. Dolby is providing a short, encrypted trailer for all Dolby Media Blocks. See this section of the document for more: link

Start with the Cinema-wide infrastructure:

- Power up the networking hardware in the building (Content and Management Networks,) so that Network Time Protocol (NTP) will function when the auditorium equipment is turned on. Receiving an accurate time on many of your cinema devices is important.
- Power up the TMS (Theatre Management System). The time should be displayed correctly on the TMS server and you should be able to login.

Then move to the auditorium equipment:

- Inspect the equipment and wiring for any physical damage.
- If there isn't any damage, power up the equipment in an auditorium. If anything looks to be unsafe, contact your technical support for assistance.
- Check for any red lights on equipment or equipment that won't turn on. Things you should check are:
    o Projector (power up to standby mode which will provide power to the Dolby Media Block/Server). Check that there are no warnings on the projector
    o Lamp Power supplies
    o Servers - check that there are no red lights on the server, particularly on the hard drives
    o Server – log into the server and check for any warnings
    o Makes sure all amplifiers are on
    o All network switches are on.
    o Any other devices used for the auditorium are on and that there are no warnings
- Log into the server and ensure the system time is correct.
- Test the loading and transferring of content from TMS or another auditorium.
- Ensure that projector exhaust is functioning correctly before striking the lamp.

- Once the projector and Dolby Media Block are fully connected, test content playback.
    - Use encrypted content if possible, to test the Media Block.
    - Ensure the picture looks good (try playing flat and scope material). If your auditorium has movable masking, check that it works.
    - Test the lighting cues and any other automation used in the room.
    - Listen to the audio playback in the auditorium for damaged components or problems. Test 5.1, 7.1, and Dolby Atmos.
    - You may want to look at the amplifiers during content playback to ensure there is activity.

Perform the same steps on the remaining auditoriums

Go back to the TMS:

- Check that all auditoriums are connected to the TMS.
- Test the scheduling of one show on each screen. You can do this in the TMS, or at the Point of Sale System (if connected). Then watch to see that the shows start on time.

Optional Step:

- You may wish to contact your Network Operation Center (NOC) and let them know you are back online and see if they are detecting any issues at your cinema. You can then work to correct any problems.

Opening your cinema:

The equipment we've discussed so far is usually in a projection room and not something that people interact with on a regular basis. There are some items sold by Dolby that your guests interact with. The following is some basic guidelines.

Dolby 3D Glasses

Dolby 3D glasses are designed to be washed in a way that sanitizes the lenses and frame. This information is available in our Glasses Operating Procedures document: Link This document is in English. On our Dolby Customer Portal, we have versions of this document in Arabic, Chinese, French, German, Japanese, Korean, and Russian.

Dolby Accessibility Receivers

Alcohol or sanitizing wipes can and should be used on customer accessibility equipment including:

- Dolby CaptiView – wipe down the receiver head, the area with the power switch and buttons, the gooseneck and base/clamp.
- Dolby Fidelio Receiver – wipe down the receiver box and all buttons.
- Dolby Fidelio Headphones – If the customer can use their own headphones, no cleaning is done by the staff. If using cinema provided headphones, wipe down the cord, connector, and plastic head band. Foam earpieces can be replaced after each use.
- CineAssista Receiver – wipe down the receiver box and the gooseneck including the adjustable base.

Available Content for testing Encrypted Playback

As many cinemas have shut down for an extended period of time, keys for previously played content have expired.

Keys for content that is going to be played upon re-opening of the cinema are not yet available for your playback servers.

There is a growing concern among exhibitors, technicians, and dealers that equipment might not be in working order and would like to be sure everything is back up and operating smoothly before reopening. It is advisable to test encrypted playback as soon as possible in preparation to reopen (1-2 weeks before opening).

This will ensure that your servers and Dolby Atmos processors are operating correctly. If there is a problem, there will be time to work with technical support and/or get a replacement unit.

<u>Solution:</u>

As a service to our customers, Dolby is providing a piece of encrypted content and keys for your Dolby server to test that security is working correctly. To make this easy for you, we have generated playback keys for all* Dolby servers and posted them to our FTP site. All you need is the serial number of your Dolby Media Block.

Supported Media Blocks are:
- Dolphin
- IMB (used with ShowVault)
- IMS1000
- IMS2000
- IMS3000
- DSP100
- CAT862
- CAT745
- CAT1600 (Media Block in CP850; These keys will be used when paired with an IMS3000 in Server Mode)

If you are having trouble locating your server serial number, please use this document to help: link

* If you want to use this content with dual projectors in Security Manager/Link Decryptor (SM/LD) mode, please contact Dolby Support for this type of key. You will need to provide the serial numbers of the server media blocks and the projector certificates.

