

Blu Disc Quick Start Guide in 10 minutes



based on the video on YouTube
(https://www.youtube.com/watch?v=0I_H6cuox0s)

by

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Contents

Tutorial “10 minutes Quick Start Blu Disc Studio”	5
Introduction	5
Two menu types: normal and popup.....	5
What does our tutorial bluray disc do?	6
Action diagram for the project	6
What must be there to compile a bluray disc?	7
Movie files	8
Menu files	8
Starting the project	11
Location.....	11
Video and audio	12
Menus	13
Basic project in Project Tree	15
Menu storage	16
Menu impression	16
Menu objects	17
Duplicating menus	18
Splitting one menu-of-all into several menus-of-parts.....	18
Retain only main menu buttons on “menu”	20
Retain only popup menu buttons in “Popup” menu	21
Retaining only audio options in extended “Menu options” menu	21
Retaining only audio options in extended “Popup options” menu	23
The final menus.....	23
Setting default buttons on each menu	25
Setting button actions.....	27
“Menu” menu buttons.....	27
Action for the “Play” button: method 1.....	27
Action for the “Play” button: method 2.....	28
Action for the “Play” button: method 3.....	28
Action for “Menu” menu “Audio” button.....	28
Actions for “Menu option” buttons	29
Actions for “Popup” buttons.....	31

Actions for “Popup options” buttons.....	31
Copy/Paste using the Action Matrix	31
Adding chapters (playmarks) menus	32
Creating chapters	32
Create chapter (scenes) menus	34
Set scenes in Popup menu	39
Simulate the project.....	39
Building the disc	41
Burning the disc	43
Nero Burning ROM.....	43
ImgBurn.....	44

Tutorial “10 minutes Quick Start Blu Disc Studio”

Introduction

On YouTube (https://www.youtube.com/watch?v=0I_H6cuox0s) you can find a tutorial movie that shows through screen-capture the steps to take to create a simple bluray project using Blu Disc Studio standard (not the Lite edition, though much of the steps are the same). The movie runs less than 10 minutes. But unless you know what it happening, it leaves you flabbergasted.

For that particular reason, this guide was made to provide the written explanation and some background information to give you a good start in using Blu Disc Studio Lite. This free edition is limited in that it does not provide animated menus or playlists which are the final part of the tutorial movie. It also doesn't allow you to have more than 32 movies in any blu ray disc compilation, each with a maximum of 4 audio tracks and subtitle tracks.

These restrictions are lifted (to the maximum bluray disc specification allows) in the commercial “Standard”, “MX” or “MX Pro” edition that you may want to buy once you get acquainted with the free Lite edition and want a more professional disc authoring. Information about the Blu Disc Studio products can be found at <http://blu-disc.net/index.html>.

There is a small deviation between the names of folders in the quick start movie and the downloadable files for this project. Most likely, some changes were made after the quick start movie was completed.

This tutorial follows the quick start movie but uses the names currently used in the sample project. The sample files can be downloaded from <http://blu-disc.net/examples.html> where you select the “Menu without video/audio tracks” (9,7 MB) and complement it with the movies themselves in “Video and audio tracks for example menu”.

Two menu types: normal and popup

At any one time only a single menu is shown on screen. When a button on a menu activates another follow-on menu, the earlier menu disappears.

Blu Disc Studio differentiates between two types of menus:

- menu – ordinary menu, shown on screen when no movie plays.
- popup menu – menu that “pops up” while playing a selected movie. A popup menu typically allows you to modify some settings of the movie playback (such as different audio or subtitle) or abort the movie playback and show some other menu.

Both menus have a movie playing in the background. For the popup menu it is clear: it is the selected movie that plays. For the ordinary menu it is a special (usually short) movie that belongs to the menu. The menu text and buttons are projected on top of it. If the menu is partly transparent, the menu movie can be seen behind the menu text and buttons. If the menu is filling the screen and is opaque, the movie is not seen but still heard.

What does our tutorial bluray disc do?

The sample project is a simple one:

- It has one main movie, showing how waves break on the coast.
 - the audio with the movie is either the original sound or a music track
 - there are no subtitles
- It has three menus. The main menu that allows one of the two other menus to show. Therefore the main menu has 3 buttons:
 - “play” the movie,
 - “audio” selection for original sound or music
 - the “original”/”music” selection is done through the second menu (called “menu options”)
 - “scene” selection: chapter displays of the main movie to select a particular scene
 - this third menu is generated automatically

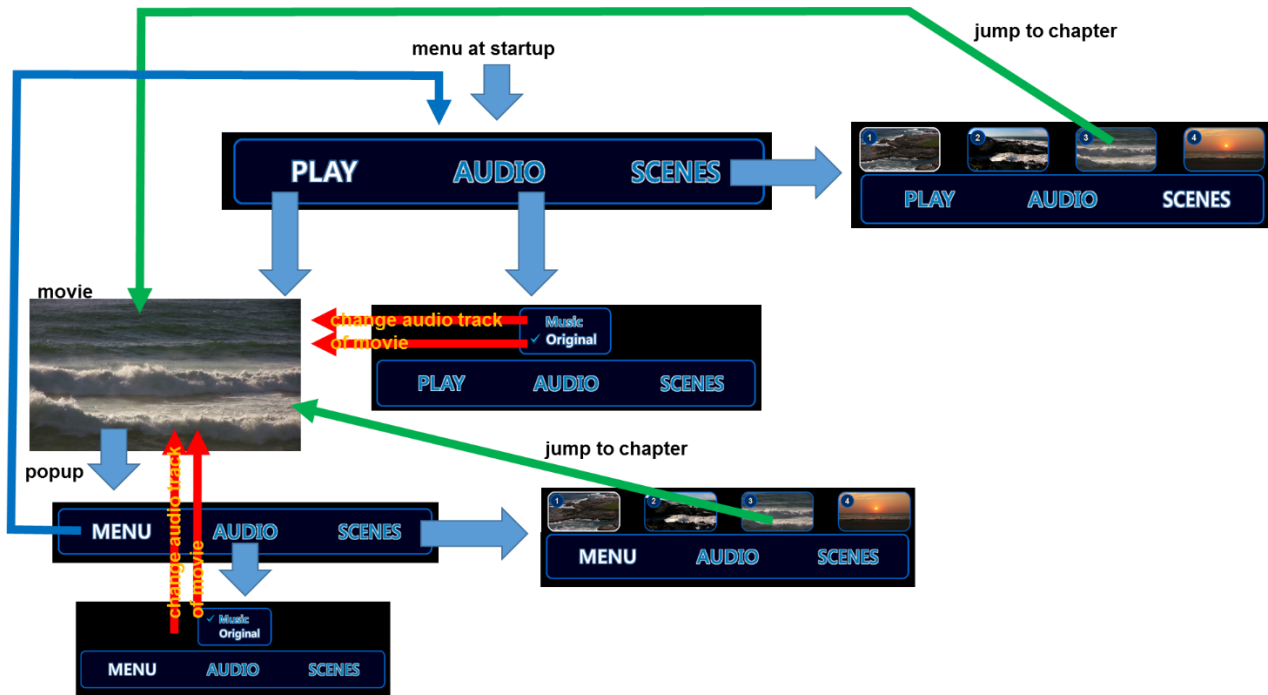
Audio can be selected, still “play” must be entered to start the movie.
- It has three popup-menus that can be displayed while the movie plays in order to change settings. It always starts with the “popup” menu through which two other popup menus can be shown. Therefore the popup menu has 3 buttons:
 - “menu” – interrupt movie and go back to the main menu
 - “audio” – change the audio selection to original sound or music
 - this change is indicated on the second menu, “popup options”
 - “scenes” – move to a selected scene/chapter of the movie. This is shown on a third popup menu that is generated automatically.

Action diagram for the project

If we want to make an action diagram of this simple disc, the following picture would give the rough impression of what we are after.

Remember, that only one menu can be displayed at any time. Any new menu replaces the earlier one on screen. If the second menu adds

something to the first one, it must replicate the entire first menu but any buttons on this menu simply become a picture. Only the buttons meant for the second menu are true buttons. This way it looks like the first menu is still there but enhanced with new buttons.



The picture shows how on the main “Menu” menu you can select between different buttons and when a button is activated (text shows up white) either another menu (for audio or scenes – blue arrows) is shown or an action (indicated by a green or red arrow) takes place that does something to the movie.

While the movie plays, the popup menu button on the remote control will show the “Popup” menu and again a button can be selected on this menu. When a button is activated (text coloured white) either another menu (back to “menu”, audio or scenes – blue arrows) is shown or an action performed (green or red arrows).

What must be there to compile a bluray disc?

For a disc, we need:

- the movies for main movie, extras and the menu backgrounds
 - use a demuxer such as tsMuxer to split a movie into its video and audio streams
 - possible subtitle streams in .srt or .sup format (not in this example)
- the menus and their buttons

- a main menu with 3 buttons “play”, “audio” and “scenes”
- an extended 2nd menu: if “audio” is selected to allow to choose between “original” and “music”. This extended menu disappears when “play” or “scenes” is selected.
- a to be generated “scenes” 3rd menu
- a popup menu with 3 buttons “menu”, “audio” and “scenes”
- an extended 2nd popup menu: if “audio” is selected to allow to choose between “original” and “music”. This extended menu disappears when “play” or “scenes” is selected.
- a to be generated “scenes” 3rd menu

Movie files

The video track allows for MPEG-2 (.m2v), H-264 (.264), H-265 (.265) and VC-1 (.vc1) type video tracks (those are the ones supported by the bluray standard).

The audio tracks allow for uncompressed LPCM (usually .wav), Dolby Digital in 2 track stereo or 5.1 surround (.ac3), Dolby Digital Plus (.ec3), DTS (.dts), DTS-HD High Resolution (.dtsHD) or DTS-HD MASTER Audio (.dtsHD). Many DTS formats all are stored as .dts files without distinction in file type.

The subtitle tracks allow for .srt format, .sup, BDN XML (.xml) or PES (.pes).

The tutorial uses an H-264 movie file with Dolby Digital audio and no subtitles.

Menu files

Acceptable menu files are either layered PhotoShop files (.psd) or single layer .png files, 32-bits (24+8 bits).

Note: The total size of all menus in the project must be less than 7900 000 pixels (not kB!). The adagio for any project therefore is “reuse”. Do not make 4 menus of 1920x1080 pixels (=4 x 2 073 600 = 8 294 400 pixels) as that will issue an error during simulation or project creation. If all menus look alike apart from a small picture, use 1 full sized black menu (1080x1920) and only the small pictures as additional images. Better still: use 1 full sized black menu background video with additional smaller menus on top of it. The movie takes no pixels. Also, L-shaped menus are better defined as two legs (vertical and horizontal) since all menus are stored as rectangles. The L-shape menu then has a lot of unneeded pixels in its surrounding rectangle with L along two sides of the rectangle.

The tutorial uses two PhotoShop files for the “menu” and “popup” menu that are shown below. Both are the most extended versions of each

menu. Parts of them may be invisible at some instances and only shown when a particular choice (“Audio”) is made. For that reason, these complete menus are duplicated and their duplicates are trimmed by removing the unnecessary elements.

But we start with two menu files in PhotoShop format that contain all text and buttons ever to see on any menu.

