



grass valley

A **BELDEN** BRAND

# IGNITE

LIVE PRODUCTION CONTROL SYSTEM

Release Notes

Software Version 10.0

071896901  
JULY 2017

—

## Copyright & Trademark Notice

Copyright © 2017, Grass Valley Canada. All rights reserved.

Belden, Belden Sending All The Right Signals, and the Belden logo are trademarks or registered trademarks of Belden Inc. or its affiliated companies in the United States and other jurisdictions. Grass Valley is a trademark or registered trademarks of Grass Valley Canada. Belden Inc., Grass Valley Canada, and other parties may also have trademark rights in other terms used herein.

## Grass Valley Web Site

The Grass Valley Web ([www.grassvalley.com](http://www.grassvalley.com)) site offers the following:

**Online User Documentation** — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes are available.

**FAQ Database** — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

**Software Downloads** — Download software updates, drivers, and patches.

## Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's Web site ([www.grassvalley.com](http://www.grassvalley.com)).

An online form for e-mail contact is also available from the Web site.

## Recycling

Visit [www.grassvalley.com](http://www.grassvalley.com) for recycling information.

—

# Contents

- Ignite Release Notes** ..... 7
  - Introduction ..... 7
  - Release Summary ..... 7
  - New Features and/or Functionality..... 7
    - Ignite Automation Software Panel (ASP) ..... 7
    - Ignite-X: Playlist enhancements ..... 9
    - Support of WASP3D CG..... 10
    - Support of Studer Audio Mixer..... 10
    - Support for Grass Valley Densité GPI-1501..... 10
    - Support of Dalet Newsroom ComputerSystem ..... 10
    - New requirement to install MongoDB as a Windows service ..... 10
  - Compatibility..... 10
    - Hardware ..... 10
    - Software ..... 11
  - Installation and Configuration ..... 12
    - Considerations ..... 12
    - Hardware Installation..... 12
    - Software Installation..... 12
      - New Installation..... 13
      - Upgrade Installation ..... 13
    - Configuration Notes ..... 14
  - Open Source Software Information ..... 30
    - Apache..... 30
    - Microsoft Public License..... 31
    - MIT ..... 32
    - Mozilla..... 33
    - NSubstitute..... 33



# *Ignite Release Notes*

## **Introduction**

This document describes compatibility, installation, and other information specific to Ignite Release 10.0 which is a major release of the Ignite Live Production Control System.

**Note** For a current list of supported/controlled devices, contact an authorized Grass Valley reseller or contact Grass Valley sales directly.

## **Release Summary**

This release includes information for:

- [Ignite Automation Software Panel \(ASP\) on page 7](#)
- [Ignite-X: Playlist enhancements on page 9](#)
- [Support of WASP3D CG on page 10](#)
- [Support of Studer Audio Mixer on page 10](#)
- [Support for Grass Valley Densité GPI-1501 on page 10](#)
- [Support of Dalet Newsroom ComputerSystem on page 10](#)
- [New requirement to install MongoDB as a Windows service on page 10](#)

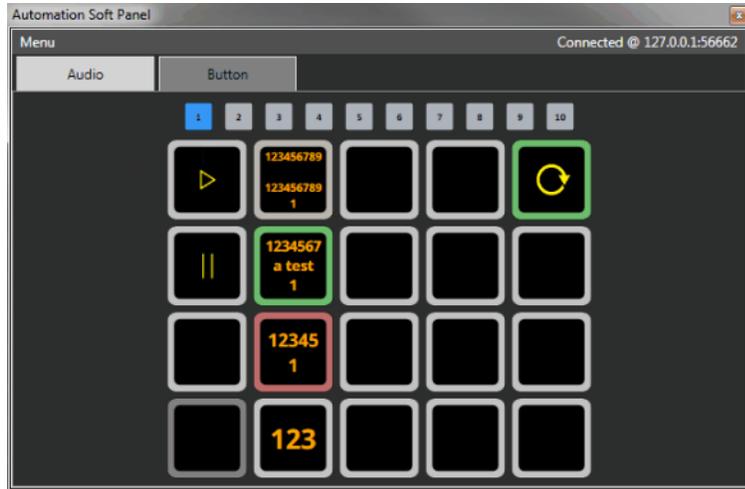
## **New Features and/or Functionality**

### **Ignite Automation Software Panel (ASP)**

Ignite introduces the Automation Software Panel (ASP) to provide another alternative for automated control workflow in a live production system.

