User Guide – Intel® Media Accelerator Reference Software Beta

Ver: 0.75

15-Sept-17

Product Versions

M.A.R.S. Windows v4.6, 64 Bit

Company Confidential.

Intel Corporation

1. Revision History

Ver. No	Approved Date	Affected Sections/ Pages	Description
0.1	05-July-17	All	Corresponds to M.A.R.S. Beta released based on the previous ISBA user guide.
0.2	07-July-17	5.3.1.3	Minor correction to screen-shot description
0.3	21-July-17	5.2.1	Simplified installation
0.4	07-Aug-17	5.3.1.4, 5.4, 6	Removed FFMpeg. Preferred presentation setting also removed.
0.75	03-Sept-17	All	Removed Metrics framework

2. Glossary

CSV	Comma Separated Values
DXVA	DirectX Video Acceleration
EVR	Enhanced Video Renderer
GPU	Graphics Processing Unit
M.A.R.S.	Intel® Media Accelerator Reference Software
KBL	Kaby Lake Platform
RSS	Really Simple Syndication is a family of web feed formats used to publish frequently updated works like news headlines in a standardized format.
SW	Software
Zone	A zone is a rectangular area on the screen.
Compositing	The processing of combining various zones in to a single frame for presenting

3. Contents

4. What is M.A.R.S.

4.1 Overview of M.A.R.S.

The main goal of the Intel Media Accelerator Reference Software is to demonstrate video acceleration using the Intel Media SDK for digital signage use-case. M.A.R.S. also provides a configurable multi-zone composited UI that enables the user to customize the number and types of playout zones

4.2 Features at high-level

At high-level, M.A.R.S. supports the following features.

1) Multi-monitors
2) Hybrid multi-monitors
3) Identical, Tiled, Different, Portrait, Landscape – display topologies
4) Multiple zones. Each zone could be configured with various media contents.
5) Media contents: Video, audio, image, text ticker, RSS, benchmark zone, clock widget.
6) Video pan/tilt/zoom on multiple platforms forming a video wall
7) Active pan on multiple platforms
8) Zone carousel, Zone border
9) Configuration GUI
10) Zone overlay and alpha blend

4.3 Operating systems supported

M.A.R.S. supports the following operating systems.

Windows 10, 64 bit

4.4 Hardware platforms supported

M.A.R.S. Beta runs on the following hardware platforms.

Intel® 6th Generation Core
Intel® 7th Generation Core
Intel® Atom® Processor (Formerly Apollo Lake)
Intel® Atom® Processor (Formerly Braswell)

4.5 Intended audience

M.A.R.S. is intended for users who need to simulate embedded usage models, collect benchmarking statistics, compare and decide which platform is right for a specific market segment.

4.6 Input to M.A.R.S.

Input to M.A.R.S. application is an xml file, called configuration file. This xml file describes the number of monitors, display topology, number of the zones in each monitor, dimension of each zone, content of each zone and more. This file is generated by the configuration GUI of M.A.R.S..

4.7 Output of M.A.R.S.

M.A.R.S. application runs for a specific duration as mentioned in the configuration xml file. At end of this test duration it generates a CSV file that collects all the benchmarking statistics and benchmark number. Additionally benchmark zones could be configured to display selected benchmarking parameters in the form of text and graphs.

4.8 Keys and functionalities

The following are the keys that M.A.R.S. would respond to while running. The functionalities are described below. M.A.R.S. would ignore all other key events while running.

Key	Functionality
s	Invoke configuration GUI while M.A.R.S. is running.
q/ESC	Quitting M.A.R.S.
h	Displays help menu

5. M.A.R.S. - Windows

5.1 Getting Started

5.1.1 Hardware requirements

The following are the minimum hardware requirements for running M.A.R.S. Windows v3.0.

1) One of the supported hardware platforms in 4.4
2) Platforms must be able to connect to Internet over LAN, without any proxy server setting – this is for running RSS. RSS zones would not work when proxy is enabled.
3) Headphones or speaker must be connected to the platform, if "AudioOut" [Settings GUI] is enabled.
4) M.A.R.S. would work only with wired ethernet. Wireless should be switched off and wired ethernet should be set as the default before running M.A.R.S.

5.1.2 Software requirements

The following are the software requirements.

The packages mentioned below have to be manually installed.

1. 64 bit Windows 10 Operating system must be installed on the above-mentioned platforms.
2. Make sure the correct version of the graphics driver is installed on all platforms.
3. Make sure Intel® Management Engine driver is installed on all platforms. Refer to the OEM website to download the Intel® ME driver if it is not installed.
4. M.A.R.S. installer – "MARS_Setup.exe". This installer will install the binary and necessary dependent files and dlls required for running M.A.R.S.
5. Some sample RSS feeds URLs that we have tested with:
   - http://timesofindia.indiatimes.com/rssfeedstopstories.cms
   - http://sports.espn.go.com/espn/rss/news
   - http://feeds.bbci.co.uk/news/rss.xml

5.1.3 Recommended Settings

1) By default, the application starts in 1920x1080 mode to support the current common resolution. The recommended monitor resolution for all platforms is 3840x2160.

5.2 Installing and running

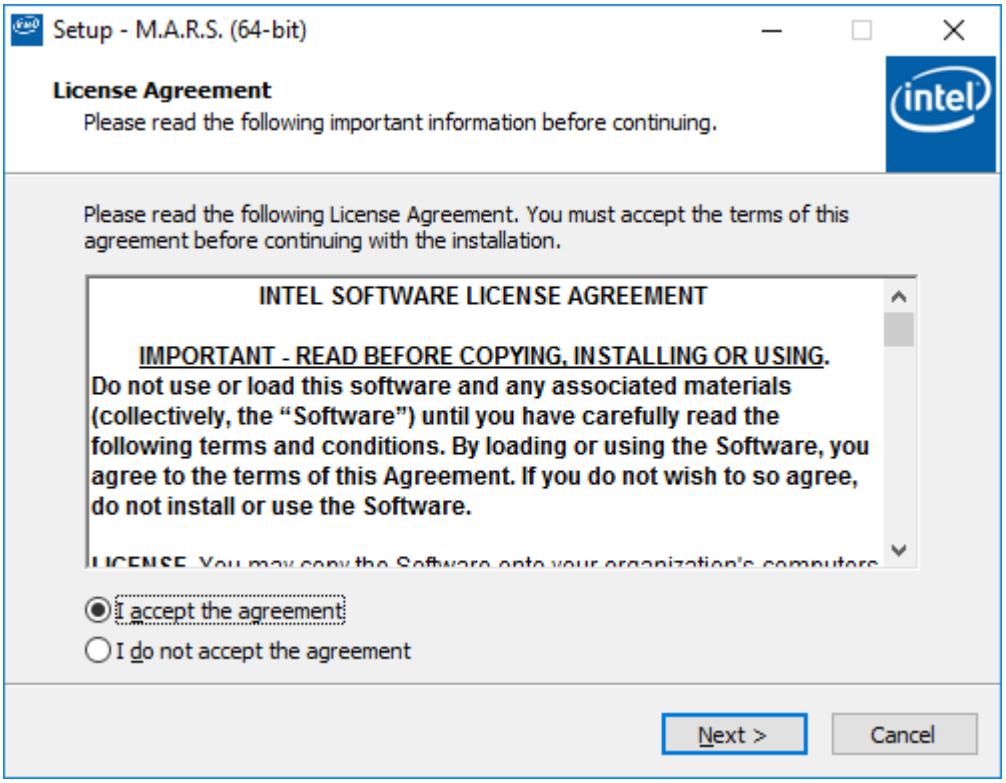
5.2.1 Installing

Running MARSSetup-v4.5.6_x64.exe will install the binary and necessary dependent files and dlls required for running M.A.R.S. When running the installer, a "User Account Control" message is displayed. Press "Yes" and proceed. This Installer will create shortcuts to MARS.exe on the desktop and

from the program menu.

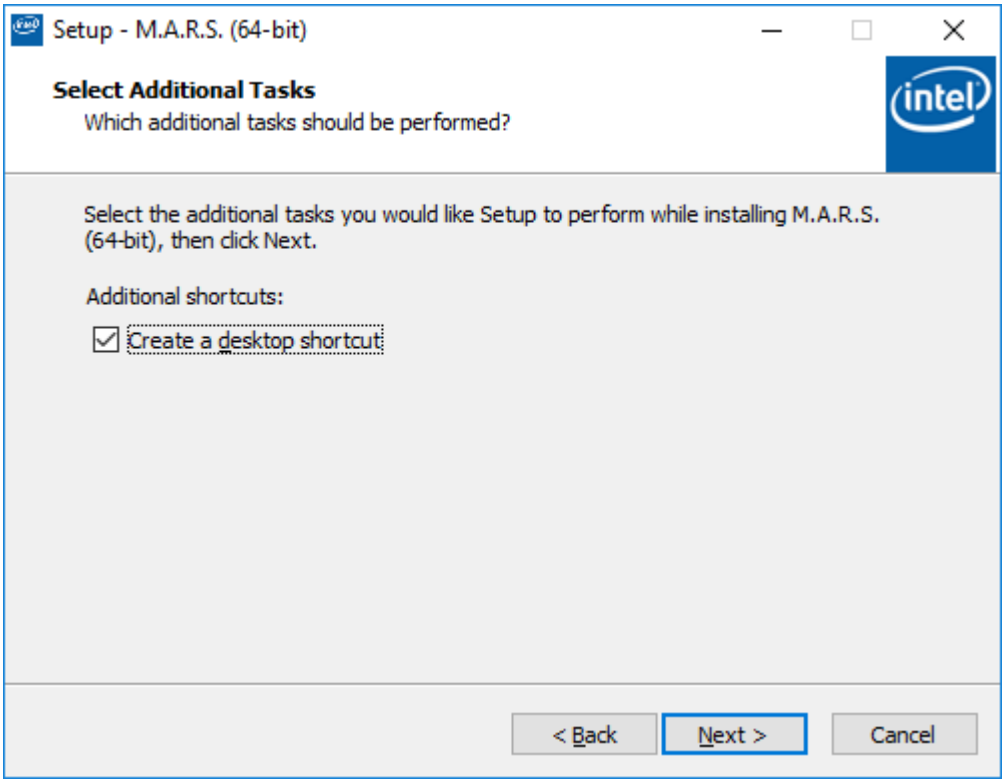
Step 1: M.A.R.S. License agreement

Accept the agreement and press ‘Next’ to proceed.



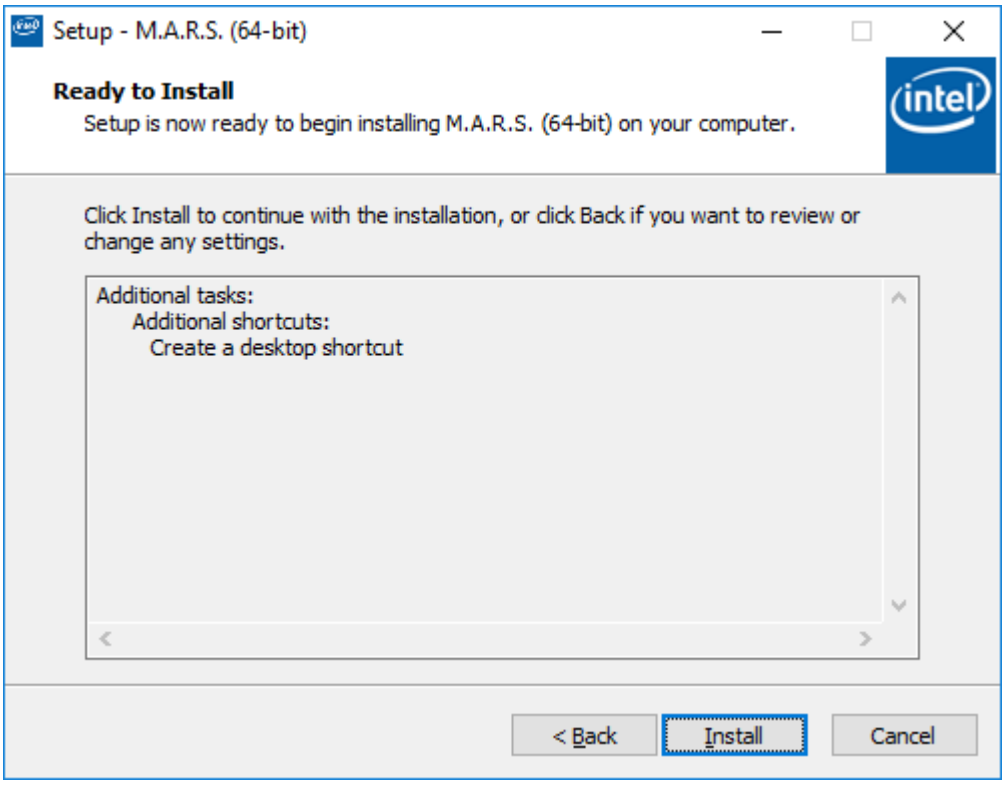
Step 3: Select Additional Tasks

This allows the user to create a desktop shortcut for M.A.R.S.