The layers within the PhotoShop file must adhere to a specific naming convention if buttons are to be recognized as buttons when the file is imported. If a layer has any other name, it becomes a picture part of the menu, not part of a button state.

The naming convention for each button layer is `btn:<name>:<state>`

- **btn** indicates it is a button layer. Must be typed literally
- **<name>** name of the button. Can be anything as long as it has no spaces or punctuation marks. E.g. SndMusic, Play
- **<state>** A single character, one of:
 - “N” for button shown in “normal” state
 - “A” for button shown in “active” state
 - “S” for button shown in “selected” state
 - “C” for button shown in “current” state

The minimum states that need to be present are N and S.

The A state shortly shows a button in a different form when the “OK” button is pressed on the remote control. Often there is no A state layer as the “OK” action is performed immediately when the OK button is pressed on the remote control.

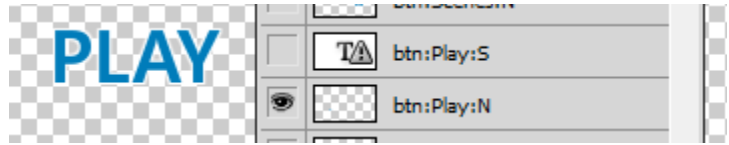
The C state is set automatically when the button is activated: it serves as a memory that this button was the last one pressed.

It is not a required state: if not given a visual clue it will not show. In our tutorial it is used to indicate the latest Audio setting (Music or Original) and when opening the Audio menu the last made choice is highlighted by a checkmark that happens to be the “current” state of the button.

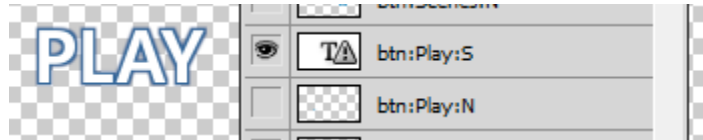
The checkered background of the menu file shown in PhotoShop means that this area is transparent and do not count as pixels within the total menu pixel number (that must remain less than 7 900 000).

- Note that both “Menu” and “Popup” menus look similar – the main “Menu” has a “play” button whereas the “Popup” menu has a return to “menu” button.
- The size of each button or menu picture as number of pixels is always the surrounding rectangle. So even a circular picture is still taking up the size of the rectangle in which the circle fits.
- The button texts differ slightly depending on their state.

- For example, the normal state of the “play” button is shown as blue text with white outline:

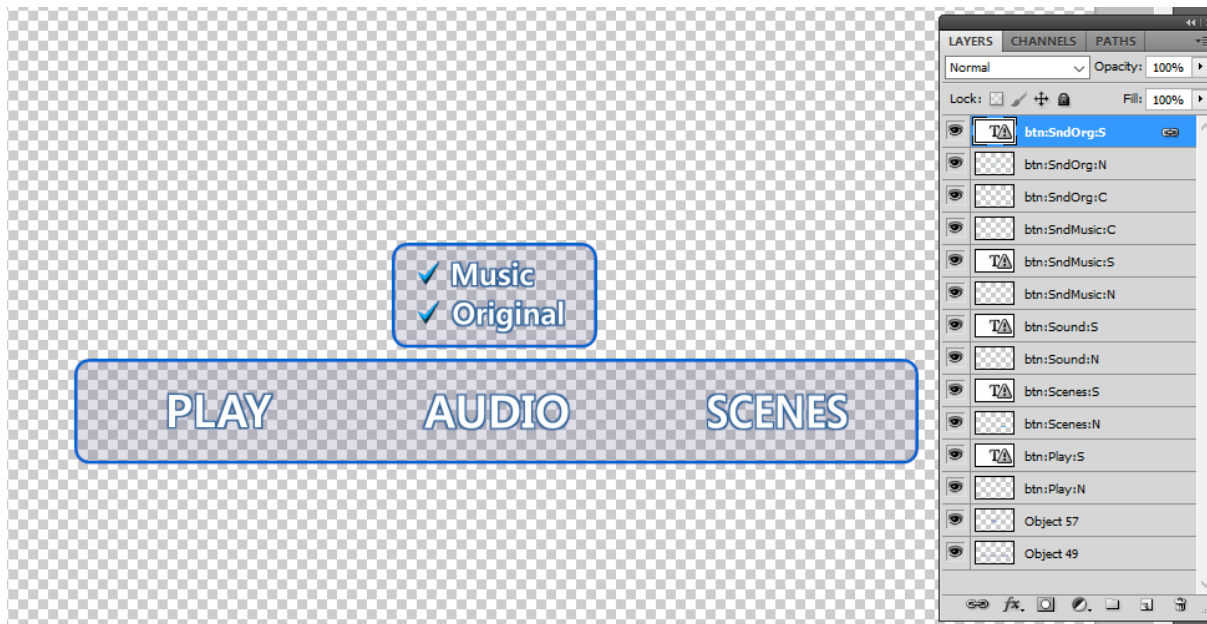


- the selected state of the button will show itself as an inverse image with blue outline.

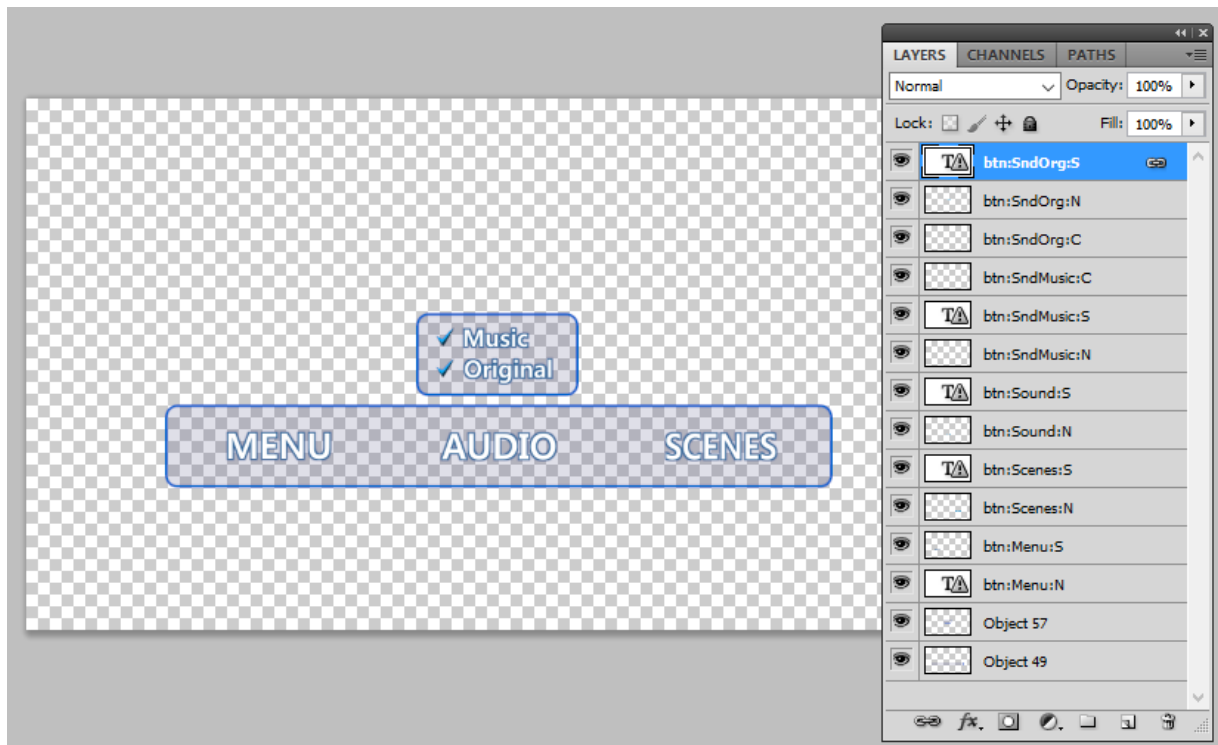


- The blue surrounding boxes are picture elements.

The complete menu files look like the images below. The checkmarks are the “Current” states of the buttons “Music” and “Original” buttons. Their “Normal” and “Selected” states are the words themselves (that will invert in colour when selected). Upon activation of one of these Music/Original buttons automatically the “Current” state is made visible.




menu.psd



popup.psd – identical to menu.psd but for the “Menu” button (instead of the “Play” button).

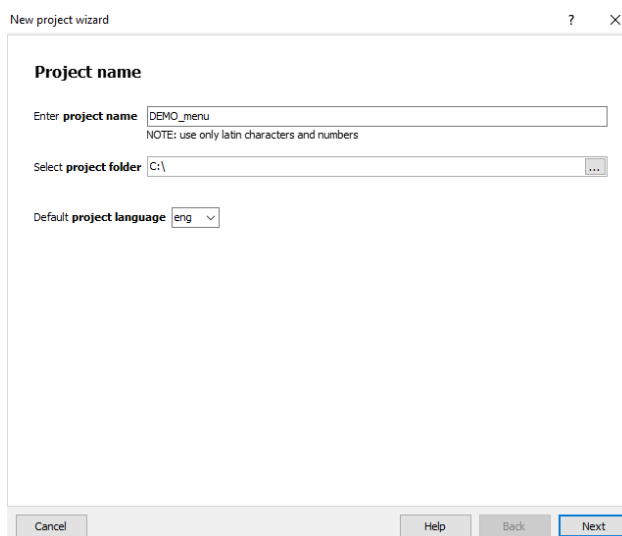
Starting the project

To start a project in Blu Disc Studio (from here on forwards abbreviated to BDS), you open the “New Project” wizard by clicking its button () or use the File > New Project menu option. To continue working on a previous project, use File > Open.

Location

The “New Project” wizard opens a window that first asks you a number of questions about the project in general:

- name of the project
- folder in which BDS must create the project folder (BDS creates additional folders here)
- default language to use for audio and subtitle tracks



The example uses the “DEMO_menu” project located at C:\ . This will create the project folder C:\DEMO_menu. On the site of BDS you can download a zip file with all necessary files for this project so you can re-do this entire tutorial yourself. By default it provides the completed project in folder C:\DEMO_menu. If you want to replay all steps yourself, extract the files into a different location.

Note: the project name is also the name of the project folder created under the “project folder” entry. For example, project “XX” in folder “C:\YY” results in a project folder C:\YY\XX.

Video and audio

Click “Next” for the following window. This asks for the main movie of the project and its audio and subtitle tracks. BDS requires any movie to be delivered in its separate components. In the BDS Lite version you need a freeware product like tsMuxer to demux your all-in-one video files into its separate streams.

Click on the “...” button and navigate to the folder where your movie is stored. The example provides it in *folder:\movie* (where “*folder*” is the top folder where you extracted the example files). For this tutorial I’ve copied the example files into C:\xDEMO_menu to be able to create the tutorial’s C:\DEMO_menu project.

New project wizard ? X

Main movie

Select main movie **video** track: C:\x\DEMO_menu\Movie\Movie.264 ...