The software panel allows users to run it cross platform, on PC and tablets from any location in the control room. Additional features include:

- Support on Windows and Android operating systems.
- Simultaneous run of multiple Automation Software Panels. There is no limit of instances but a maximum of 6 simultaneous instances is recommended, and supported by the installer.
- Toggling of layouts between having modules on separate Audio and Button tabs, or stacked horizontally. (Windows only)



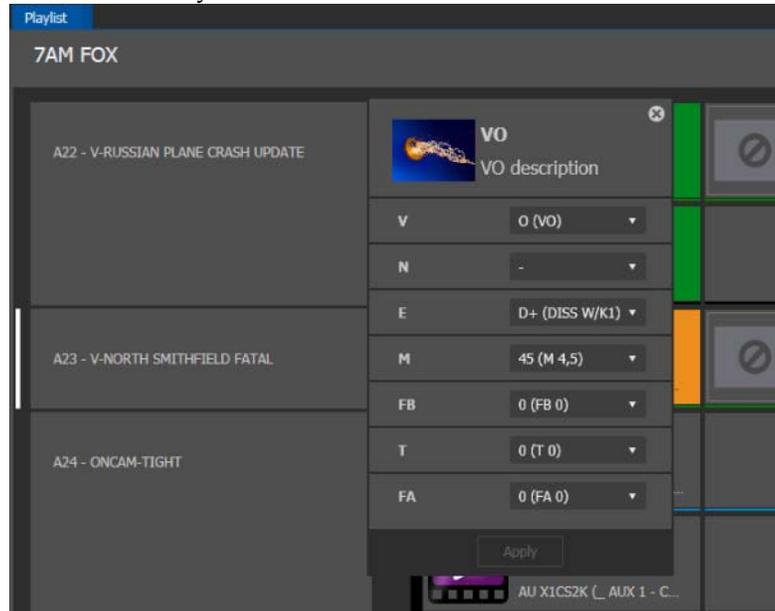
- Toggling between full screen and window modes. Just like the position and size of windows are remembered between sessions, the full screen state is persistent, so an ASP which was closed while being in full screen will reopen next time in full screen. (Windows only)



For configuration details, refer to [CONFIGURATION NOTE 5](#) on page 16.

## Ignite-X: Playlist enhancements

Ignite-X playlist is enhanced with the display of event parameter values as configured in the IQ Template Manager. Users can now modify values of each parameter table instantly just by selecting from drop-down lists of events on the Playlist itself.



The Preview Event Inspector is also added into Ignite-X Playlist to display events in a column for stacked view, and side-by-side with another column to monitor the sequence of events on the Timeline. This is beneficial for Directors and Producers to quickly monitor current and future events in live production with just one glance.



## Support of WASP3D CG

Ignite now supports the WASP3D CG device. For more details, refer to [CONFIGURATION NOTE 13 on page 26](#).

## Support of Studer Audio Mixer

Ignite now supports Studer Audio mixer in the Audio module. For configuration details, refer to [CONFIGURATION NOTE 6 on page 18](#).

## Support for Grass Valley Densité GPI-1501

Ignite introduces the support of Densité Frame with GPI-1501 card to replace the Videoframe Tally Expander. Ignite supports configuration of up to 64 GPOs and 32 GPIs on multiple GPI-1501 cards across one or more Densité frames. For configuration details, refer to [CONFIGURATION NOTE 14 on page 27](#).

## Support of Dalet Newsroom ComputerSystem

Ignite enables the creation of TME column in the Dalet Newsroom Computer System in this release. For configuration details, refer to [CONFIGURATION NOTE 8 on page 20](#).