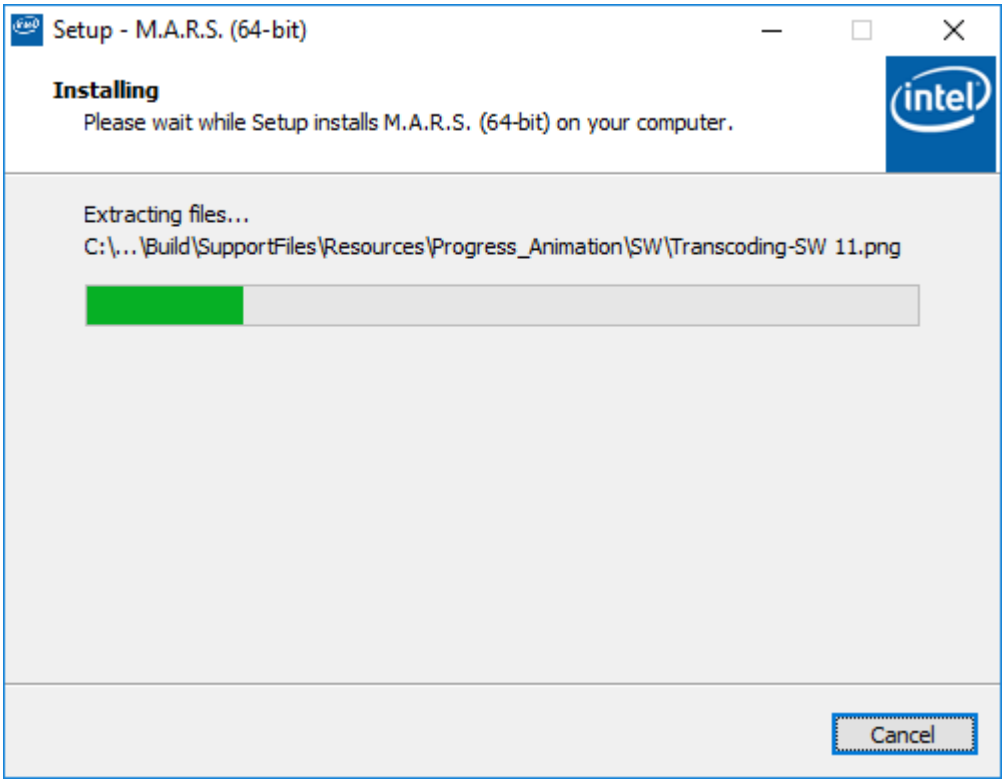


Step 4: Installation Summary

The selected M.A.R.S. installation options are displayed

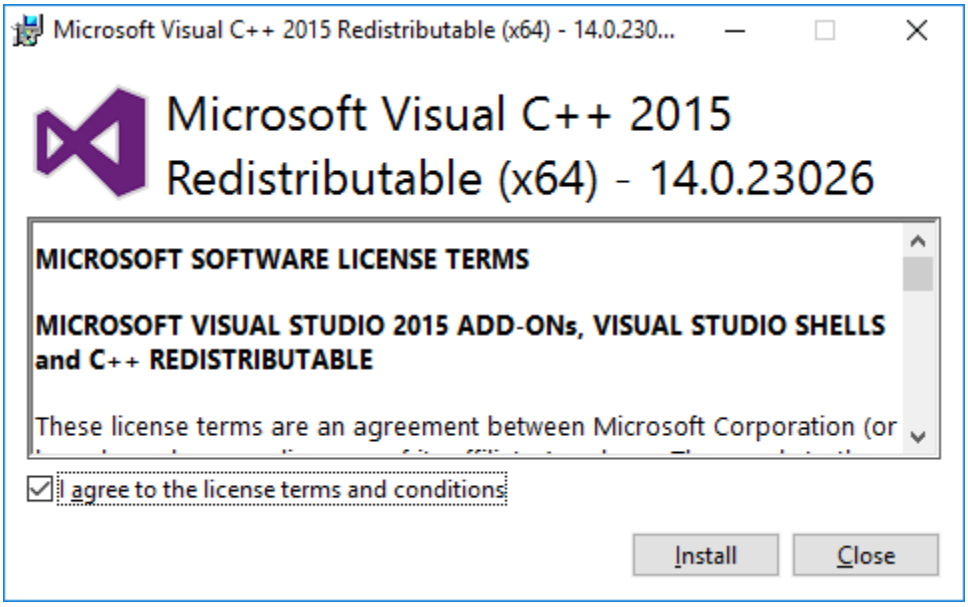


Step 5: Installation progress



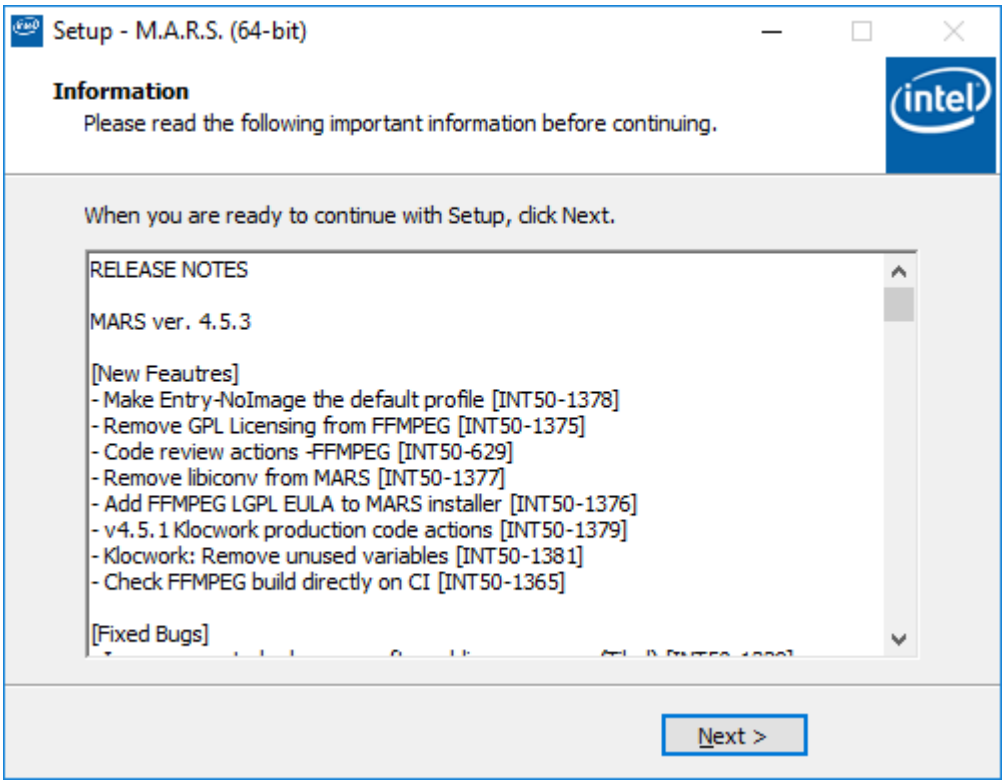
Step 6 Visual C++ Redistributable Binaries

These are required to run M.A.R.S



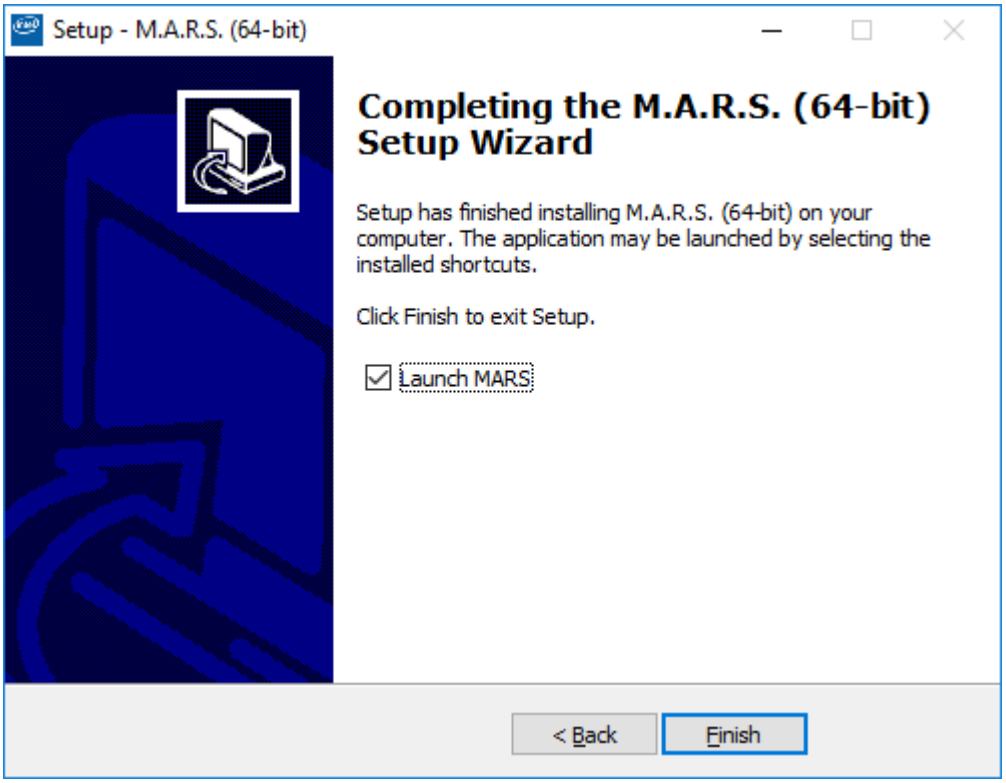
Step 9: Release Notes

This displays the change history of the M.A.R.S. applications



Step 10: Finish and Launch Application

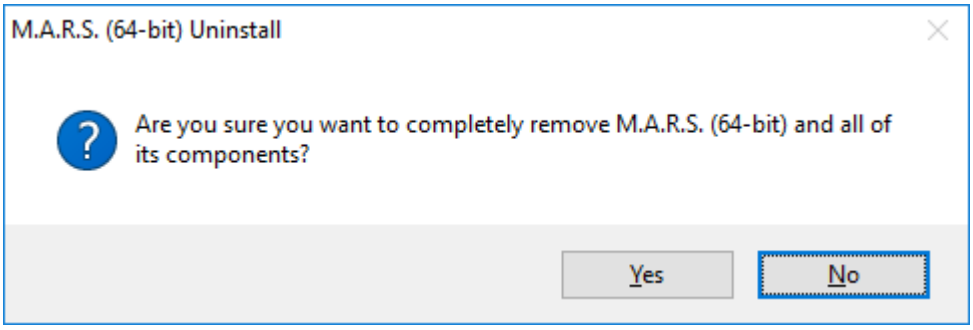
This is the last step in the installation. The user can optionally launch the application.