Add main movie **audio** tracks

C:\x\DEMO_menu\Movie\Movie_Music.ac3
C:\x\DEMO_menu\Movie\Movie_original.ac3

Add main movie **subtitle** tracks

Chapter list file

Use:

- \movie\movie.264 (H-264 video) of a cliff with breaking water waves. Specify this in the main movie video track.
- \movie\movie_music and \movie\movie_original (.ac3) as two audio tracks – one with music only and one with the natural sound of breaking waves. Specify this in the second block for audio tracks by clicking on “Add”
- no subtitle files for the demo (otherwise use the third block and click “Add”)

When done, click “Next” to add the menus of the project.

Note: In the current main movie as well as all subsequent wizard windows, you can enter what is already present and known. If some files for movies or buttons are not yet there, simply leave those fields blank. You can always add information later – the wizard only sets up the basic structure of the project.

Menus

Menus consist of a set of .png files that are layered on top of each other or a single PhotoShop .psd file with separate layers. Each layer (or .png file) is fully transparent except for the menu parts that will show on screen. The menu structure was described earlier in section “Menu files”. Remember that the total number of pixels of all menus together must be less than 7 900 000 pixels! Reuse rather than duplicate identical parts and if a black background is needed: make a small silent black menu movie – that won’t take any pixels.

A bluray player can only display one menu at the time. This menu may be partly transparent to allow the background movie to be seen.

When a new menu is displayed, the old one disappears. If the new one looks like the old one, it contains all the elements (pictures, text and

buttons) of the old menu as a set of pictures. The new menu only has its own buttons that are active as buttons.

If you consider the screen image as built up from a stack of layers, the very bottom layer is always a background menu movie. The menu buttons are displayed on top of this background menu movie in higher layers.

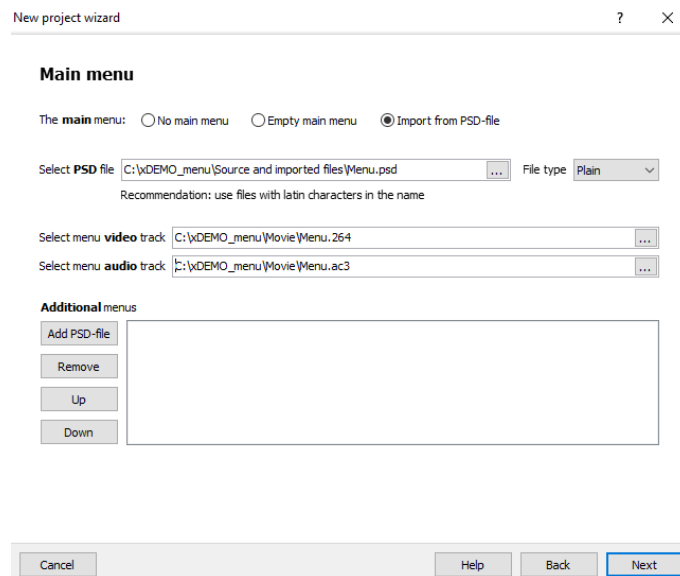
In this tutorial the menus are stored in two PhotoShop .psd with layers

- \Source and imported Files\menu.psd
- \Source and imported Files\popup.psd

Both menus contain all possible buttons and options. Once imported, we will clone them and personalize each menu by removing any button (changing their appearance into a picture) not wanted or needed.

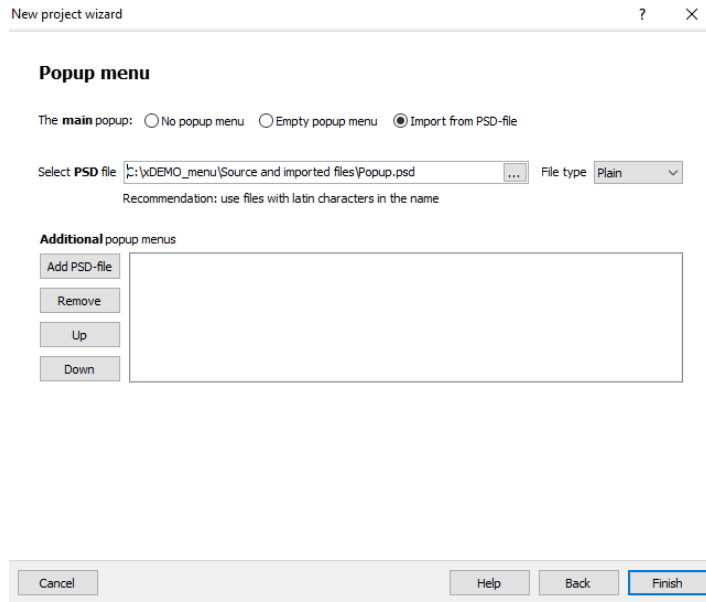
For the main menu:

- select the “Import from PSD-file” option
- navigate to the \Source and imported Files\menu.psd file
- indicate “plain” for the file (and not PS Designer)
- use as background movie \movies\menu.264
- use as background movie sound \movies\menu.ac3



When done, click “Next” to repeat these steps for the second menu, the popup menu. This menu will be shown while the movie plays and is shown as “popup” over the movie.

A popup menu therefore has no background video as it is the movie already playing. Therefore the PhotoShop file contains only layers for the buttons.

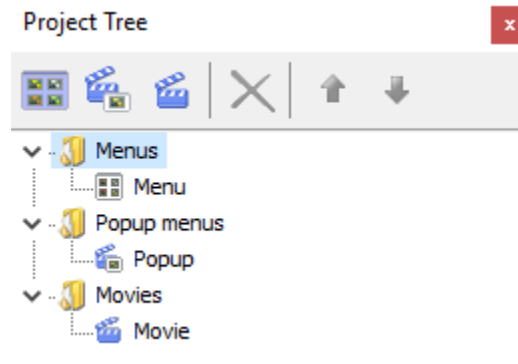


Click “Finish” to complete the entries.




This will now generate the project. Additional menus and movies and be added later.

Basic project in Project Tree

Upon completion of the wizard, a skeleton of the project is created and is shown in a window called “Project Tree”. When not visible, you can display it by selecting menu View > Project Tree (or press F3 button).



You have added one main menu “Menu”, a popup menu “Popup” and a movie called “Movie”.

- Right clicking on “Menus”, “Popup Menus” or “Movies” headers allows you to enter additional menus, popup menus or movies. This is useful if you make a disc consisting of several episodes of a series of movies.
- The same is achieved by clicking on the icons at the top of the Project Tree window (  ).

(The Lite version does not show an additional entry, “playlists” and an additional icon for it – they are not used in this tutorial).

Menu storage

All files imported to create menus and buttons are saved as a set of .png files with specific names by BDS. Each menu has its own folder (with menu name) in the project folder. The creation happens automatically.

In the picture below you can see the two menus (Menu and Popup) imported and the folder created for “Menu” and some of the generated button files like btnPlayN.png for the Play button in normal state.

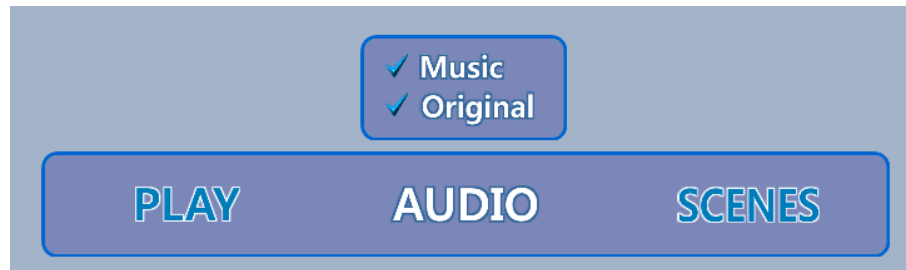


If you make any change to any of these generated files, that change is immediately reflected in the BDS menu.

Menu impression

To get an impression of what the menus look like open the “Designer” window (View > Designer or press F2). Select an item on the Project Tree window and the Designer window synchronizes with the selection and shows that item the way it will look on-screen.

Below you can see what the “Menu” menu item looks like.

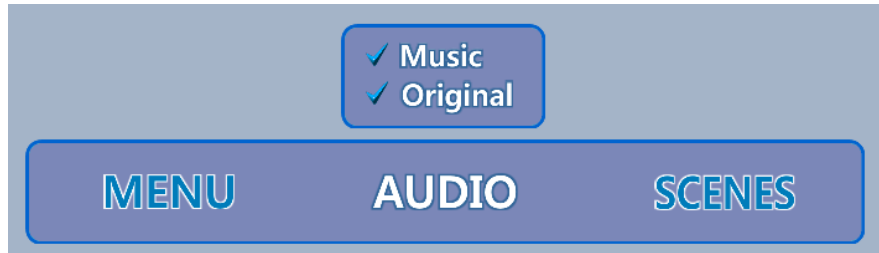


As you can see it has all button elements as well as surrounding box pictures. The top box with “music”/”original” must only be shown when “audio” is selected. This extended audio menu has both the Normal and Selected states as well as the checkmark Current state.

The main menu should display only “Play”/”Audio”/”Scenes” buttons. Another menu (“Menu Options”) should display the extension box with “Music”/”Original” also, but at the same time show the main menu as a simply picture.

The “Popup” menu looks similar – but note that the button “Play” has been changed for “Menu”. During editing of the menus care was taken that identical words and items overlapped precisely. Like the “Menu”

menu the audio options only should show when “Audio” is selected, so we need to split this menu into two menus also (“Popup options”).



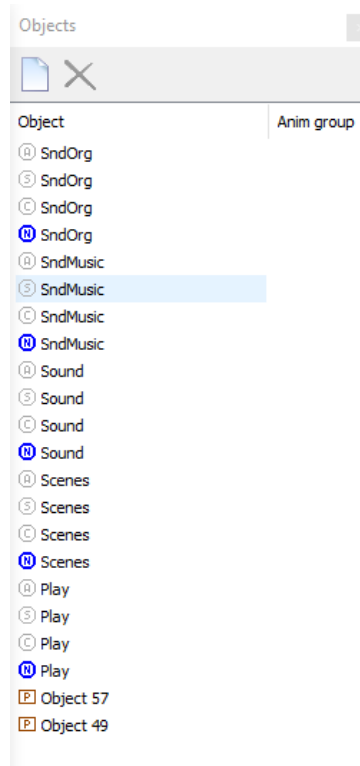
Menu objects

A menu consists of a number of objects. Objects are buttons (and their various states) and background images. They are shown in the “Objects” window (View > Objects or press F4). Objects shown in the Objects window synchronize with the selected item on the Project Tree window. If you click on one of the objects, the Designer window highlights the object in question. And vice versa: click on the surrounding “play” box and Objects tells you this is the “Object 49”.


As an example, the objects that are part of the “Menu” menu are shown below. The blue icons show the “normal” state of the various buttons on this menu. The “P” entries are static background pictures such as boxes, lines and plain text.

The “Normal” state of a button is always displayed on screen. The “Selected” state image is shown on top of it. That means that if there is a transparent area in the selected state button image, the normal state image will shine through.

The “Current” state of a button is automatically activated when the button is activated after selection. It serves as a memory of what button on the menu was last pressed on the remote control. This way in our tutorial, we can see what audio option (Music or Original) was last chosen.



Note: what button states are shown on the Designer window and have an active colour (not greyed out) in the Objects window depends on which states you decide to make visible. The “Show normal”, “Show selected”

and other buttons () determine this. By default only “Normal” states (purple or blue dot) are shown. When buttons have several states defined and all state pictures overlap, it is useful to select only a single state to be shown in the Designer window. Showing all is useful if you want to align various states of a button on top of each other.