## New requirement to install MongoDB as a Windows service

Ignite release 10.0 requires the installation of MongoDB as a Windows service. For configuration details, refer to [CONFIGURATION NOTE 4 on page 15](#).

# Compatibility

## Hardware

This release requires hardware equipped with Windows 64-bit operating system.

## Software

This Ignite Release 10.0 only functions with the Media Object Portal (MOP) and does not support the XMOS server from previous systems. If a customer is being upgraded from any version of Ignite prior to:

- 5.2.0.0, you must run the AlloyConversionUtilities found in the Ignite installation folder
- 5.1.1, you must convert the customer's TME & Macro library with the the IgniteTMEProcessor found in the Ignite installation folder

Refer to the release matrix in [Table 1](#)

Table 1. Release Matrix

Category	Application	Version
Newsroom Computer Systems	ENPS Server	8.0.0.203
	ENPS Client	8.0.0.203
	iNEWS Server	5.6.0.6
	iNEWS Client	5.6.0.6
	iNEWS MOS Gateway	4.3.1.0
	Dalet (TME column only)	Galaxy
Protocol	Automated Soft Panel (ASP)	10.0
	Ignite ActiveX	1.0.27
	Katalyst	2.1.5
	MOP Server	1.0.25
	MOS	2.8.3
	TME File Watcher	1.0.27
Audio Mixers	Calrec	Zeta 100
	Klotz	1.3.5.006
	Lawo	5.8.0.4
	SSL	5.0/5
	Studer	5.4.00a3
	Wheatstone	D8/D10
	Yamaha	1.35
Graphics Device	Chyron (Duet and HyperX)	8.0 (build 1558)
	Vertigo	5.4 SP3 (5.4.149.0).
	VizRT	3.1.1
	WASP3D	3.8.2
KONNECT	Kayenne Frame Firmware	4.2.2d01
	K-Frame Firmware	10.5.0
	K-Frame Deployment Tool	10.5.0
	K-Frame Menu	10.5.0
Video Server	K2 Summit	9.7.0.2438

Table 1. Release Matrix

Category	Application	Version
Others	Elemental	2.3.1.22369
	GV STRATUS	5.7.0
	Densité	GPI-1501 firmware version (1.0.0)
	MongoDb	3.4.4 (Community version)
	Android for Automation Soft Panel (ASP)	Android 6.0 (Marshmallow) or Android 7.0 (Nougat)

## Installation and Configuration

### Considerations

- Ignite 10.0 is not an update, but a full installation.
- Ignite 10.0 requires Microsoft .NET 4.6.1 and Microsoft Visual C++ Redistributable for VS 2015 Update 2.
- ScriptViewer is no longer sold with Ignite, but for upgrading customers, a corresponding ScriptViewer is available.
- With v10.0, desktop experience must be enabled otherwise graphics might be compromised.

### Hardware Installation

Only qualified Grass Valley Service Engineers are authorized to install the Ignite Live Production Control System. Contact your local Grass Valley representative, your Grass Valley Ignite Technical Service representative, or Grass Valley Support Center.

### Software Installation

Only qualified Grass Valley Service Engineers are authorized to install Ignite Live Production Control System Release 10.0 software. Contact your local Grass Valley representative, your Grass Valley Ignite Technical Service representative, or Grass Valley Support Center.

Installation has two parts:

- MOP server
- Ignite

## New Installation

1. Run the IgniteMOPInstaller.msi for 1.0.25 on the MOP server.
2. Run the Ignite 10.0.0 Installer.exe on the Ignite workstation.
3. Select the feature set from installer options (Audio, Switcher Type, etc.) and finish the installation.

## Upgrade Installation

### MOP Server Upgrade

**CAUTION** It is imperative that you follow these instructions when UPGRADING to MOP Server 1.0.25 from a previous version.

**Note** This update requires more than just new software, but also has a database update component.

1. Stop all MOP services before the upgrade.
2. Manually uninstall MOP Server via Windows add/remove programs.
3. Run IgniteMOPInstaller.msi for 1.0.25 on the MOP server.
4. Launch the Ignite MOP Utility and select as below:
  - **Services > Start Services**
  - **Settings > Configure Database**
5. Ensure that the Database Version is 6 or less.