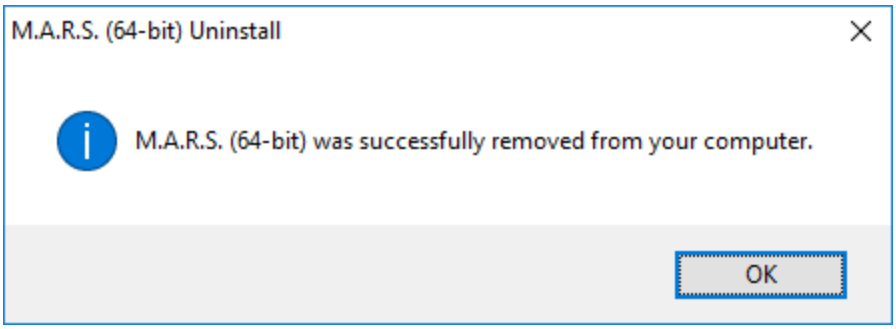
5.2.2 Uninstalling

M.A.R.S. can be uninstalled from System settings (Add or remove programs) or Control Panel (Change or remove a program). If uninstalled from System settings a User Account Control dialog will be displayed.

The installer will display the following message:



Then the installer proceeds to remove M.A.R.S.


M.A.R.S. (64-bit) Uninstall
M.A.R.S. (64-bit) was successfully removed from your computer.
OK

5.2.3 Running M.A.R.S.

M.A.R.S. can be launched in the following ways.

5.2.3.1 From command prompt

Configuration file name could be given as command line argument. Ex: MARS.exe M.A.R.S._Custom1_I.xml

5.2.3.2 Double clicking the exe, or shortcut

Double clicking "MARS.exe" present under "$M.A.R.S._INSTALL_DIR /Build/Bin" directory, will invoke M.A.R.S. with a configuration file that it was run with, the previous time. If "MARS.exe" is launched for the first time, Preset_Entry_Signage.xml will be used by default.

Also M.A.R.S. can be invoked by clicking on the shortcut on the Desktop or in the programs menu.

While M.A.R.S. is running, hitting "s" key invokes the Configuration GUI. Once the changes are done in the GUI, hit "Finish" which would invoke M.A.R.S. with the modified configuration.

5.2.4 Running M.A.R.S. in video tilt with multiple platforms and active pan

This is not supported for the Beta release

5.2.5 Quitting M.A.R.S

Hitting "q" or "Escape" while M.A.R.S. is running will exit M.A.R.S. application.

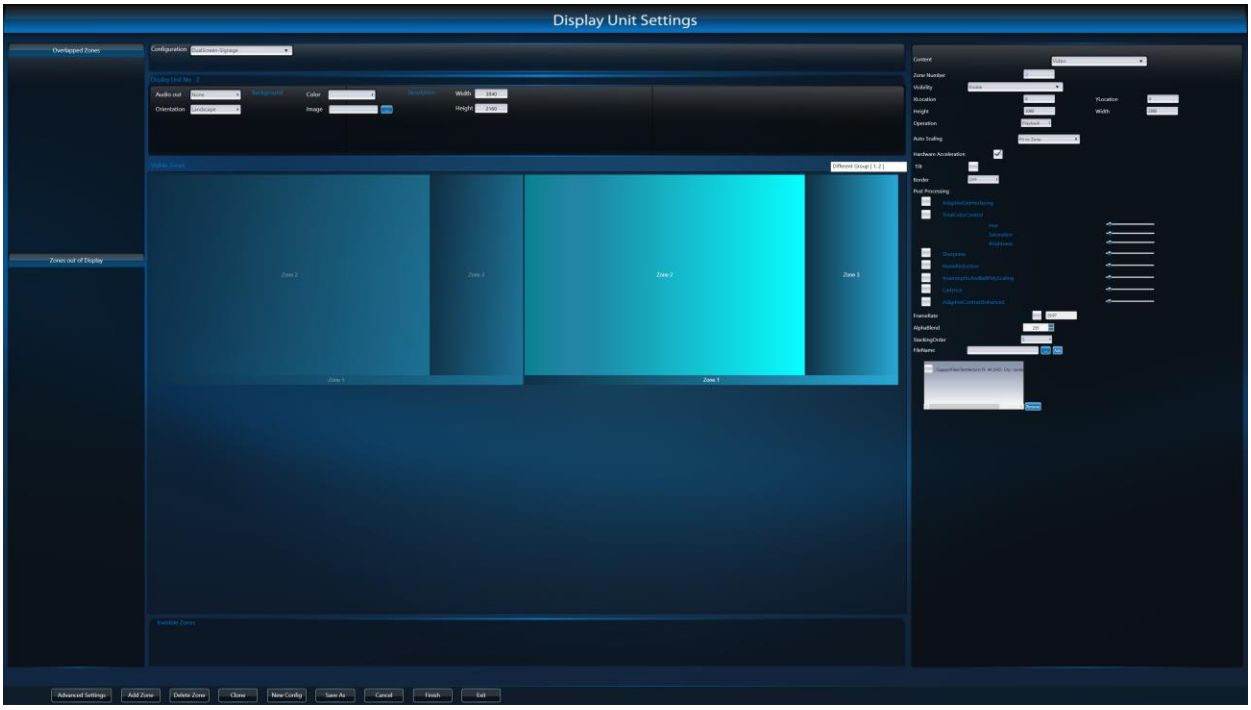
5.2.6 Command line arguments

For each of the command line arguments below the configuration file to be used can optionally be provided as a command line parameter

Sl No	Argument	Remarks
1	-ui	By using this command line argument user can enter configuration gui, directly. [By default when user launches application, it starts playing back] Example: MARS.exe –ui ../SupportFiles/ConfigFiles/Windows/xyz.xml
2	-silent	This option suppresses all the errors/warnings that pop up during execution of M.A.R.S.

5.3 Basic features user guide

While M.A.R.S. is running, press “s” key to invoke the configuration GUI. All the settings are available in one screen as shown below.

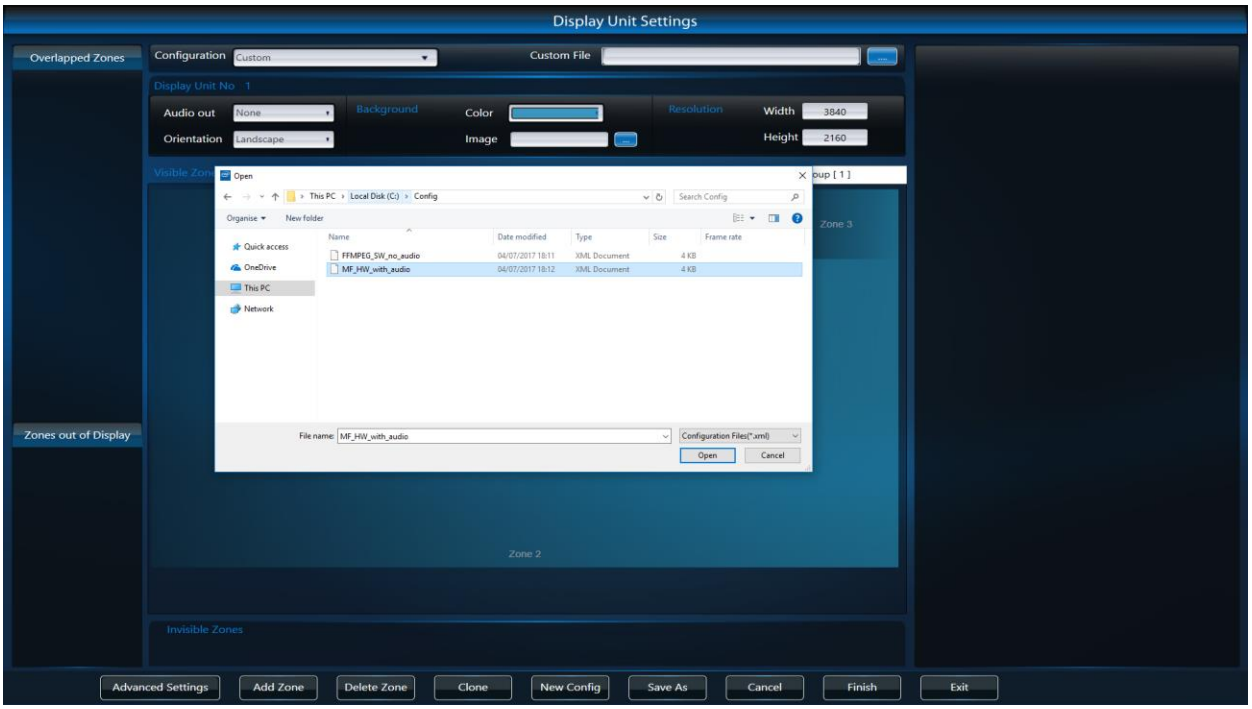


User can either one of the following configurations:

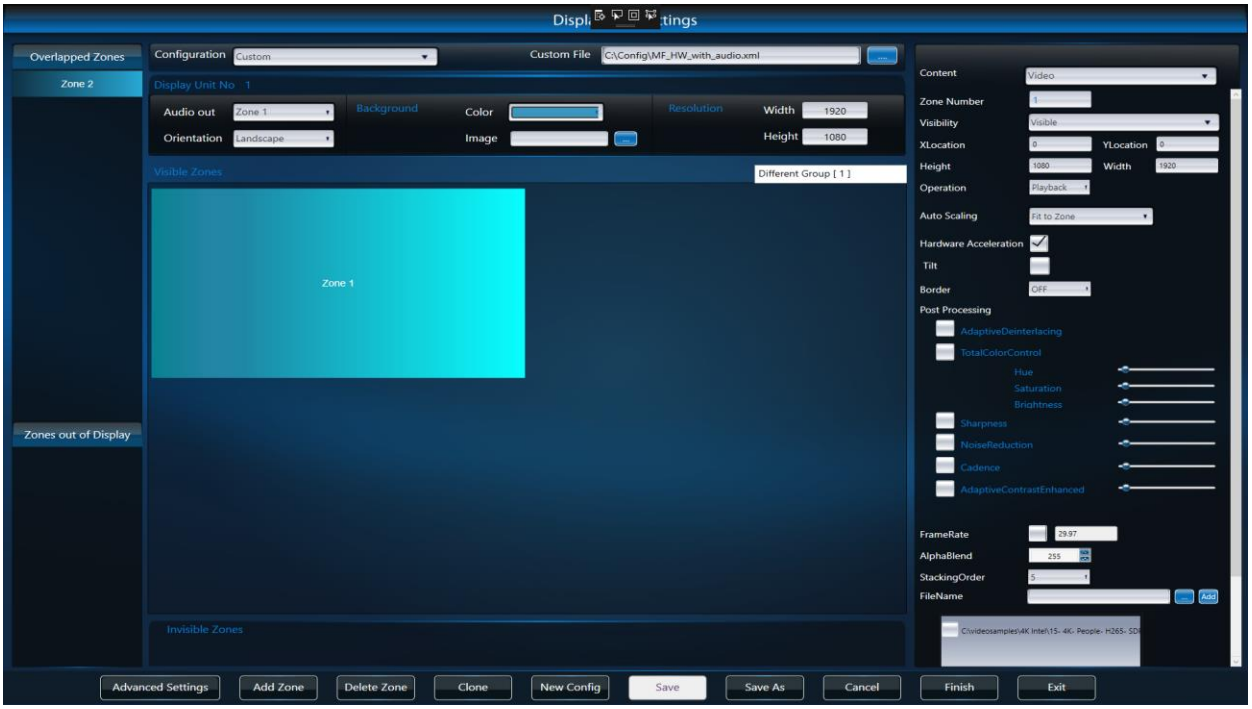
1. Entry-Signage-FHD
2. Mainstream-Signage-UHD
3. Performance-Signage-UHD (requires dual display)
4. Extreme-Signage-UHD
5. Custom

If custom is selected, the user can enter a path to a custom configuration file. It is also possible to create a custom configuration from one of the presets by pressing SaveAs then modifying the settings as desired.

This screen appears when the user selects the “Custom” option under “Configuration” box. User can select the custom file by selecting the browse option, which is shown below.