Duplicating menus

Splitting one menu-of-all into several menus-of-parts

The two menus “Menu” and “Popup” imported have several buttons too many. Only when “Audio” is selected we should see an additional part of the menu displaying “original” and “music” buttons. In fact, this is a new menu activated from the main menu. We call these new menus “Menu options” and “Popup options”. Those menus we will now create. When the viewer activates these menus through remote control, it looks like the old menu is still there but with some additional buttons. It isn’t in reality: the newly selected menu just happens to be identical to the previous one and has a few bits more to show.

What we need to achieve is:

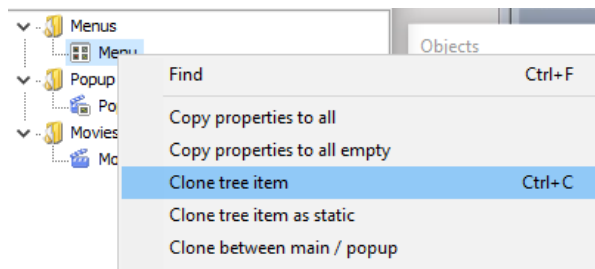
- One main menu named “Menu” has only the main buttons “Play” (or “Menu” in the popup case), “Audio” and “Scenes”

- A second menu named “Menu options” has only the Audio selection buttons only but retains the rest of the main menu as a picture.

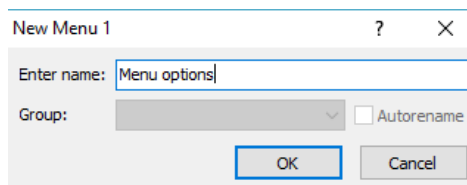
When “Audio” is selected in the “Menu” menu, the menu seems to extend, making a box with buttons for “original” and “music” options visible and available

Both imported menus are duplicated first and then pruned for items not needed.

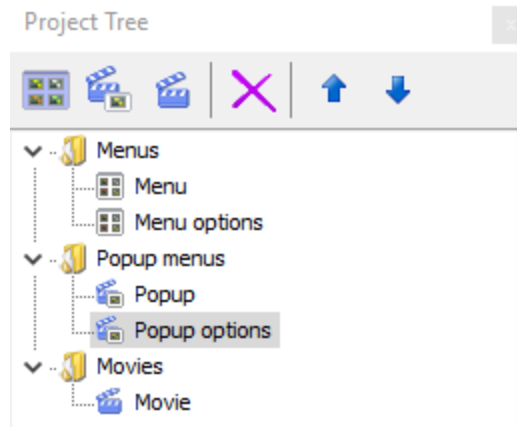
To copy a menu, simply select the menu in the Project Tree window, right-click and select “clone tree item” (or press Ctrl/C). This makes an exact duplicate of the menu (with all its buttons) but under a different name.



Enter the name under which this duplicate entry will be known. Enter “Menu options” as menu name. In the end, this menu should only have the active buttons for the audio options: original or music.



Repeat the same procedure for the popup-menu and call the duplicate menu “Popup options”.



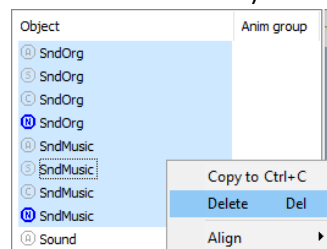
Retain only main menu buttons on “menu”

The original “Menu” has everything and so does its clone “Menu options”. In the “Menu” we want to remove the extended elements (box, “original” and “music” entries). The buttons on the “Menu” are shown below. The parts not shown we need to remove from the clone.



To do this:

- select “Menu” in the Project Tree. This shows all objects in the Object window
- Select all Snd* (sound) button objects (select and keep Ctrl key pressed on each item; alternatively select first one, keep Shift pressed and select the last item))
- delete these button states (selection right click > delete or press the <delete> button)



- Select the remaining box in Designer window. This highlights the “Object 57” picture in the Objects window.



- Delete the box item

The “menu” now looks like the picture below with three buttons “play”, “sound” (displayed as “audio”) and “scenes”.



Retain only popup menu buttons in “Popup” menu

This same process is repeated for the “Popup” menu where the entire expanded audio box is removed and only the “menu”, “audio” and “scenes” buttons remain.

You can use the same process as described above or use a different approach. Both result in the same situation – use whatever method you find most convenient or logical. We will show you the other method of deleting menu elements.

- Open the Designer view window
- Select the “Popup” menu in the Project Tree window. This synchronizes with the Designer view and shows the “Popup” menu in Designer View
- In Designer view, select all items to be removed (click each one while keeping Ctrl key pressed). This highlights multiple objects in the Objects window (but only the most recent one in Designer)
- Press <delete> key to remove objects

The resulting “Popup” menu looks like the image below with its three buttons.



Retaining only audio options in extended “Menu options” menu

When in the “Menu” menu the “Audio” is activated, an extended menu should be shown above the “Audio” button to allow selection of “original” or “music”. In reality, the menu is not extended: it is replaced by a new one that looks like the old one (which has all its buttons converted to a “picture”) plus the additional parts (box and buttons).

It is important to understand the difference between the “selected” and “activated” state of a button. Moving the cursor on the menu screen with the remote control arrow buttons to “Audio” makes this button enter the state “selected”. All other buttons are in state “normal”. By pressing the “OK” button on the remote control, the “Audio” button also becomes “activated” – it executes whatever action is defined for it. If instead we move on to another button such as “Scenes” or back to

“Play” the “Audio” button changes state from “selected” back to “normal” and nothing happens.

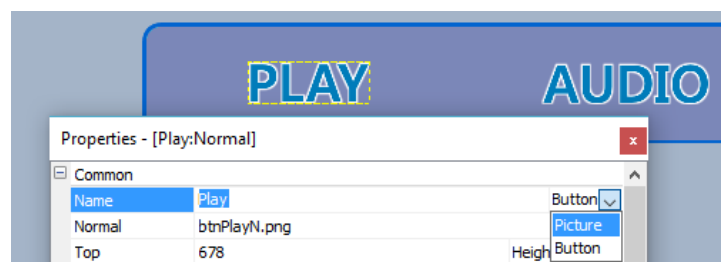
When “Audio” is activated, we want to display the “Menu options” menu. This means we switch from the “Menu” menu to “Menu options” menu. Because the “Menu options” menu looks exactly like the “Menu”, the viewer will think nothing changed except that the box with audio options became visible.

These two audio options should be the only buttons active as long as “Menu options” is shown. This means that any button cloned from the “Menu” menu and not part of the audio box, must become a picture on the “Menu options” menu. The only buttons that should remain are shown below.



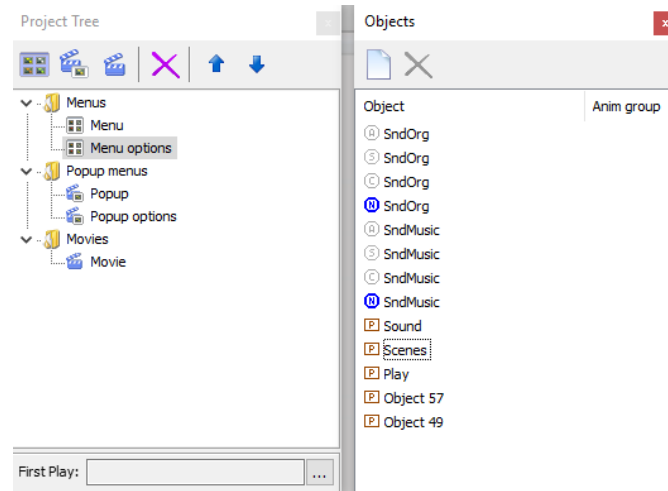
This means that in the “Menu Options” menu we convert the cloned buttons for “play”, “audio” and “scenes” into pictures by taking the following steps:

- Select the “Menu options” menu in the Project Tree. This synchronizes the Designer window to show that menu
- Select a button object on the Designer window that needs to be changed into a picture
- Go to the Properties window (View > Properties or press F11) that shows the selected button
- In the “Name” row item change the function “Button” (at far right) into “picture”
- Repeat this for all three buttons of the “Menu” (“Play”, “Audio” and “Scenes”) that are now pictures in the “Menu options” menu.



The entire “Menu options” menu has now become a static image with only two buttons left (“original” and “music”).

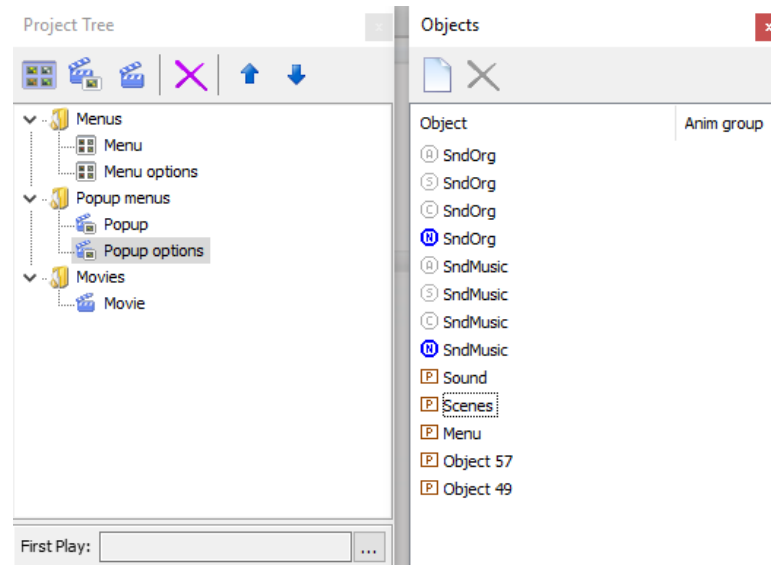
The objects window for the menu reflects this. The “Snd*” objects are the two remaining audio option buttons, the rest has been converted to “P” pictures.



Retaining only audio options in extended “Popup options” menu

The same procedure as for “Menu options” is performed on “Popup options” items.

All buttons “Menu”, “Audio” and “Scenes” need to be converted to pictures – only the “music” and “original” button remain.



The final menus

We now have four menus:

- Menu – main menu shown at start. Has “Play”, “Audio” and “Scenes” buttons, audio options box is absent

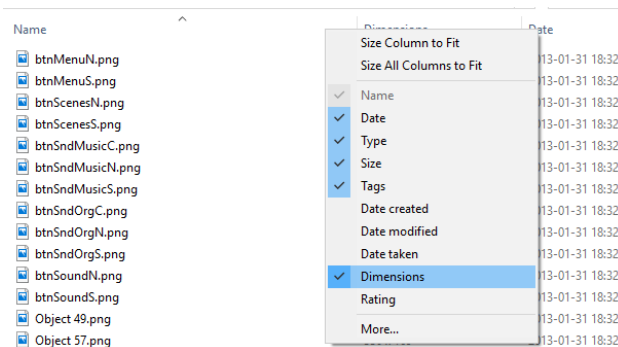
- Menu options – extended main menu shown when “Audio” is activated and showing “original” / “music” as buttons. The rest of the menu (looking like “Menu”) is a picture.
- Popup – menu shown while playing the main movie. It has “Menu”, “Audio” and “Scenes” buttons
- Popup options – extended popup menu shown when “Audio” is activated and showing “original” / “music” as buttons. The rest of the menu (looking like “Popup”) is a picture.