Content details are shown below:

Content Name:
DolbyEncrpytedContentTester_TST-2D_S_EN-XX_OV_71_Atmos_2K_INDI_20200430_DLB_SMPTE_ENC

Video: 2K compressed video track to make the delivery size small. You may see some small video issues, but this is normal. This content was designed to test that encrypted playback works

Audio: 7.1 main audio and Dolby Atmos (please note that this content can be used for testing on 5.1 or Dolby Surround 7.1 screens to ensure speakers and amps are working)

KDM: generated KDMs are good until the beginning of 2024

Content and Keys location:

Self-Service Portal:

Use a web browser to access: https://www.dolbycustomer.com/cinema/TestContentKdms/
Type in the serial number, or serial numbers (separated by commas) to download keys. A link to the content is shared at the bottom of the page.

Directly from our FTP site:

When using an FTP client: ftp.cinema.dolby.com
user: anonymous
no password
Note: Only use plain FTP (insecure) and not TLS.

When using a web browser, click this link: ftp://ftp.cinema.dolby.com/

Look in the folder called "Dolby_Encrypted_Content_Tester"

FTP root at ftp.cinema.dolby.com

```
04/26/2020 11:16AM     Directory  Certificates
04/02/2020 01:25PM     Directory  CineAsset_Evaluation
09/07/2017 12:00AM         3,418  dolby_communications_crl.crlpem
05/04/2020 07:32AM     Directory  Dolby_Encrypted_Content_Tester  ⬅
06/05/2017 12:00AM     Directory  DSP100_Upgrade_Keys
03/08/2018 12:00AM     Directory  DSS200_Upgrade_Keys
02/12/2019 12:00AM     Directory  Feature_Activation_DLMS
12/08/2015 12:00AM       192,515  Read_Me-Using_This_Site.pdf
```

Inside you will find folders for the content, and the keys:

FTP directory /Dolby_Encrypted_Content_Tester/ at ftp.cinema.dolby.com

Up to higher level directory

```
05/04/2020 07:32AM     Directory .
05/04/2020 07:32AM     Directory ..
05/04/2020 07:32AM     Directory Content
05/03/2020 11:24PM     Directory Playback_Keys
```

Inside the Playback_Keys folder, you will see folders by serial number range:

```
05/03/2020 07:40PM     Directory 360xxx
05/03/2020 07:45PM     Directory 361xxx
05/03/2020 07:50PM     Directory 362xxx
05/03/2020 07:55PM     Directory 363xxx
05/03/2020 07:59PM     Directory 364xxx
```

Locate your Media Block's serial number range in the list, then click into that folder to find and download the correct key for your server:

FTP directory /Dolby_Encrypted_Content_Tester/Playback_Keys/361xxx/ at ftp.cinema.dolby.com

Up to higher level directory

```
05/03/2020 07:45PM     Directory .
05/03/2020 07:45PM     Directory ..
05/02/2020 02:35PM          0 blank.txt
05/02/2020 06:21PM      5,636 DOLBY_ENCRYPTED_CONTENT_TESTER_361000.zip
05/02/2020 06:21PM      5,633 DOLBY_ENCRYPTED_CONTENT_TESTER_361001.zip
05/02/2020 06:21PM      5,644 DOLBY_ENCRYPTED_CONTENT_TESTER_361002.zip
05/02/2020 06:21PM      5,637 DOLBY_ENCRYPTED_CONTENT_TESTER_361003.zip
05/02/2020 06:21PM      5,641 DOLBY_ENCRYPTED_CONTENT_TESTER_361004.zip
```

Questions and Support

Dolby Cinema Support is available to help during business hours (except holidays). For critical or screen-down issues, we always have a support engineer on call who will return phone calls.

Portal: http://customer.dolby.com/Cinema/

Email: CinemaSupport@dolby.com

Phone: (always use the phone for critical issues):
Americas: +1-415-645-4900
Asia, China, and Pacific Rim: +86-400-692-6780
EMEA: +44-33-0808-7700
Japan: +81-3-4540-6782

Latin America:
Argentina: +54 11 5031 8725
Brazil: +55 11 4217 0358
Colombia: +57 1 489 8241
Mexico: +52 55 8526 2744