The user can select “Finish” option from the bottom of the screen to load this file and launch M.A.R.S.. Alternatively, the user can edit the configuration further then press Save.



5.3.1 Settings GUI Options

The user can edit/change the zone-specific parameters along with the background color/images. The following are few of the options.

When user clicks on any “display unit”; “Audio Out”, “Background color/Image”, “screen resolution” and “invisible zones” fields will show/reflect the values for this display unit.

Audio Out: This option decides the audio out of this display unit. Audio of the selected zone will be played back at this display unit output.

Resolution: This is the resolution of the target monitor, where the configuration file is supposed to run.

Content: This is to select the zone content type.

If the user wants to add a new zone, the “Add Zone” option can be selected from the bottom of the screen, and the zone information is then edited accordingly.

User can see the zone placement on the screen under “Visible Zones” area, which will give exact information of where the zone is placed on the Display Unit.

If user wants to delete a zone, they should select that zone from the “Visible Zone” area and click on the “Delete Zone” button provided at the bottom of the screen. Additionally, user can select the zone and press the “delete” key on the key board.

“File Name” option lets the user add files of the selected content type for a zone. This will build a “playlist” of files for that zone that will be played in a round-robin fashion.

To delete files from a play list, user can check the respective check boxes next to the filenames and click on the “Remove” button.

Also, this screen has “Save As” and “Save” buttons at the bottom. “Save as” option lets the user to save to a new configuration file, whereas “Save” option will save modifications to the current configuration file.

Note: The “Save” option is only available for Custom configuration files (this prevents overwriting of the default profiles).

The user selects “Finish” to start playback with new configuration. “Cancel” will reject the current changes, and load the previous configuration values.

When “Finish” option is selected:

1. If user had edited the configuration parameters and has not saved yet, this option will prompt the user to save the file.
2. If user has already saved the edited configuration file, the M.A.R.S. will start running using this latest configuration file.
3. In case the user has not edited any of the parameters in the configuration file, then the M.A.R.S. will start running by taking the loaded configuration file.

When the “Cancel” option is selected, M.A.R.S. will start running with the loaded configuration file without taking any edited changes.

Exit Button: This provides the user with an option to quit the application while in GUI.

Clone Button: This provides the user with a feature to clone/duplicate a selected zone. The duplicated zone contains all the attributes of its parent.

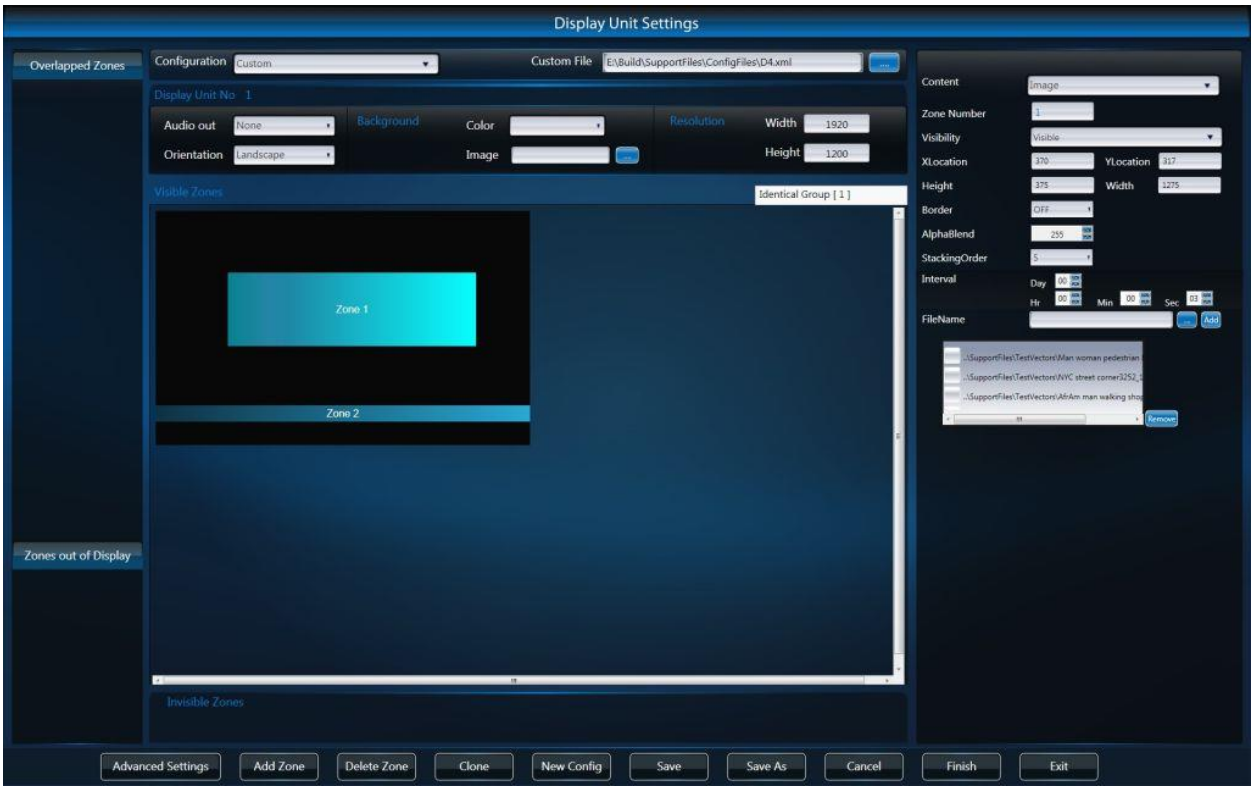
Note: During start up, if the application detects that the configuration file is in a wrong format, then M.A.R.S. launches with the Entry-Signage-FHD configuration.

5.3.1.1 Tab based “Visible Zone”

The simulation of the monitors under the “Visible Zone” is tab based. Tabs will be created and arranged depending on the monitor “Configuration” and topology. There are 3 different kinds of tabs. “Identical Group”, “Different Group” and “Tiled Group”. There can be up to two tabs in the “Tiled Group” [by name “Tiled Group1” and “Tiled Group2” – for monitors tiled under integrated GPU and discrete GPU]. The monitor numbers are given with in brackets after the group name, for ease of identifying.

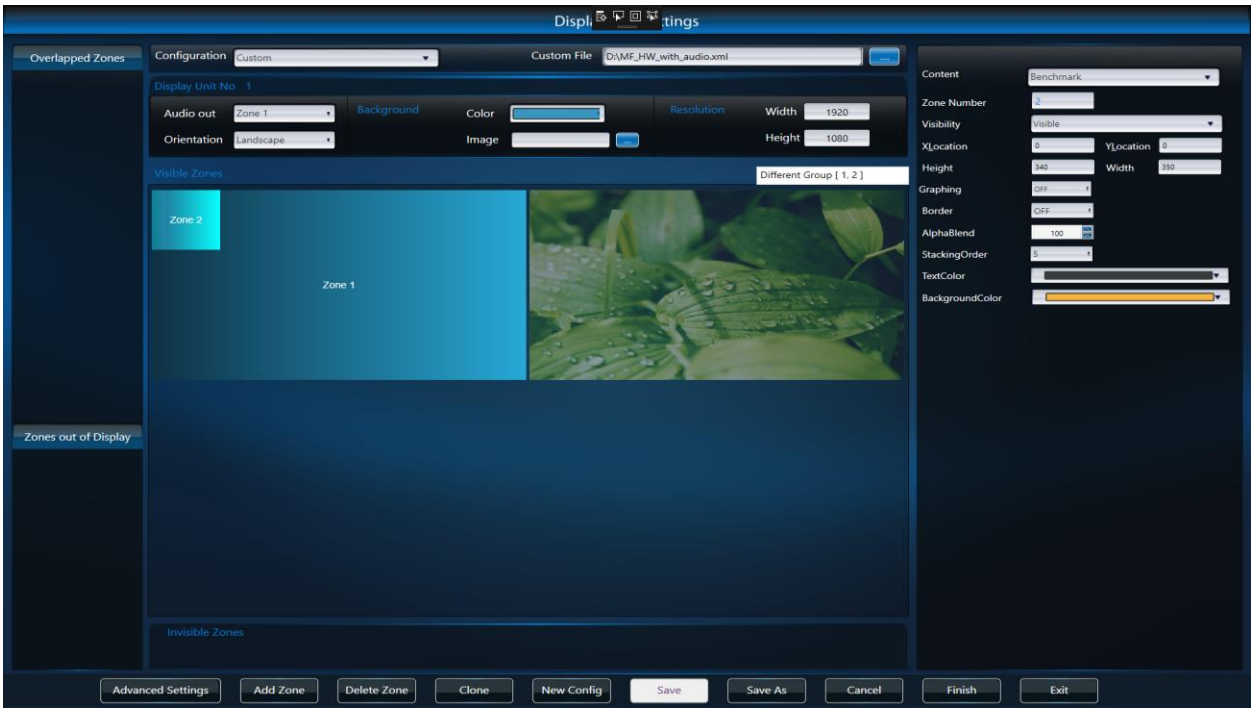
5.3.1.2 Identical Configuration

In “Identical” configuration only one display unit will be shown in GUI and one display unit entry will be created in configuration file. While running M.A.R.S. application it shares this configuration across all display units connected to the system. An Identical configuration screenshot is captured below.



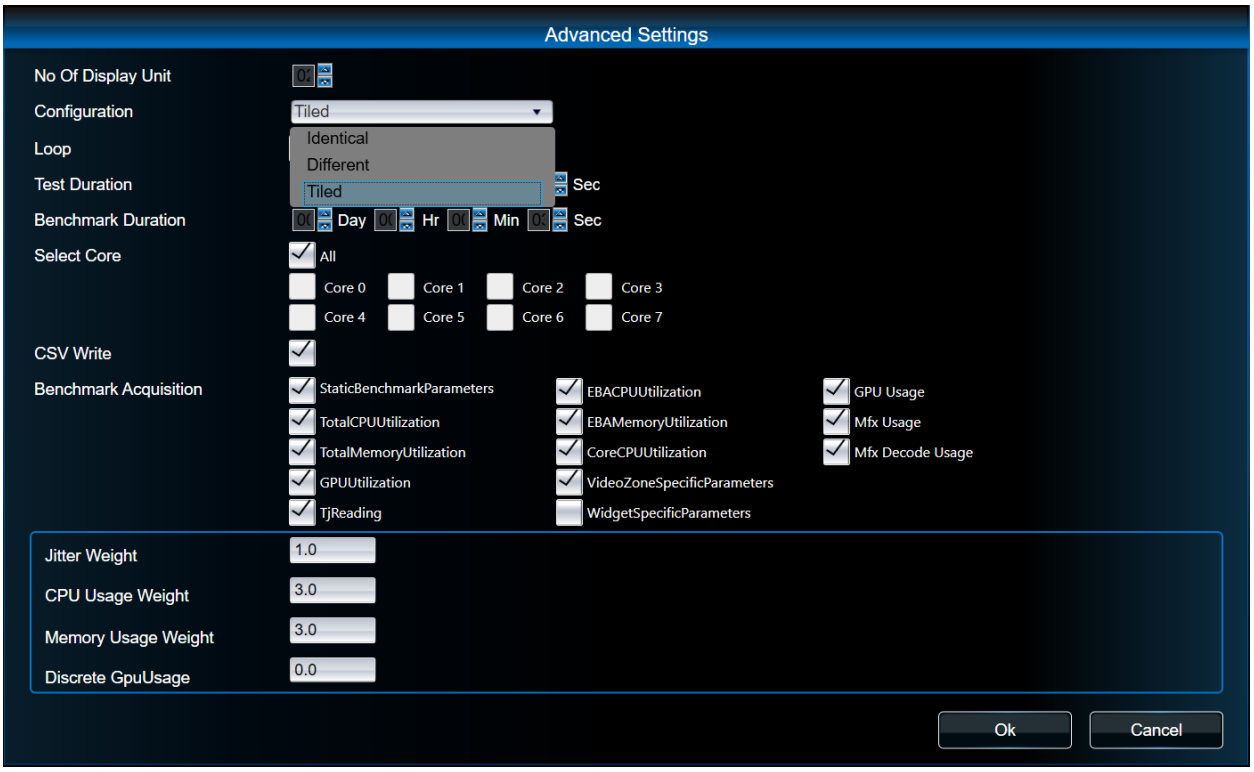
5.3.1.3 Different Configuration

In “Different” configuration, if user selects two display units in configuration settings window, two display units will be shown in GUI and same number of display unit entries would be created in configuration file. A Different configuration screenshot is captured below.