Note that by cloning menus and removing unnecessary parts, you also reduce the total number of pixels of all menus combined. This number must remain below 7 900 000.

For advanced users, the cloned menus contain several identical image state copies of the “Audio” and “Scene” buttons as well as surrounding boxes. If you’re pressed for pixel space, you can modify the properties of the images for each button to point to one copy of it. This allows you to remove all other identical copies of the button state image in all other menu folders.

On Windows Explorer, you can show the number of pixels by right clicking on an Explorer right hand part header where usually name, size and date of any file is given. The right click allows you to add or remove additional informative columns on the files. In our case, we want to add the column of “Dimensions” to see the pixel width x height information.

By dragging the header “Dimensions” you can display the column before some others. In the picture below, we showed it at first column after the file name.



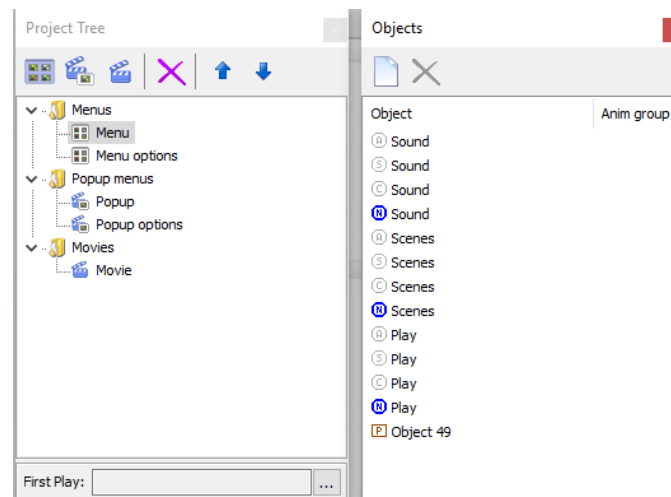
Name	Dimensions
btnMenuN.png	211 x 57
btnMenuS.png	213 x 59
btnScenesN.png	227 x 58
btnScenesS.png	229 x 60
btnSndMusicC.png	36 x 38
btnSndMusicN.png	133 x 42
btnSndMusicS.png	135 x 44
btnSndOrgC.png	36 x 38
btnSndOrgN.png	181 x 53
btnSndOrgS.png	183 x 55
btnSoundN.png	236 x 58
btnSoundS.png	238 x 60
Object 49.png	1356 x 169
Object 57.png	330 x 169

Setting default buttons on each menu


It is usual to have buttons ordered from top to bottom and left to right. When creating a menu this may not always be the case automatically. It depends on the order in which .png files or PhotoShop layers are imported into the project.

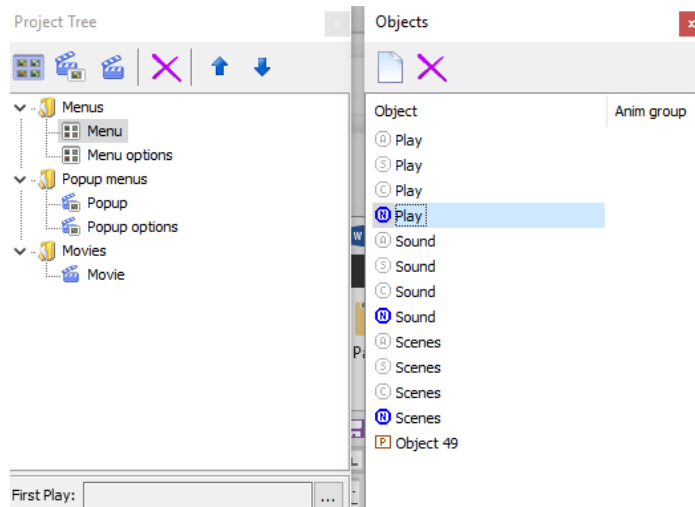
BDS uses the first button object in the Objects list of a menu, as the default button. This is the selected button when the menu opens for the first time (after that “default” is the button last activated on the previous time the menu was active).

For the “Menu” the left most visible button is “Play” and should be the default button. But it is actually the last one in the object list. We need to rectify this and make “Play” the first one.



To do this:

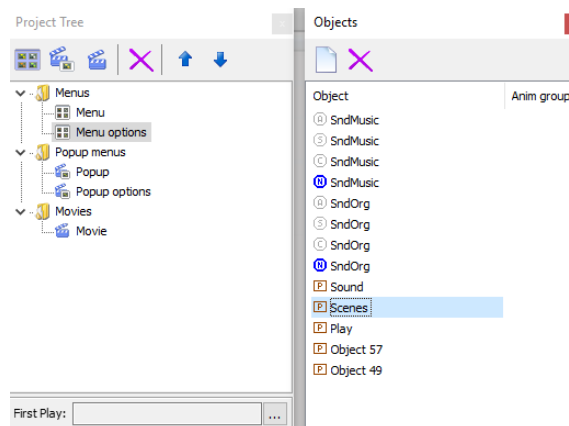
- select the “Play” button in the Designer window
- click on the “Object top” icon () (or press Alt / Home)



Now “Play” is top of the objects list and therefore the default button for the “Menu” menu. You may shift the position of the other buttons too using the up/down arrow buttons on the BDSL menu bar.

In the “Menu options” menu we have a similar problem: here we must correct the order for “Music” and “Original” to ensure “Music” as top entry is the default when the menu opens:

- Select “Menu options” in Project Tree
- Select “Music” button on Designer window. This selects “SndMusic” on the Object window
- Click on “Object Top” icon. This makes “SndMusic” the first button on the Object window.



To make sure the other menus follow the same procedure, repeat this for them:

- Select “Popup” menu and set the “Menu” button on top
- Select “Popup options” menu and set “Music” button on Designer window on top (or SndMusic button in Objects)

Setting button actions

Each button should perform an action depending on what key we press on the remote control. This can be navigation (moving to a different button, changing which button is currently “selected”) or action driven (by pressing the “OK” button on the remote control when a button is selected).

“Menu” menu buttons

The “Menu” buttons “play”, “audio” and “scenes” are assigned actions:

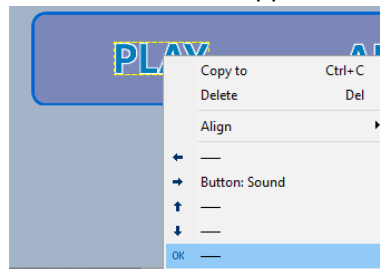
- if “play” is activated, the “movie” is played starting at chapter 1
- if “audio” is activated, the “Menu options” menu is displayed
- if “scenes” is activated, a special scenes menu (will be built later – see section “Create chapter (scenes) menus” on page 34) is displayed

Action for the “Play” button: method 1

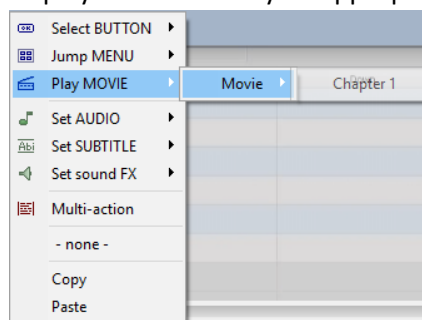
There are several ways to achieve the goal. We will show you how to do it for one button (“Play”) – duplicate these steps for all other buttons.

Take these steps:

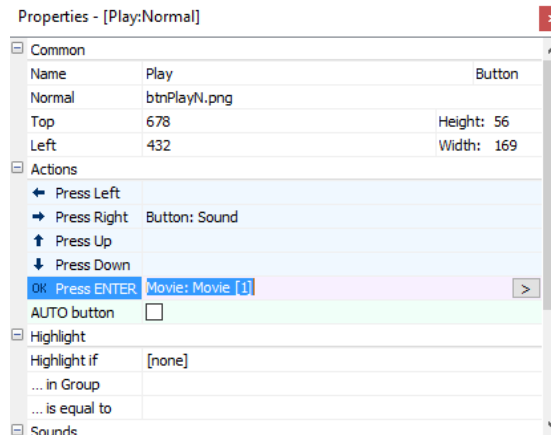
- Select the “Menu” menu in Project Tree
- From the Designer window select the “Play” button
- Right-click opens a menu from which you select the “OK” option that defines what happens if “Play” is activated



- “OK” should start the movie playing. (For other buttons the display of a menu may be appropriate).

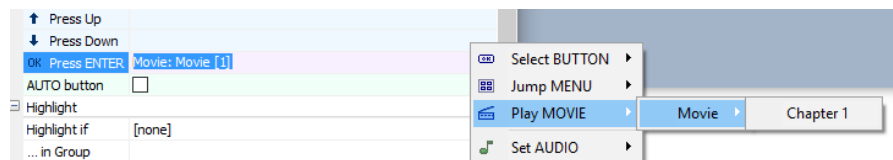


The result of this choice is displayed in the Properties window for this “Play” button.



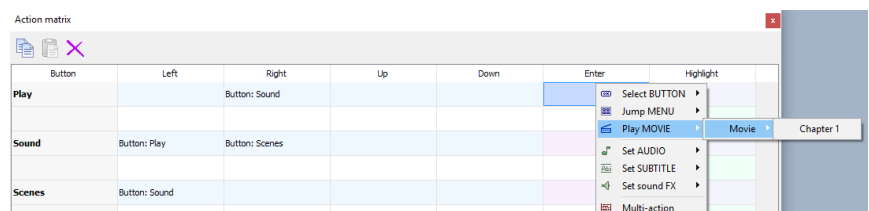
Action for the “Play” button: method 2

Rather than using the Designer window to assign an action, you can also select a button from the Objects window. The Properties window synchronizes with the selected object. The “Press ENTER” row allows to specify what to do. If you click on the “>” button at the right, the same selection menu as with method 1 pops up to define the action.



Action for the “Play” button: method 3

A third way of assigning an action to a button is to use the “Action Matrix” window (View > Action Matrix or press F8).



- Select a menu in Project Tree
- The Action Matrix synchronizes with the menu and shows all buttons of the menu
- Select the “Play” button row and right-click in the cell for “ENTER” column
- This opens the action menu. Select “Play movie” for “movie” to start at “chapter 1”

Action for “Menu” menu “Audio” button

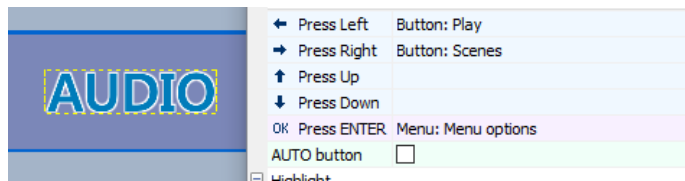
The three methods outlined work for all buttons. The “Audio” button should open another menu, the “Menu options” menu. This replaces the

“Menu” menu but because it looks identical to it, the viewer thinks only an additional box is shown with two audio select buttons.

Taking method 1:

- select “Menu” menu in Project Tree
- select “Audio” button on Designer window
- right click on “Audio” to open dropdown menu
- select “OK” state
- select “Jump Menu” > “Menu options”, default button

The result is shown in the “Audio” button properties: “Press Enter” opens Menu “Menu options”.