**Note** In the following step, the application might freeze for a few seconds, this is normal.

6. Under **Upgrade**, click **Upgrade Database**. When done, the:
  - Messages window displays **Upgrade complete**
  - Database Version displays **7**

### Ignite Upgrade

**Note** If a customer is being upgraded, and is using different audio, or a different switcher (i.e. going from Klotz to Calrec, or Kayak to Kayenne), after restoring setups, you will need to restore some registry settings manually. Refer to [http://grassvalleyautomation.com/wiki/index.php?title=Ignite\\_Restore](http://grassvalleyautomation.com/wiki/index.php?title=Ignite_Restore) for more information.

If a customer is upgrading from any version of Ignite prior to:

- 5.2.0.0, you must run the AlloyConversionUtilities found in the Ignite installation folder
  - 5.1.1, you must convert the customer's TME & Macro library with the the IgniteTMEProcessor found in the Ignite installation folder
1. Backup the GrassValley folder and the TBMS registry.
  2. Copy the Ignite\_10.0.0\_FullInstall folder to the C:\Software directory.
  3. Run the Ignite 10.0.0 Installer.exe to uninstall previous version and backup configs.
  4. Take note of the name of the folder created in the D:\IgniteBackups folder.
  5. Run the Ignite 10.0.0 Installer.exe on the Ignite workstation.
  6. Select feature set from installer options ( such as Audio, Switcher Type, etc.) and finish the installation.

**Note** Timed Events setting is disabled by default. To enable Timed Events, check Timed Events check box when it displays on the Ignite installation wizard.

## Configuration Notes

### CONFIGURATION NOTE 1

**Note** Always perform a backup of the entire TME library before running a conversion via IgniteTMEProcessor.

If a user is being upgraded and has any TMEs that addressed the Script-Viewer to append scripts and/or load CGs from the CG list, the TMEs must be converted.

In most cases, this is just a single TME (LP.tmx, LS.tmx, or something similar) that is embedded but if the customer uses multiple versions of this file type, all must be converted. Conversion is done via the IgniteTMEProcessor.exe in the root Ignite folder.

### CONFIGURATION NOTE 2

- If a user is being upgraded and is not using ScriptViewer, or for any reason would prefer to not see the Miniviewer in the Ignite GUI, this must be modified in the registry.

```
HKEY_LOCAL_MACHINE\SOFTWARE\TBMS\IPS\SCRIPT-  
GUI\MINIVIEWMODE  
0 = No Miniviewer
```

1 = Miniviewer

- If the user is not using ScriptViewer, it is recommended that the SV row in the timeline track be removed and replaced with another track (e.g. CG, Kayak, Camera).
- If the user is not using ScriptViewer, in order to fill the space vacated by the Miniviewer module, it is recommended that the CG List GUI be changed to **Wide** mode from the Display Settings tab of the CG List Settings dialog box.

### CONFIGURATION NOTE 3

For users of Konnect, a license must be generated using the new PVLICENSE-Generator.exe v6.0.0.2. This module should also be used for generating licenses for new Kayak customers.

### CONFIGURATION NOTE 4

Beginning with the Ignite 10.0 release, MongoDB must be installed as a Windows service in the Ignite system.

**Note** Use the default port with Ignite 10.0 application. If MongoDB has been previously installed, you must uninstall it before proceeding with installation instructions below.