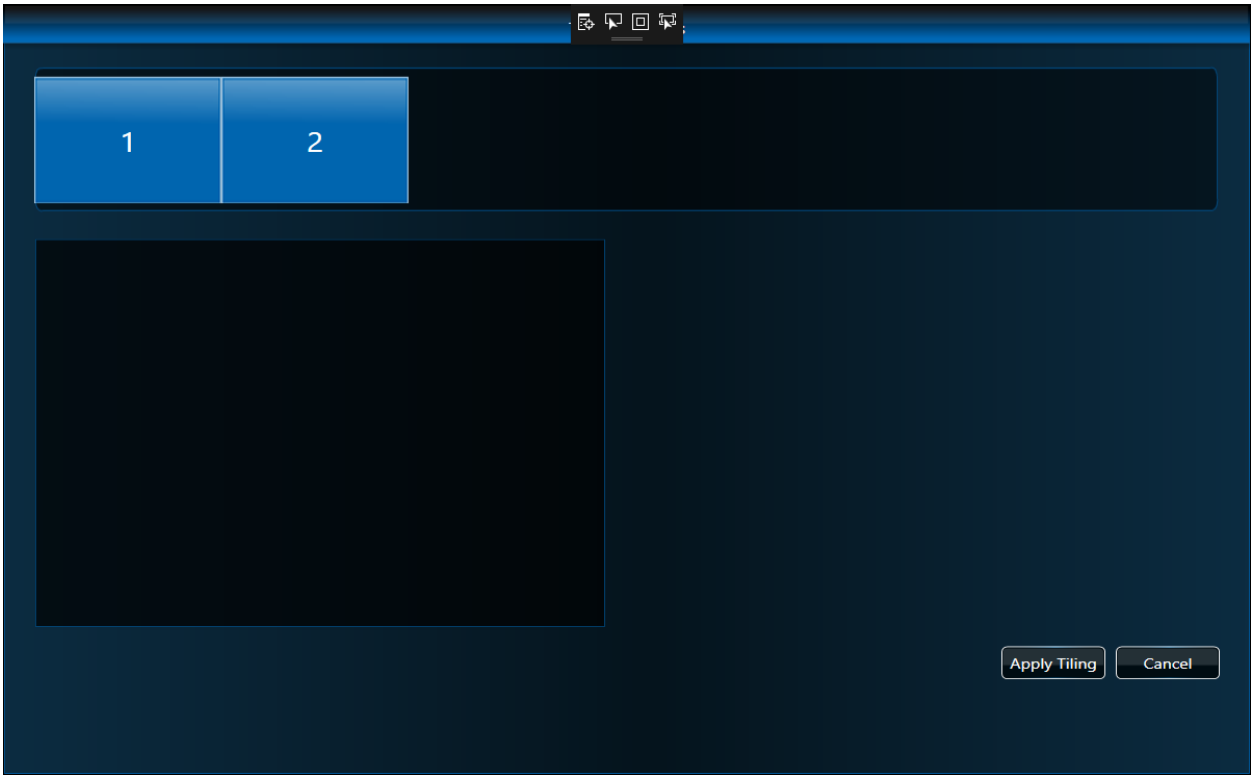


5.3.1.4 Tiled Configuration

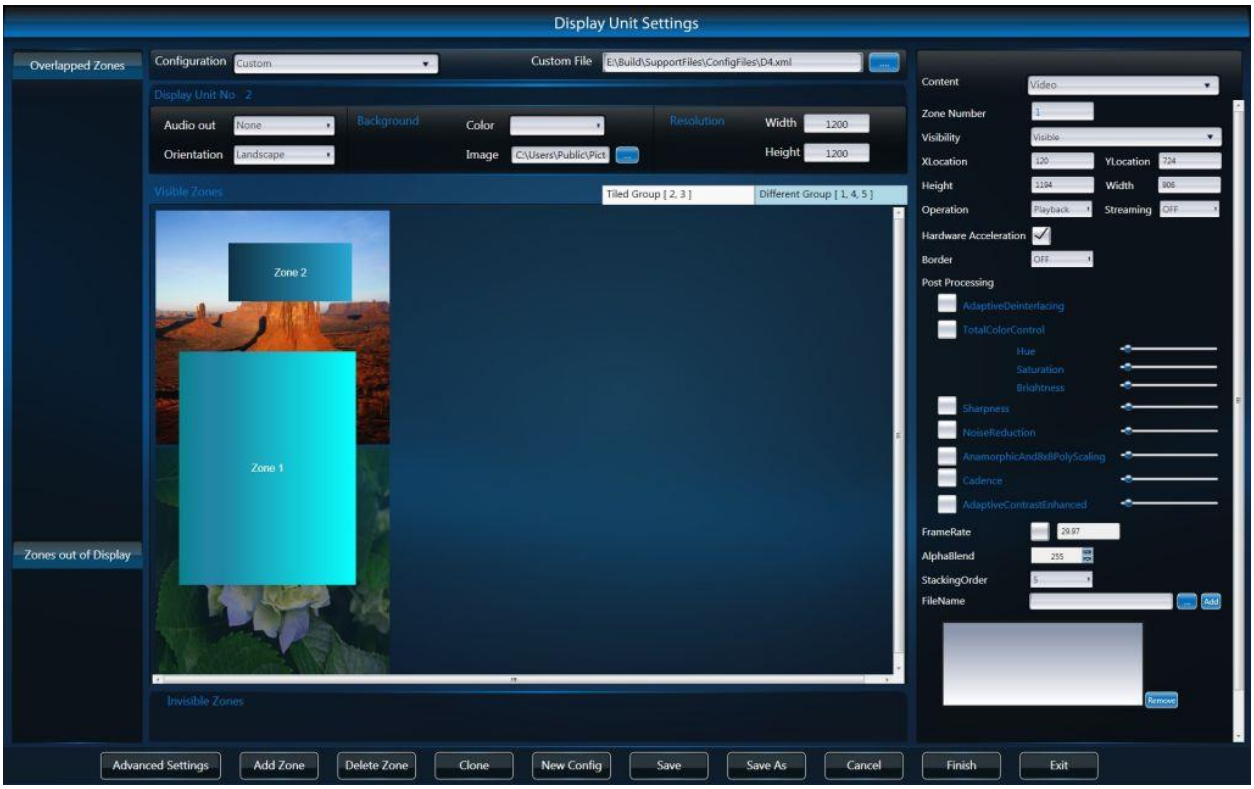
If we select the configuration as “Tiled” [selection shown below],


Advanced Settings
No Of Display Unit
Configuration
Tiled
Identical
Different
Tiled
Loop
Test Duration
Sec
Benchmark Duration
Day
Hr
Min
Sec
Select Core
All
Core 0
Core 1
Core 2
Core 3
Core 4
Core 5
Core 6
Core 7
CSV Write
Benchmark Acquisition
StaticBenchmarkParameters
TotalCPUUtilization
TotalMemoryUtilization
GPUUtilization
TjReading
EBACPUUtilization
EBAMemoryUtilization
CoreCPUUtilization
VideoZoneSpecificParameters
WidgetSpecificParameters
GPU Usage
Mfx Usage
Mfx Decode Usage
Jitter Weight
1.0
CPU Usage Weight
3.0
Memory Usage Weight
3.0
Discrete GpuUsage
0.0
Ok
Cancel

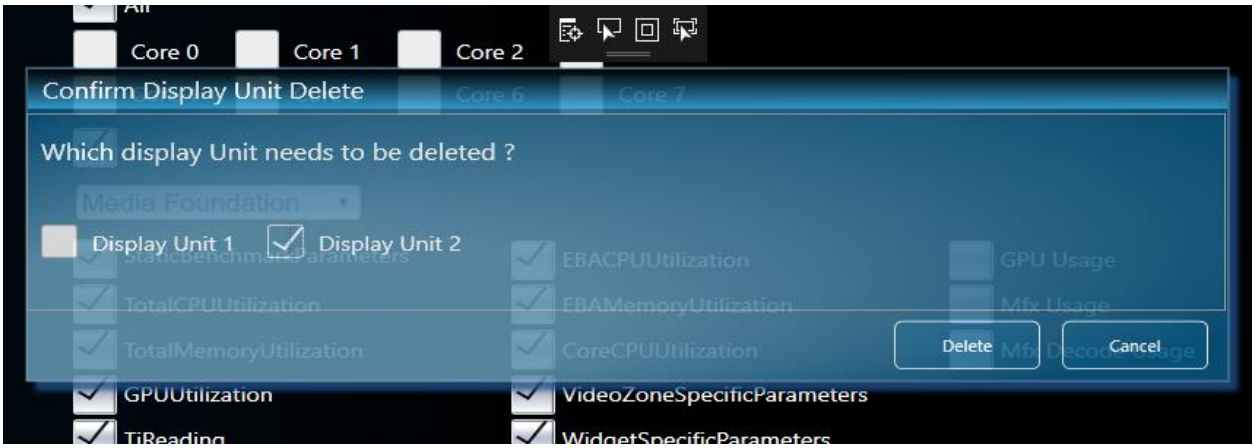
A pop-up screen appears where the user can select which DU to be tiled and the direction of tiling (Horizontal or Vertical). Various possibilities of tiling are captured in the screenshots below. Note that “Apply Tiling” should only be pressed if one or more DUs have been dragged into the selection area.



In “Tiled” configuration zones can be shared across Display units as shown below.

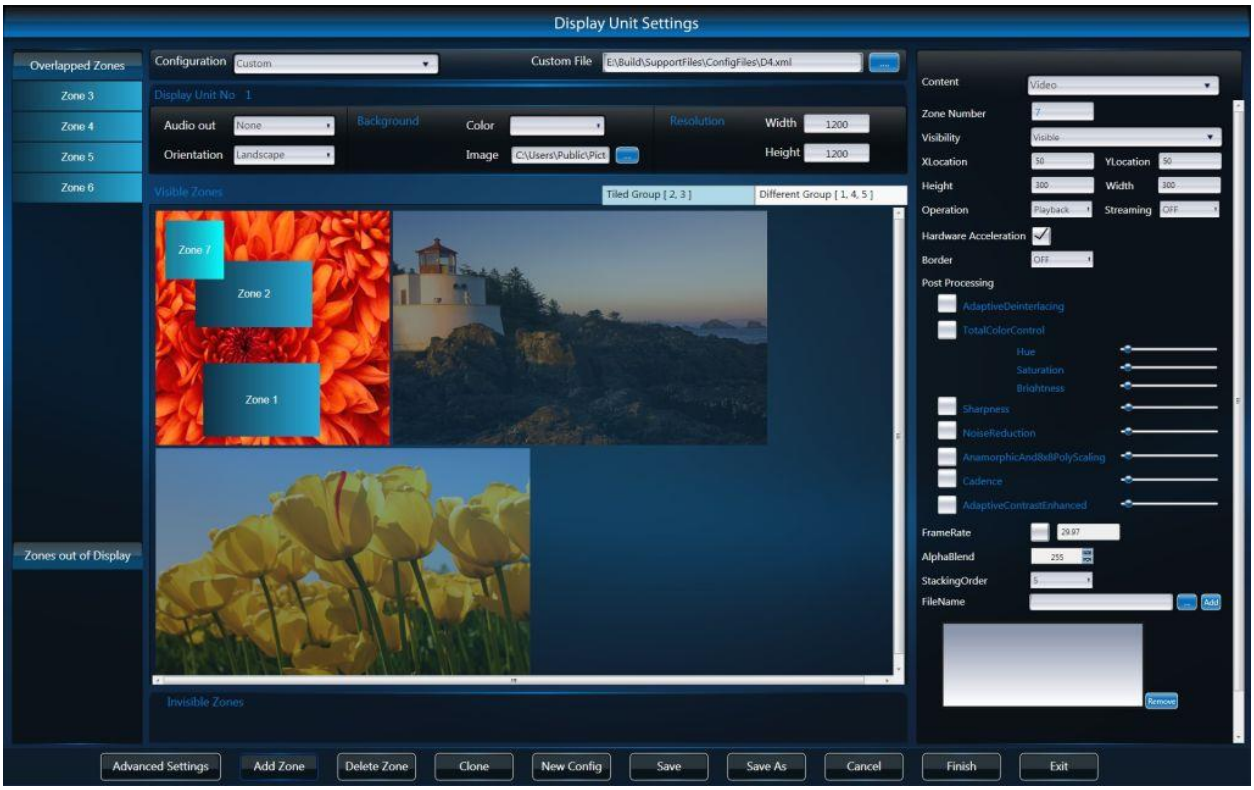


When “No Of Display Unit” in the “Advanced Settings” is decremented, user would be prompted on what display units that need to be retained. This is illustrated in the screenshot below.