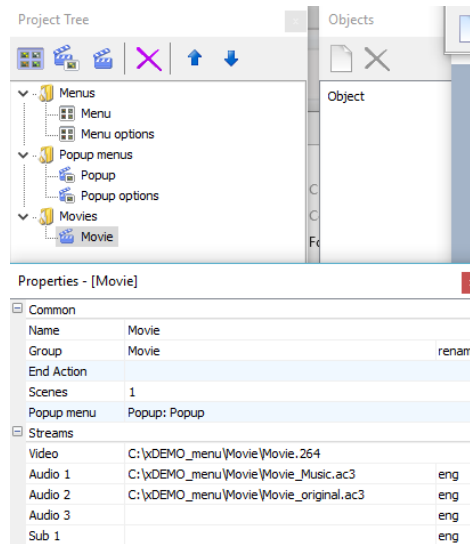


Actions for “Menu option” buttons

The new menu has two buttons: “music” and “original”. These must be assigned to select from the audio tracks:

- “Audio (1)” for “music”
- “Audio (2)” for “original”

The tracks correspond with the assignment of the audio tracks when the project was created. For additional movies, a new movie entry is made in the “Movies” section and the specific audio track order is specified there. Showing the “movie” properties of our main movie shows the order too.




When the “Music” button is selected in the Designer window, it can be set to select the first audio track by the proper popup menu selections.



The same procedure is followed for the “Original” button (using Audio 2).

Next we want to remember the choice made by activating “Music” or “Original” by leaving the “Current” state button image visible. This state is shown next to the “Music” or “Original” word as a checkmark.

To make this visible, you need to revisit the show the “Current” state on the Designer window by activating the green state button on the BDS menu bar ().

Click on the checkmark next to “Music”. In the properties window of the button you set the values for “Highlight if”, “Group” and “value”.


OK Press ENTER Set audio: Movie [1] (eng)	
AUTO button	<input type="checkbox"/>
Highlight	
Highlight if	Audio
... in Group	Movie
... is equal to	1

The checkmark should “Highlight if” the “Audio” stream is selected in group “Movie” with value “1” (which corresponds with audio track 1).

The checkmark for “Original” must be set to highlight if “Audio” stream is selected in group “Movie” with value “2” (which corresponds with audio track 2).

When the menu button “Music” or “Original” has been given a value to set the audio to a particular track, the “Highlight if” is already filled in. When you compose the menus and leave adding the real movies until later, you may have to fill in these values manually.

The “group” item is something not used in this tutorial but each movie added to the movie list can join to belong to the same group. Any change in audio or subtitles set for that group applies to all movies that are part of this group. By default BDS puts each movie in its own group.

If “Current”, “Selected” and “Normal” states need to be given their own position, you can move each state manually in the Designer view provided you have unlocked their fixed relative position using the menu button “Move whole button” () on the project menu bar.

Actions for “Popup” buttons

The same procedure used for the “Menu” menu is also used for the “Popup” menu that also has the “Audio” button that starts the “Popup options” menu.

The “Menu” button on the “Popup” menu must be assigned to jump to the “Menu” menu so a playing movie can be stopped and control is returned to the main menu.

Actions for “Popup options” buttons

The “Popup options” menu has the same two buttons “Music” and “Original” as the “Menu options” and must be assigned the same actions. It also has the two checkmarks as “current” states that must be highlighted when a menu choice is activated.

Copy/Paste using the Action Matrix

In cases like this, where identical actions must be defined for buttons on different menus, it is often handy to use the “Action Matrix” window. You select the action for a button in one menu (copy) and then select

another menu and paste the action into the right cell for a button on that menu.

Adding chapters (playmarks) menus

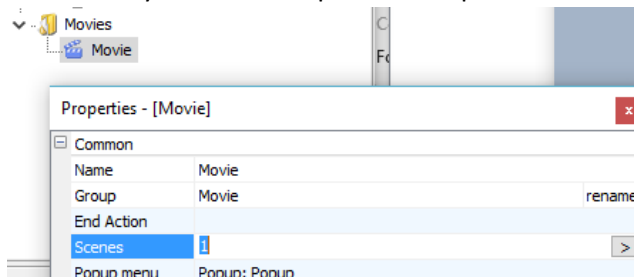
Creating chapters

A movie can be split in several chapters to allow the user to quickly jump to a significant scene. These scenes can be handpicked or generated automatically (like after about every 3 minutes). BDS allows both ways of doing it.

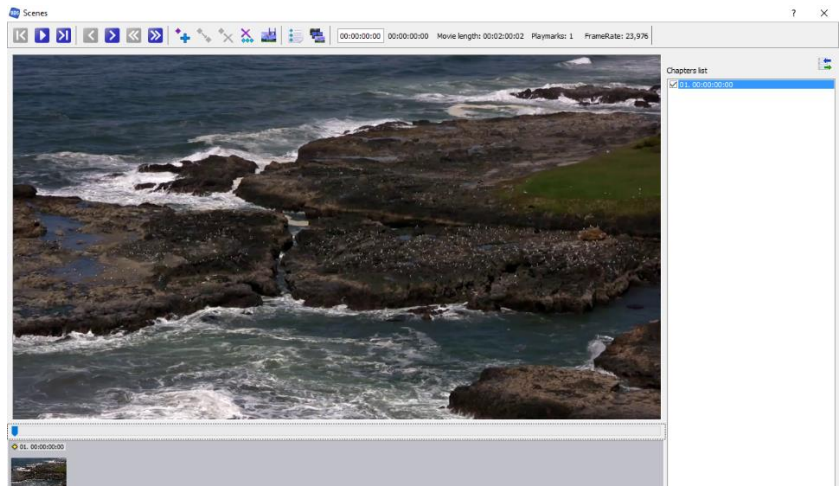
There is always a chapter at the very start of a movie (BDS does this automatically) but it is useful to have one at the very end (you must specify this yourself). The latter allows the viewer to jump to the very end of the movie and do whatever comes next. This may be back to a menu but may also start another movie. What happens is defined in the “End Action” property of each movie.


To create a chapter or set of chapters, the movie must first be opened. If no chapters yet exist, BDS starts inspecting the file first.


- Select a movie in the “Movies” list of the Project Tree
- In the properties of the movie select “Scenes” and press on the “>” button at the far right end.
- The movie is inspected first or the chapter window opens immediately with earlier specified chapters.




- After inspection, the “Scenes” windows opens showing the current chapter list (chapters are also referred to as “playmarks” by BDS)

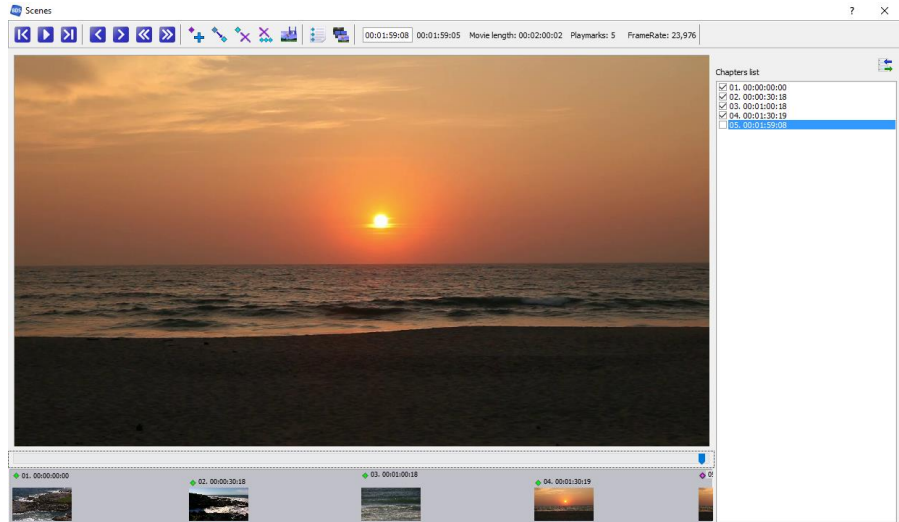


It may show only the opening chapter 1. By using the slider underneath the movie frame, additional scenes can be selected and added using the “Add playmark” icon () or press “Ins” key.

Chapters can be generated automatically using the “Generate playmarks” icon () or press Ctrl/M. Chapters are always added to any already existing chapters, so you may want to delete old ones first.

Note: whether hand-set or generated, modify the chapter setting to ensure it is set on a key frame boundary. Key frames are complete pictures whereas all other frames only contain changes of the picture compared with the key frame. Only key frames allow to start a scene playing correctly with a full image. You find the next key frame by clicking on the “next key frame” button  or press Alt/Right-arrow.

Without any further work, these chapters can be used on a remote control using the |< and >| buttons. There is currently no special menu to select a scene. Often this suffices if a viewer wants to jump forwards or backwards while running a movie. If a menu is needed to display the individual chapters, see section “Create chapter (scenes) menus” on page 34.



For the short example movie, manually chapters were set on key frames after every 30 seconds. The final chapter at the end is not normally shown in scene lists – therefore the chapter list displayed at the right of the movie frame has the final entry unchecked.


You return to BDS main interface by closing the menu window by pressing on its “X” button at the top right hand corner. The “Scenes” counter of the movie properties is updated to reflect the current number of chapters defined.

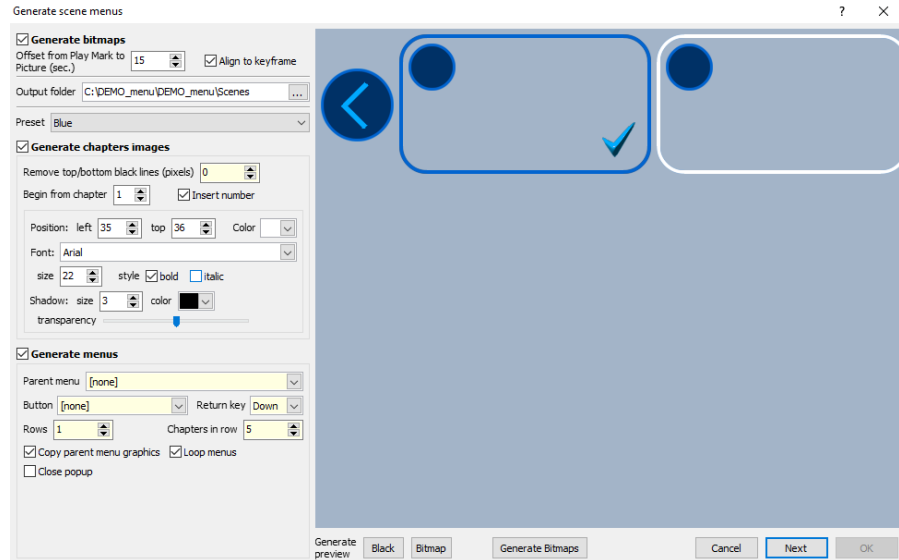
(If you automatically generate chapters you always get two more than you specify: the first and last chapter are not counted as generated, yet they are chapters).

Create chapter (scenes) menus

BDS allows you to generate a chapter menu where each chapter image becomes a visible small button you can select and then jump to that chapter in the movie.

For this to work, all images of all chapters must first be saved in a special folder not used for anything else. Unlike the Quick Start video where this is done chapter-by-chapter, it can be done in one swift sweep once the chapters are defined as we did in the previous section.

To generate images, open the “Scenes” window and press on the “Generate Scenes” button () or press Ctrl/S. This opens the “generate scene menus” window.



The left hand part of the window is important.

- check “Generate bitmaps” (creates screen dumps of chapter images in the movie)
- check “Generate chapter images” (uses the screen dumps to create chapter buttons)
- check “Generate menus” (uses the chapter buttons to fill the scenes menu that is automatically entered in the menu list of the Project Tree window)

The right hand part shows how each chapter image is framed and numbered. The currently selected one is highlighted with a white border. If the chapters don’t fit, a follow-on menu is created and linked using the > and < buttons.

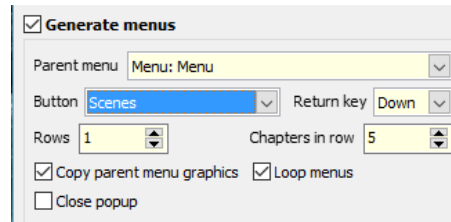
With these three generating checks in place, the generation of images as well as menus for the chapters becomes fully automatic.

- specify the output folder where the chapter images are stored. A suggestion is already made as empty subfolder within the project folder
- Click on the “Generate bitmaps” button at the bottom. This creates bitmaps of the chapter points selected in a subfolder \bitmaps under the selected output folder

Now it is time to generate the scene menus. You need to specify in the left column how many rows and how many chapter images per row are to be shown. In this short movie 1 row with 5 chapters or less suffices.

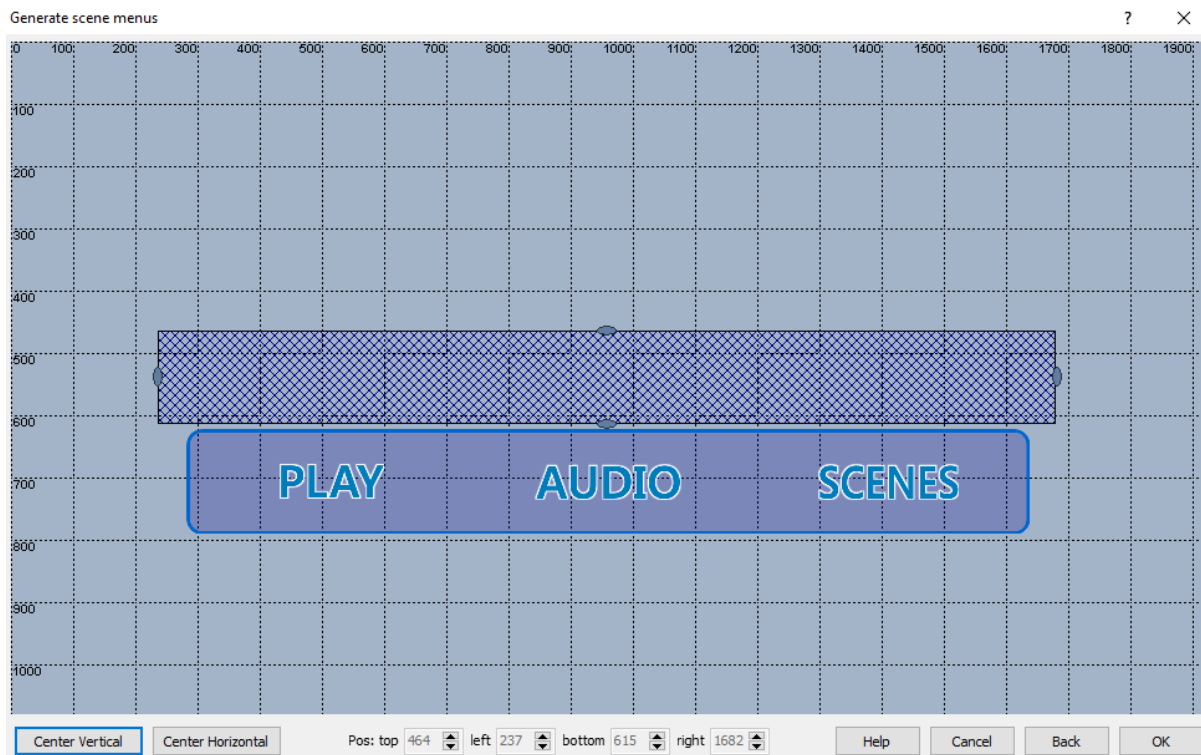
Also you need to specify where this scenes menu is accessed from. We will have to repeat the steps twice: once for Parent menu = “Menu” and once for Parent Menu = “Popup”. In both cases these scene menus are

shown when the “Scenes” button is activated. You may wish to change the “Return key” value. By default it says that if the down arrow is pressed on the remote control, the “Scenes” menu disappears and the parent menu is displayed again.



After the bitmaps have been generated, click on “Next” to specify the space on the menu where to show the chapter images. The indicated area is shown as layer on top of the menu through which it is accessed.

You can make the area as big or small as you like – they will be shown either over the menu movie (when “Scenes” button is selected from “Menu” menu) or over the playing movie (when “Scenes” button is selected from “Popup” menu). This second “Generate scene menus” is precisely 1080 x 1920 pixels in size – the HD size of a bluray picture. But only the hatched block that will accommodate the chapter buttons will actually become the size of that menu.

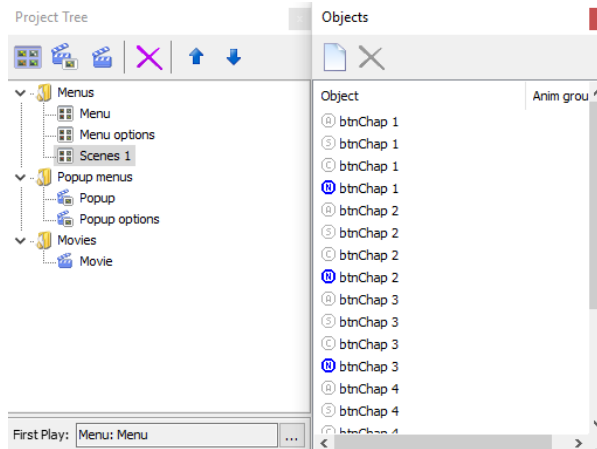


Modify the display size (hatched blue) by pulling on its handles displayed on all sides. The picture above shows how the scenes bar is shown on

the “Menu” menu above the “Menu” buttons area. By adjusting the size to fit the box of the “Menu” it looks a bit nicer. Special buttons like “Center horizontal” or “Center vertical” as well as notching the shape pixel by pixel using the arrow keys of the keyboard, allow you to position the scenes menu exactly.



When satisfied click on “OK”. A scenes menu is now generated and inserted in the Project Tree list of menus. The buttons that jump to a specific chapter are also generated and entered in the Objects view of the Objects window.



The Designer view shows how the menu will look eventually when the “Scenes” button is activated. You can change the appearance by modifying the “Generate menus” data. Here for example, we can make the chapter scenes slightly better spaced out by specifying to have 4 chapters on a row instead of the initial five specified.



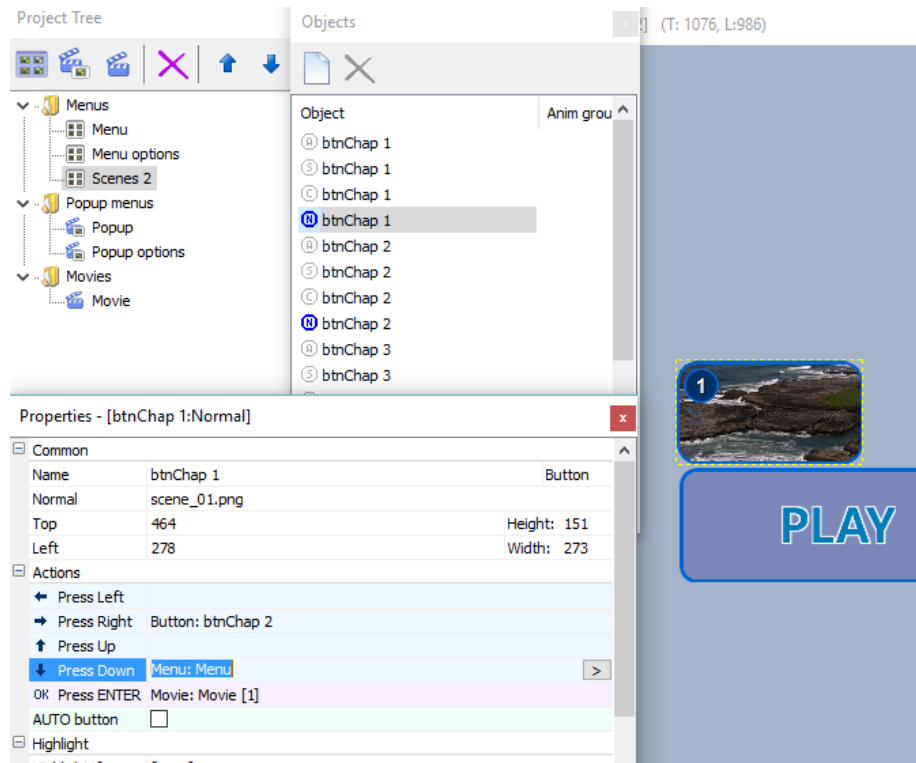
Re-generating the scenes menu creates a new menu (Scenes 2). The original one (Scenes 1) still remains. You can select and delete it if you wish (select and press <delete>).



By clicking on any of the scenes in the Designer view, you highlight the button associated with that scene as well as its properties. Most are filled in the way they should, but you can make manual adjustments.

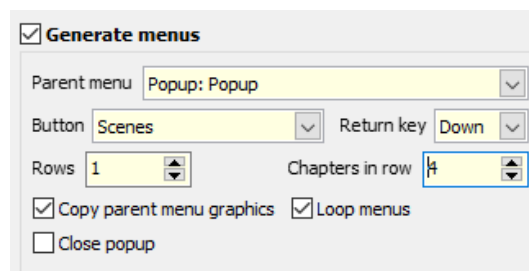
In the picture below we selected the first scene on the Designer window and see that all other information windows synchronize. For example, select the “Chap 1” button. Project Tree shows the menu it is on, Objects shows the menu objects and highlights the “Chap 1” button, Properties shows the properties of the “Chap 1” button (which consists of objects “btnChap *n*” (*n*= 1,2,3...)).

Pressing the down arrow (as specified in “Return key”) returns to the “Menu” menu without scenes. Pressing right or left arrows move between the scene buttons, pressing “OK” starts the movie at the specified chapter.




Set scenes in Popup menu

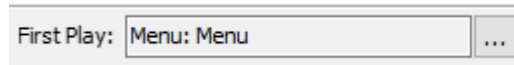
The same steps as used for the main menu, you have to perform for the “Scenes” button of the “Popup” menu.



Simulate the project

Once all movies are in place and all menus defined and buttons assigned and connected, the “Simulation”  (press F9) key allows BDS to compile the entire project after which you can test the menus.

For this to work, the Project Tree must have assigned a “First Play”. This is the “Menu” menu if we want to start with this menu when the disc is inserted in a player.