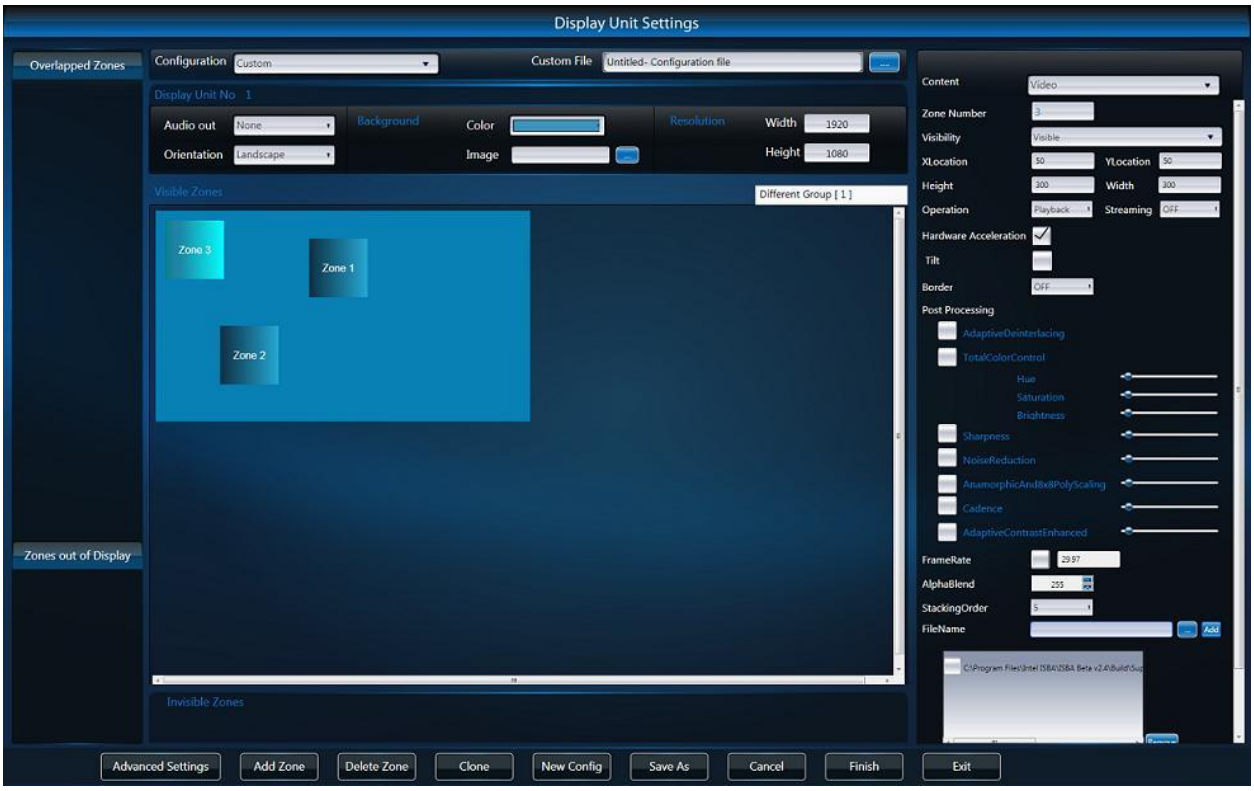
5.3.1.5 Overlapped Zones

By controlling the “Stacking Order” [on the right pane of Setting GUI] we can have overlapping zones [one on top of other]. If there are other zones below the selected zone [currently selected in the settings GUI], these will be displayed under the “Overlapped Zones” pane on the top left corner of the screen. Zones could be selected from here, to change their properties [These zones then become visible under the “Visible Zone” area]. This is shown in the screenshot below.

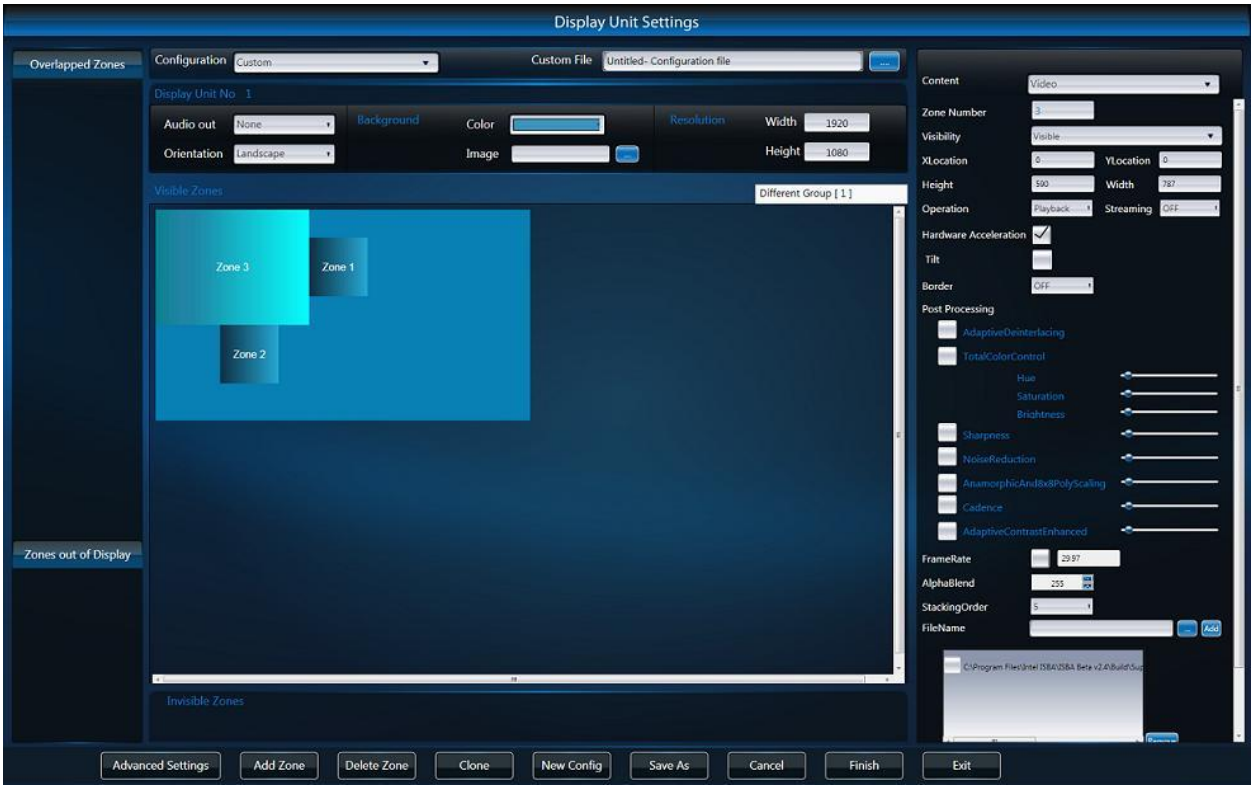


5.3.1.6 Snap zone to available size

“Snap zone” resizes the selected zone until it hits the nearest neighbors in all 4 directions. If there is no zone in a certain direction, it would resize until it hits the monitor boundary. To apply this feature on zone3 [in the screenshot captured below], hold the CTRL key and bring the mouse on Zone3 and click the left button.

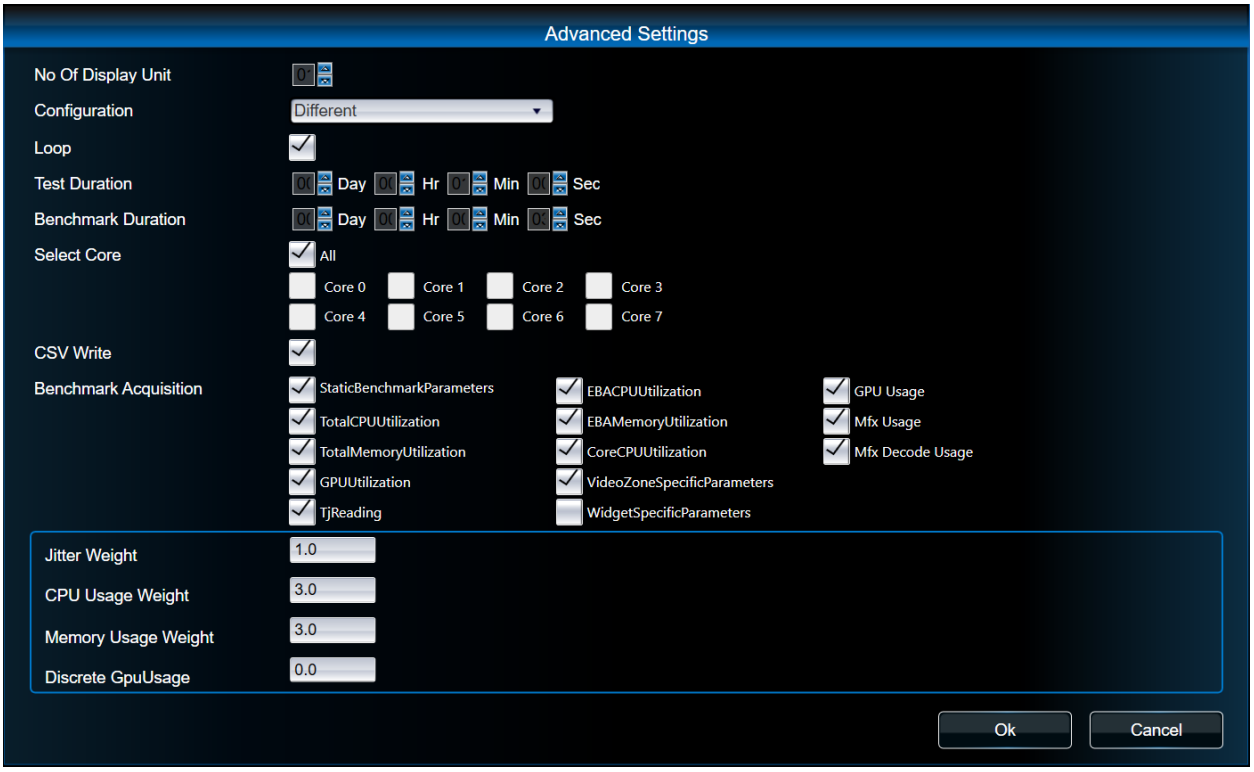


After resizing, zone3 would appear as shown below.