The simulation starts with compiling the project and button assignments in java and shows its progress in a “Running” window.

```
BDs Running...
mode: Simulation

17:10:52 - Saving...
17:10:52 - Preparing...
17:10:52 - Adding video asset for "Menu"
17:10:52 - Adding audio asset for "Menu"
          BDID = 00001 (menu "Menu")
17:10:52 - Adding video asset for "Movie"
17:10:52 - Adding audio asset #1 for "Movie"
17:10:52 - Adding audio asset #2 for "Movie"
          BDID = 00002 (movie "Movie")


17:10:52 - Preparing menu...
17:10:52 - Step 1/4 ...
17:10:53 - Step 1/4: done
17:10:53 - Step 2/4 ...
17:10:53 - Step 2/4: done
17:10:53 - Step 3/4 ...
17:10:54 - Step 3/4: done
17:10:54 - Step 4/4 ...
17:10:54 - Running ...|
```

If menus cannot be found, movies are not defined, tracks not specified, error messages will tell you and you need to revisit the project.

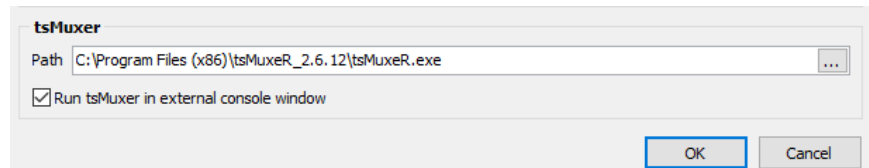
But if all is fine, the simulation menu opens and you can try the various options using the arrow keys and <return> key of your keyboard. The pc mouse won't work. The simulation does not play any movie. When you select “Play” in the tutorial, you can use the <F5> key to simulate a “Popup” action from the remote control to display the popup menu.

Use the simulation mode to check whether all menu buttons work as anticipated. Where they do not, go back to the project and modify the button properties accordingly (for right navigation or “OK” action) and restart the simulation.

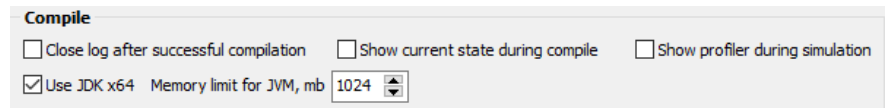
Building the disc

When all elements are properly connected and the actual movie streams are present, the final disc can be build. This is done by clicking on the “Mux by tsMuxer” button  or pressing Ctrl/F9.

The Lite edition does not have a BDS muxer, so the freeware tsMuxer is used. You must install this and inform BDS where it is located. You specify this in File > Options in the tsMuxer box.

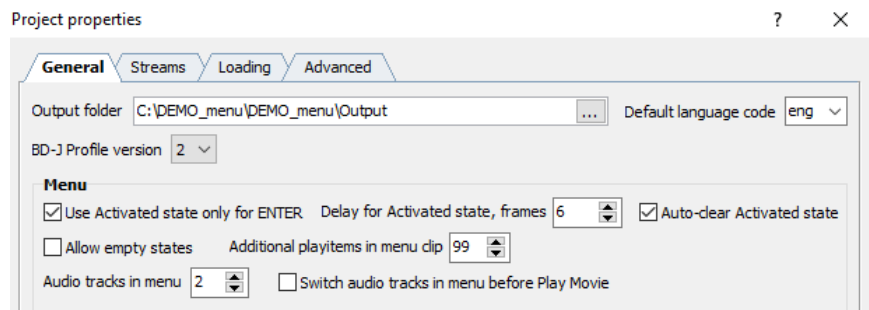


While you are at it, you may want to check the Java JDK x64 box if you run on a 64 bits Windows platform. Not doing so may work fine, but if compilation complains about a “line 1” error – try again with the check mark set.



The building of the disc starts again with the building information for the menus, but then it continues to mux all video, audio and subtitle streams of the movies that are defined within the project.

The output is written to the location specified in the Project > Project Properties window. This window opens automatically when you want to mux the project to give you an opportunity to change the disc folder location. This way you may build different versions of the same project.

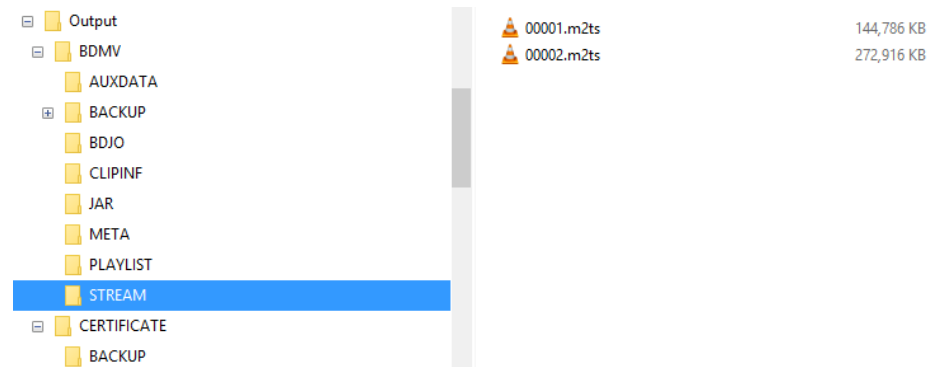



By default the \Output folder is used within the project main folder. If the folder does not exist, BDS will create it.

The progress of the build is given in a new window that changes its name constantly from “compiling” via “muxing” to “Finished!”

A sample output of the tutorial project is shown below. The \output folder then has all files needed to create a bluray disc, split over the two root \BDMV and \CERTIFICATE folders.

Using a software player like Nero Bluray player or the freeware Leawo Blu-ray Player can be used to check whether the created disc indeed works as intended before committing the folders to a physical disc.



 Finished!

mode: tsMuxer

```
19:32:50 - Saving...
19:32:50 - Preparing...
19:32:50 - Adding video asset for "Menu"
19:32:50 - Adding audio asset for "Menu"
          BDID = 00001 (menu "Menu")
19:32:50 - Adding video asset for "Movie"
19:32:50 - Adding audio asset #1 for "Movie"
19:32:50 - Adding audio asset #2 for "Movie"
          BDID = 00002 (movie "Movie")

19:32:50 - Preparing menu...
19:32:50 - Step 1/4 ...
19:32:51 - Step 1/4: done
19:32:51 - Step 2/4 ...
19:32:51 - Step 2/4: done
19:32:51 - Step 3/4 ...
19:32:51 - Step 3/4: done
19:32:51 - Step 4/4 ...
19:32:51 - Step 4/4: done

19:32:51 - Muxing menu "Menu" (BDID: 1)

19:32:52 - Muxing movie "Movie" (BDID: 2)

19:32:53 - Updating movie playlist "Movie"

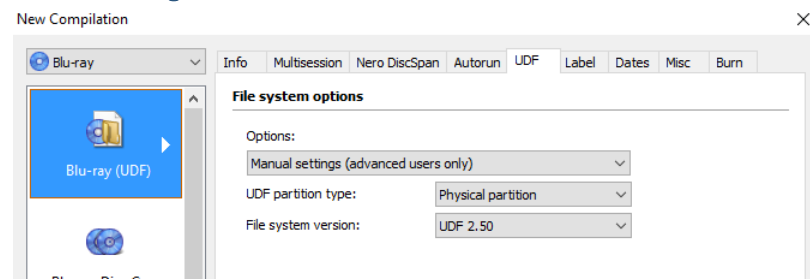
19:32:54 - Finished!|
```

Burning the disc

The created files in both bluray folders can be burned to bluray disc using a commercial package like Nero Burning ROM or a freeware package like ImgBurn and of course a physical bluray burner.

In both cases it is useful to use the Bluray UDF mode (not the Nero Bluray BDMV mode) and to specify the use of UDF 2.50.

Nero Burning ROM

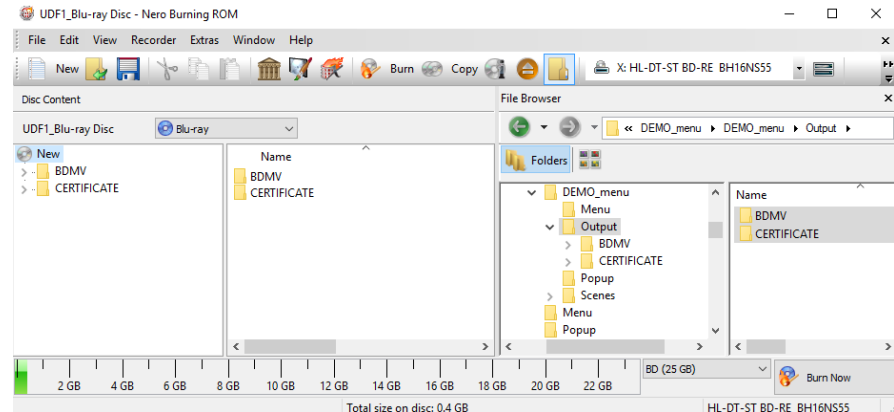


The picture above shows the Nero Blu-Ray (UDF) setting where the version to use is specified under its UDF tab.

Once specified, open the Disc content window (after pressing “New” on the previous menu) and drag the two created folders to the disc area.

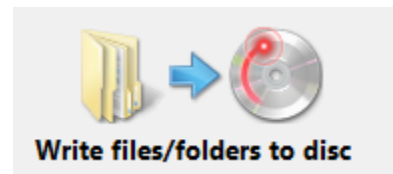
Click on the “Burn Now” button to start the burning process.

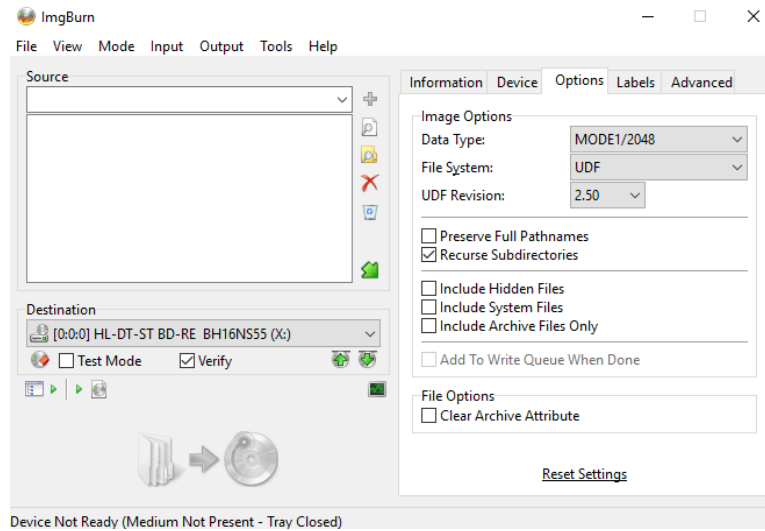
Note: it appears that using the UDF 2.50 mode produces a faster responding bluray disc than when the BDMV template of Nero is used.



ImgBurn

For ImgBurn use the “Write files/folders to disc” option from the EZ-Mode picker (available from the Mode menu) and specify UDF 2.50 under its “Options” tab.





Fill the “source” area with the created bluray files by selecting the “browse for folder” icon and load both BDMV and CERTIFICATE folders.

To start the burning process, click on the “burn now” button below the source area.