Display Unit Settings
Overlapped Zones
Configuration
Custom
Custom File
Untitled- Configuration file
Display Unit No 1
Audio out
None
Orientation
Landscape
Background
Color
Image
Resolution
Width
1920
Height
1080
Visible Zones
Different Group [1]
Zone 3
Zone 1
Zone 2
Zones out of Display
Invisible Zones
Content
Video
Zone Number
Visibility
Visible
XLocation
YLocation
Height
Width
Operation
Playback
Streaming
OFF
Hardware Acceleration
Tilt
Border
OFF
Post Processing
AdaptiveDeinterlacing
TotalColorControl
Hue
Saturation
Brightness
Sharpness
NoiseReduction
AnamorphicAndBx8PolyScaling
Cadence
AdaptiveContrastEnhanced
FrameRate
29.97
AlphaBlend
255
StackingOrder
FileName
Add
Advanced Settings
Add Zone
Delete Zone
Clone
New Config
Save As
Cancel
Finish
Exit

5.4 Advanced Settings

When the user presses the “Advanced Settings” button on the bottom left corner the following screen is displayed:



The various options are described in more details below:

- No. of Display Unit – the number of monitors to display on. This is usually limited by the number of video outputs on the device.
- Configuration – Identical / Different / Tiled (described in sections 5.3.1.2, 5.3.1.3 and 5.3.1.4)
- Loop - When selected the zone playlists will endlessly loop. When not selected, M.A.R.S. will close after the specified Test Duration
- Test Duration – only applies when Loop is not selected. M.A.R.S. will close after the specified time
- Select Core - this option allows the user to select the cores where he needs M.A.R.S. to run. This is applicable to M.A.R.S. and the widgets launched from it.

5.5 M.A.R.S. Error Codes and Error Messages

5.5.1 M.A.R.S. Error Codes/Messages

The following table captures the error codes and messages displayed by M.A.R.S. along with their severity. For all errors, M.A.R.S. will give an error pop. When the error is critical and if application can't proceed the pop-up will have only an "OK" button. Upon clicking this, the application will terminate. If the error is major or minor, and if the application can proceed, then the error pop-up will have "OK" and "CANCEL" options. Clicking "OK", application will continue. Clicking "CANCEL", will cause the application to terminate.

Error Code	Error Message	Severity	Description
1	M.A.R.S. OSA Failure	Major	OS System call failures
2	M.A.R.S. Memory Allocation Failure	Critical	Not enough memory in the system
3	M.A.R.S. General Status Failure	Major	General Error
4	Failed to stop M.A.R.S., Keyboard Interface may not work, try killing the application	Major	Display Manager Module not responding
5	Failed to read configuration file information.	Critical	Xml read error
6	Failed to select cores - Using all cores...	Major	Processor Core Selection failed
7	Only few cores are selected. The performance may be degraded depending on the total number of zones.	Major	Few cores are selected, performance may be degraded
8	No zones found in the Display Unit.	Minor	No zones defined in configuration file.
9	No of Display Units connected to Hardware differs from No of Display Units in Configuration file	Minor	Actual number of monitors mentioned in the configuration file and actually connected mismatch.
10	Unsupported video file format... Use mov, mp4, mpeg2-TS, avi ,wmv, mpg, yv12 or nv12	Minor	Supplied file is of unknown/unsupported extension
11	Video Zone Playlist is empty, add some videos	Minor	A Video Zone is defined but no video file is given in the carousel.
12	The selected area is out of bound	Minor	Tilted region goes out of Bound
13	Failed to play video. Either Unsupported format or corrupt file	Major	Encountered error while playback. File may be corrupt.
14	Failed to create elements for video Playback	Major	Pipeline/Filter graph creation failed.
15	Unable to Playback video	Minor	Video runtime error.
16	Failed to connect with default filters, Try registering the	Major	Pipeline/Filter graph creation failed

	FilterDLLs and running application again		
17	Specified Video file is not present. Kindly verify the configuration file	Minor	File doesn't exist in the path mentioned
18	Unsupported decode method.. Check Hardware Acceleration setting	Major	The video format cannot be played without hardware acceleration.
19	Unsupported video codec.. Use H264, H265 or Mpeg2	Minor	Given Video Codec is not supported
20	Unsupported audio codec.. Use aac, mp3 or wav	Minor	Given Audio Codec is not supported
21	Unsupported video codec or output format. Please try a different decode method.	Minor	Given output format is not supported
22	Failed to create elements for Audio Playback	Major	Pipeline/Filter graph creation failed.
23	Invalid/Corrupted Audio content	Minor	Invalid or Corrupt Audio file
24	Can't play the audio - Check external audio card and speaker connection	Minor	Either Audio card is not inserted or speaker/head phone not connected.
25	Setting H264 encoder parameters failed ... Setting default parameters	Minor	Failed to set H264 encoder parameters, setting default parameters
26	Setting MPEG2 encoder parameters failed... Setting default parameters	Minor	Failed to set MPEG2 encoder parameters, setting default parameters
27	Transcoding is not supported for Non-Intel Platform	Minor	Transcode not supported on Non-Intel Platform
28	Invalid raw format	Minor	Invalid raw format
29	Invalid parameters for a raw file. Please check Width, Height, FPS and Format.	Major	Invalid parameters for raw file
30	Query interface failed	Major	Query interface failed
31	Failed to Create Dump Filter	Major	Dump filter failure
32	Error in setting the dumping file name	Major	Error in setting the dumping file name
33	Error while connecting to server. Check if the IP address is correct and server is in running state.	Major	Error while connecting to server
34	Error while creating video session for the given stream	Major	Error while creating media session
35	Unable to play given stream. Error occurred in RTP.	Major	Unable to play stream. General error occurred in RTP
36	Video Sync Time information not available	N/A	Not used
37	Video sync Init failed	Major	Failed to initialise video sync

38	Video Reference clock cannot be created. Filter Failure.	N/A	Not used
39	Unsupported Audio File Format.. Use aac, wav or mp3 !!	Minor	Given Audio Codec is not supported
40	Audio Zone Playlist is empty...Add some Audio files	Minor	No Audio file in carousel
41	Failed to play audio, Either Unsupported format or corrupt file	Minor	Audio file is corrupt
42	Failed to create elements for audio	Major	Pipeline/Filter graph creation failed. It may happen if the packages are not installed properly
43	Invalid/Corrupted Audio File	Minor	Invalid or Corrupt Audio file
44	Audio file is not present at the specified path. Kindly verify the configuration file	Minor	File doesn't exist in the path mentioned
45	Unable to Playback Audio	Minor	Audio runtime error
46	Selected audio file is not a raw WAV file	Minor	WAV is not of right format
47	No Image files found	Minor	No files in Image zone carousel
48	Unsupported Image File Format.. Use jpg or bmp !!	Minor	Supplied file is of unknown/unsupported extension
49	Failed to Decode the Image	Minor	Image decode failed
50	Image file may be corrupted or may not be present in the path specified	Minor	Supplied file is corrupt or not present in the path mentioned
51	Image File is not present in the path specified	Minor	File doesn't exist in the path mentioned
52	Image file may be corrupted...	Minor	Image file could be corrupted
53	RSS Failed to connect	Critical	Network Connection Error
54	Either wrong RSS feed or RSS Network Failure...	Major	RSS url is wrong, network is under a proxy setting, or network is not functioning.
55	Failed to launch Widget	Minor	Execute permissions are not given to widget executables, or the parameters given to widgets are wrong.
56	Widget Zone Manager failed to terminate process	Minor	Widget executable is not responding
57	Widget Zone Manager structure empty	Minor	Memory Corruption in the system or invalid parameters
58	Ticker - Font not available: Use ""Times New Roman"", ""Courier New"" or ""Arial""	Major	Font creation failed, because the user specified a wrong font file in the configuration file
59	Add some text in to the Ticker	Minor	Text field is empty

	zone		
60	Image file may be corrupted or Invalid Image path	Minor	Image file added in ticker could be corrupted or it does not exist in the mentioned path
61	Wrong image index - Image index should be a non-zero positive number smaller than number of images specified	Minor	Ticker Image Number Invalid
~~62~~	~~Benchmark Display Fail~~	~~Minor~~	~~Benchmark zone rendering failed~~
~~63~~	~~Benchmark Parameter Updation Fail~~	~~Major~~	~~Benchmark parameter calculation or reading failed~~
~~64~~	~~Benchmark Font Creation Failed: Use ""Times New Roman"", ""Courier New"" or ""Arial""""~~	~~Minor~~	~~Font creation failed, because the user specified a wrong font file in the configuration file~~
~~65~~	~~Benchmark test duration was 0 - Set it to default value - 1 sec~~	~~Major~~	~~Benchmark test duration was set to 0 in the configuration file. Setting it to default value of 1 sec~~
~~66~~	~~Benchmark PAL Client Manager Unavailable~~	~~Major~~	~~Not possible to connect to Intel Metrics Framework~~
~~67~~	~~Benchmark failure to find PAL metrics~~	~~Minor~~	~~Metric from Intel Metrics Framework is not supported~~
68	Change the zone size..Bigger than the screen resolution	Major	Current zone configured is more than the screen resolution
69	Unable to initialize DWM	N/A	Not used
70	Unable to create application window	N/A	Not used
71	Unable to create Direct3D device	Major	Direct3D device creation failed
72	Unable to create DXVA device	N/A	Not used
73	Unable to create the surface for all zones	N/A	Not used
74	Unable to initialize compositor refresh timer	N/A	Not used
75	Custom Error Message	Minor	Heading used for various application specific error messages
76	Start Critical error	NA	For application's internal use
77	Failed to launch M.A.R.S. Application - Memory allocation failed for critical module	Critical	Not enough memory in the system, failed to launch M.A.R.S.
78	Wrong Configuration File - Try with some other file!!	Major	Corrupt or invalid Configuration file
79	Unable to launch M.A.R.S....EXITING !!	Major	Display Unit Manager initialization failed
80	Check Configuration File Path..EXITING !!	Critical	Specified configuration file is missing.

81	Unable to launch M.A.R.S....EXITING !!	Major	Failed to register callbacks with display unit manager
82	Unable to launch M.A.R.S....EXITING !!	Critical	Failed to read M.A.R.S. Test Duration from configuration file
83	Unable to launch M.A.R.S....EXITING !!	Critical	Display Units Entry missing or corrupted – in configuration file
84	Unable to launch M.A.R.S....EXITING !!	Critical	Failed to start M.A.R.S.. Display Unit Manger start failed.
85	Unable to launch M.A.R.S....EXITING !!	Critical	Configuration file is missing or corrupted
86	Unable to launch M.A.R.S....EXITING !!	Critical	Failed to start M.A.R.S.. Unable to start keypad task.
87	Test Duration is Zero!	Critical	Test duration is zero
88	Monitor configuration mismatch.. Please check..	Major	Monitor configuration mismatch
89	Unable to create DIRECT3D Device...EXITING!!	Critical	Unable to create Direct3D device for presentation
90	Failed to initiate video sync	Critical	Unable to start video synchronisation with other devices
91	Failed to video sync	Critical	Video synchronisation failed
92	Unable to launch M.A.R.S....EXITING !!	Critical	Display unit manager failed to read number of display units
93	Unable to launch M.A.R.S....EXITING !!	Critical	Display unit manager failed to read application information
94	Unable to launch M.A.R.S....EXITING !!	Critical	Display unit manager failed to read zone information
95	Unable to launch M.A.R.S....EXITING !!	Critical	Display unit manager failed to read audio zone count
96	Unable to launch M.A.R.S....EXITING !!	Critical	Display unit manager failed to read M.A.R.S. configuration
97	Unable to launch M.A.R.S....EXITING !!	Critical	Video zone failed to read M.A.R.S. configuration
98	Unable to launch M.A.R.S....EXITING !!	Critical	Audio zone failed to read M.A.R.S. configuration
99	Failed to display image - Image Zone Manager not initialized	Critical	Image Zone manager initialize failed
100	Failed to stop Image Zone Manager	Critical	Image zone manager uninitialization failed
101	Image Zone Manager failed to read M.A.R.S. Configuration	Critical	Image zone failed to read M.A.R.S. configuration
102	Unable to launch M.A.R.S....EXITING !!		Ticker zone failed to read M.A.R.S. configuration

~~103~~	~~Failed to read Benchmarker~~	~~Critical~~	~~Benchmark parameter read failed~~
~~104~~	~~Benchmark Zone Manager failed to read M.A.R.S. Configuration~~	~~Critical~~	~~Benchmark zone failed to read M.A.R.S. configuration~~
105	Wrong Configuration File - Try with some other file!!	Critical	Invalid xml file or syntaxes
106	Unknown error!	Critical	Unknown Error!

5.5.2 Widget Error Codes/Messages

Following table captures the error codes and messages reported by widgets, displayed by M.A.R.S. along with their severity.

Error Code	Error Message	Severity	Description
1	Failed to create shared memory	Major	Failed to create shared memory
2	Failed to write to shared memory...Check the name of shared memory!!	Major	Failed to write parameters to the shared memory. May be due to an incorrect shared memory name
3	Failed to read from shared memory...Check the name of shared memory!!	Major	Failed to read parameters from shared memory. May be due to an incorrect shared memory name
4	Failed to get a handle to shared memory...Check the name of shared memory!!	Major	Failed to get handle to the shared memory. May be due to an incorrect shared memory name
5	Encoding/Decoding General Failure	Major	General error while encoding/decoding.
6	Invalid command line parameters..Please verify!!	Major	Incorrect command line arguments passed to Widgets. Check the shared memory name.
7	Invalid input arguments..Please verify!!	Major	Invalid input arguments passed to Widgets. May be due to incorrect shared memory name.
8	Benchmark data not available	Major	Failed to populate benchmark data.
9	Could not get Widget Window handle	Major	Widget window handle not available.
10	Could not get M.A.R.S. Window handle	Major	M.A.R.S. window handle not available.
11	Check Widget zone size..Check the input arguments!!	Major	Widget zone configured is more than the screen resolution.
12	Widget Zone Not Visible..Check the input arguments!!	Major	Widget zone configured is invisible.
13	File Format not supported by Widget..	Major	File format not supported by Widget
14	Connection Establishment failed..Try after some time!!	Major	Unable to establish connection
15	Check file location...	Major	Incorrect file path
16	Session Establishment Failed!!	Major	Unable to establish session.
17	Widget Memory Allocation failure	Major	Not enough memory in the system
18	Widget General Failure!!	Major	General Error

6. Configuration parameters

Captured below are all the configuration parameters, description, range and unit.

Readme For Configuration File			
Parameter Name	**Parameter Description**	**Value/Range**	**Unit**
Configuration	Describes Configuration type for Display units.	Identical, Different, Tiled	NA
TestDuration	The time for which application will be running.	1 Sec to 9 Days	Day:Hours:Minutes:Seconds
TestDurationLoop	If this option is enabled M.A.R.S. will run forever. When disabled, M.A.R.S. will run for the TestDuration and quit.	Enable, Disable	NA
Priority	Decides the Priority of content. Priority 1 Means highest priority	1 to 10	NA
Video	Decides the Priority of Video.	1 to 10	NA
Ticker	Decides the Priority of Ticker.	1 to 10	NA
Image	Decides the Priority of Image.	1 to 10	NA
RSS	Decides the Priority of RSS.	1 to 10	NA
Audio	Decides the Priority of Audio.	1 to 10	NA
Widget	Decides the Priority of Widget.	1 to 10	NA
Text	Decides the Priority of Static Text.	1 to 10	NA
CSVWrite	Specifies whether benchmark parameters are to be written in to CSV file or not.	Enable or Disable	NA
~~BMAcquisition~~	~~Specify the benchmark parameters that needs to be calculated. With the help of this parameter, user can enable/disable the acquisition of individual benchmark parameters.~~	~~Enable or Disable~~	~~NA~~
~~MARSCPUUtilization~~	~~CPU % used by MARS~~	~~Enable or Disable~~	~~NA~~
~~TotalCPUUtilization~~	~~Overall CPU % in use~~	~~Enable or Disable~~	~~NA~~
~~MARSMemoryUtilization~~	~~% RAM usage by MARS~~	~~Enable or Disable~~	~~NA~~
~~TotalMemoryUtilization~~	~~% of total RAM in use~~	~~Enable or Disable~~	~~NA~~
~~TjReading~~	~~Temperature reading~~	~~Enable or Disable~~	~~NA~~
~~GPUUsage~~	~~GPU usage %~~	~~Enable or Disable~~	~~NA~~
~~MFXUsage~~	~~MFX engine usage %~~	~~Enable or Disable~~	~~NA~~
~~MFXDecodeUsage~~	~~MFX decode usage %~~	~~Enable or Disable~~	~~NA~~
CoreSelection	Specify the core(s) on which M.A.R.S. has to execute.	ALL (select all available cores) or 0 to (Number of cores available - 1)	NA
DisplayUnitNumber	Specifies the Display Unit Number	1 to 5	NA
DXVADevice	Specifies DXVA-HD or DXVA-VP based composition on Intel core platforms. This is valid only on Windows.	HD or SD	NA

DXVAVPSelection	Specifies Hardware or Software based composition on AMD platforms platforms. This is valid only on Windows.	Hardware or Software	NA
TiledDisplayUnitNumber	If the current Display Unit is not tiled with any other Display Unit, then this parameter will be set to "None" If the current Display Unit is tiled with any other Display Unit, then that Display Unit number will appear here	None,1,2,3,4,5	NA
Direction	This is applicable only when "TiledDisplayUnitNumber" is not set to "None". This describes whether the current Display Unit has to be tiled horizontally or vertically with the other Display Unit	Horizontal, Vertical	NA
AudioOut	Specifies the audio track that needs to be played. This may be of an audio or video zone.	None and 1 to 50. 1 means Zone Number 1	NA
Orientation	Decides the orientation of the Display Unit.	Portrait, Landscape	NA
TargetHeight	M.A.R.S. Settings GUI can be used to generate a configuration file that will run on a Display Unit of a different resolution compared to where M.A.R.S. Settings is running now. Ex: M.A.R.S. is currently running on a platform that is connected to a Display Unit of resolution 1024x768. But the user wants to generate a configuration file that actually has to run on a Display Unit of resolution 1920x1200. In this case user can set "TargetHeight" to 1200 and "TargetWidth" to 1920 and position all the zones and generate a configuration file that would later (targeted for) a Display Unit resolution of 1920x1200.	1 To 5000	NA
TargetWidth	M.A.R.S. Settings GUI can be used to generate a configuration file that will run on a Display Unit of a different resolution compared to where M.A.R.S. Settings is running now. Ex: M.A.R.S. is currently running on a platform that is connected to a Display Unit of resolution 1024x768. But the user wants to generate a configuration file that actually has to run on a Display Unit of resolution 1920x1200. In this case user can set "TargetHeight" to 1200 and "TargetWidth" to 1920 and position all the zones and generate a configuration file that would later (targeted for) a Display Unit resolution of 1920x1200.	1 To 5000	
Background	Specifies the background for display unit. This could be an image or just a color.	NA	NA
Image	Specifies the background image for the display.	Image file name	NA
Color	Specifies the background color for the display. This field will be active only when the back ground image is set to 'None'. There are 3 color components R, G and B. All of them ranges from 0 to 255	0 To 255	NA
ZoneNumber	Specifies the Zone number in the current display.	1 to 50	NA
Content	Specifies the content type for a particular zone.	Video, Audio, Image, RSS, Ticker, Widget, Benchmark	NA

FileName	Name of the files to be played on a specific zone. This field is valid only for Video, Audio and Image zones. For Zone Carousel we have to give more than one file name.	0 to 50	NA
Width	Width (X - resolution) of the video. This is applicable only for raw video files (not supported in Beta).	1 to 1920	Pixel
Height	Height (Y - resolution) of the video. This is applicable only for raw video files (not supported in Beta).	1 to 1080	Pixel
FrameRate	Frame rate of the input video sequence. This is applicable only for raw video files.	1 to 60	FPS
Format	Chroma format of the video. This is applicable only for raw video files.	YU12, NV12	NA
Visibility	Specifies whether the zone is visible or invisible. Audio zone and Video Analytics is always Invisible.	Visible, Invisible	NA
X_Location	Top-Left horizontal coordinate (x coordinate) of the zone with respect to display unit.	0 to (Screen Width – 1)	Pixel
Y_Location	Top-Left Vertical coordinate (y coordinate) of the zone with respect to display unit.	0 to (Screen Height – 1)	Pixel
Height	Height of the zone.	1 to Screen Height	Pixel
Width	Width of the zone.	1 to Screen Width	Pixel
PostProcessing TYPE	This is applicable only for Video zones and is for Video post processing. There can be more than one post processing enabled for a video zone. Depending on the GPU capability a subset of post processing filters will be applied. The following options apply to all post processing techniques. - TYPE - STATE and - VALUE	**TYPE** can have one of the following values - AdaptiveDeinterlacing - Sharpness - NoiseReduction - Cadence - AdaptiveContrastEnhanced - TotalColorControl **STATE** can have the following values - ON - OFF **VALUE** can have the following values 1 to 100 Note: 1) AdaptiveDeinterlacing doesn't have any value 2) TotalColorControl has 3 components that ranges from 0 To 100 by name Hue, Saturation and Brightness	NA
FrameRate	Frame rate for the video.	1 to (Monitor Display Rate)	FPS

AlphaBlend	Transparency level	0 to 255 0 is Fully transparent 255 is Fully Opaque	NA
StackingOrder	Depth of the zone	1 to 10. 1 is the bottom most and 10 is the top most	NA
Interval	Time interval between two images in zone carousel. This applies to only the image zone.	1Sec to Test Duration	Day:Hours:Minutes:Seconds
BorderState	Any zone can have border around it, that can be enabled or disabled by setting this variable appropriately.	ON, OFF	NA
BorderThickness	Thickness of the border in pixels	1 To Monitor Width or Monitor Height	NA
BorderColor	Border Color. There are 3 color components here R, G and B ranging from 0 to 255	0 to 255	NA
URL	URL link from which RSS zone needs to download content.	Any RSS feed URL./	NA
BorderAlpha	Border transparency	0 To 255	NA
FontSize	Font size of the text on RSS and Ticker zone.	6 to 60	NA
FontType	Font type of the text on RSS and Ticker zone.	Arial, Courier New, Times New Roman.	NA
tiledDisplayUnitNumber	Font style of the text on RSS and Ticker zone.	Normal, Bold, Italic.	NA
ScrollRate	Scrolling rate for the text in RSS and Ticker zone.	1 to 100	Pixels Per Second
ScrollDirection	Direction for scrolling. Vertical means from Down to Up, Horizontal means from Right to Left. Static means a static text zone.	Vertical, Horizontal and Static	NA
TextBackgroundColor	Background color for RSS and Ticker zone.	R,G,B	NA
TextBackgroundAlpha	Transparency level for RSS and Ticker zone.	0 to 255	NA
TextColor	Color of text in RSS and Ticker zone.	R,G,B	NA
PollRate	Time interval at which content needs to be downloaded from RSS feed URL.	5 Sec to (Test Duration)	Day:Hours:Minutes:Seconds
Text	Text to be displayed on Ticker zone.	Any text	NA
Type	Type/Name/Identifier of widget - In case of widget zone	Clock	NA
	Use case in case of Video Zone [Playback]	Playback	NA
Operation	Playback. Applicable only for Video Zones.	Playback	NA
HardwareAcceleration	Whether the encoding, transcoding need to use hardware acceleration in Video Zone.	ON, OFF	NA
BinaryName	Binary name of the widget excluding path. Extension of the binary is excluded here. Its always assumed that the executable on windows will have extension .exe and on Linux will have extension .out	NA	NA
Mode	Parameter Name of the widget specific parameter	NA	NA

ControlType	Control type of this parameter	1) Selection - This can have a set of values, depending on the widget. This basically implements a drop down. 2) Input - Represents a text box, where any widget specific value can be entered. 3) Browse - Represents a file browse option 4) BrowseFolder - Represents a browse folder option	NA
Value	Valid only when the "ControlType" is "Selection"	Alphanumeric or string	NA
Prefix	Prefix for the selected parameter	Widget specific, there is no range	