1. Procure the v3.4.4 (Community version) installer from the MongoDB website at the link below:

[http://downloads.mongodb.org/win32/mongodb-win32-x86\\_64-2008plus-ssl-3.4.4-signed.msi](http://downloads.mongodb.org/win32/mongodb-win32-x86_64-2008plus-ssl-3.4.4-signed.msi)

2. Run the installation file until completion.
3. Launch the command prompt with administrator privileges and create these required directories to store data and logs as follows:

- `mkdir c:\data\db`
- `mkdir c:\data\log`

4. Open to edit the configuration file at `C:\Program Files\MongoDB\Server\3.4\mongod.cfg`

5. Add system log configuration as follows:

```
systemLog:
    destination: file
    path: c:\data\log\mongod.log
```

6. Add storage path in the configuration file as follows:

```
storage:
    dbPath: c:\data\db
```

7. To install the mongod service, execute the following command on the command prompt:

```
"C:\Program Files\MongoDB\Server\3.4\bin\mongod.exe" --  
config "C:\Program Files\MongoDB\Server\3.4\mongod.cfg"  
--install
```

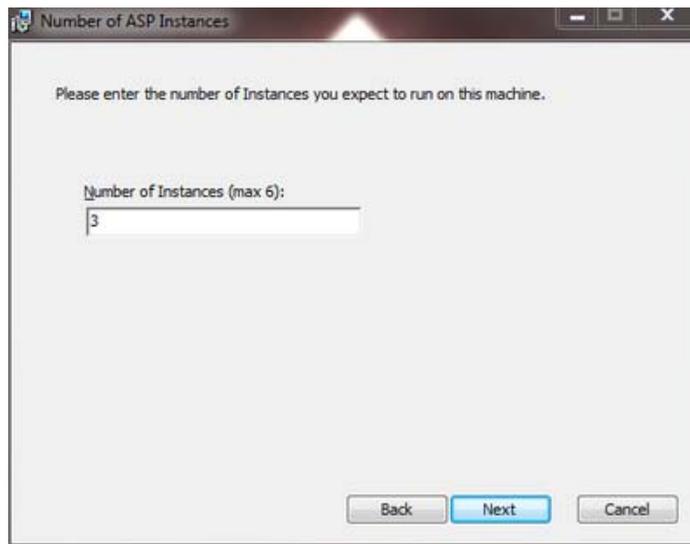
8. Lastly, start the MongoDB Service via the following command:

- net start MongoDB

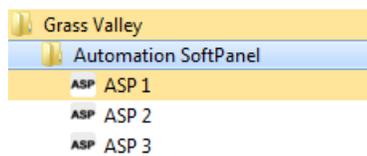
### CONFIGURATION NOTE 5

You must install the Automation Soft Panel (ASP) driver in Ignite before installing the ASP in Windows and Android devices.

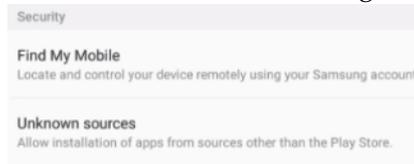
1. To get the ASP device into the Devices list in Ignite, run and install the Automation Soft Panel driver (version 10.0).
2. To install ASP in Windows devices, download the ASP installer for Windows and run it.
3. When prompted, enter the number of ASP instances that you want to run in your system. A maximum of 6 simultaneous instances is recommended, and supported by the installer.



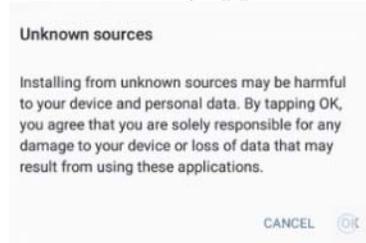
4. Click **Finish** to complete the installation.
5. Click **Start | All Programs | Grass Valley | Automation Soft Panel** to launch an instance of the ASP.



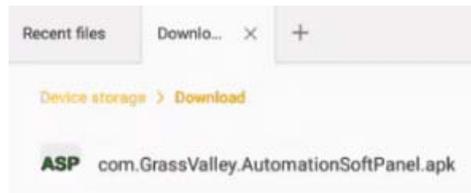
6. To install ASP on an Android device, configure the device to allow the installation of third party software as follows:
  - a. Go to the device's **Settings | Lock screen and security | Security**
  - b. Enable the **Unknown sources** setting.



- c. Tap **OK** when the dialog appears as below:



7. Download the Automation Soft Panel APK file to the Android device.
8. Open the file manager application of your choice and find the APK file.



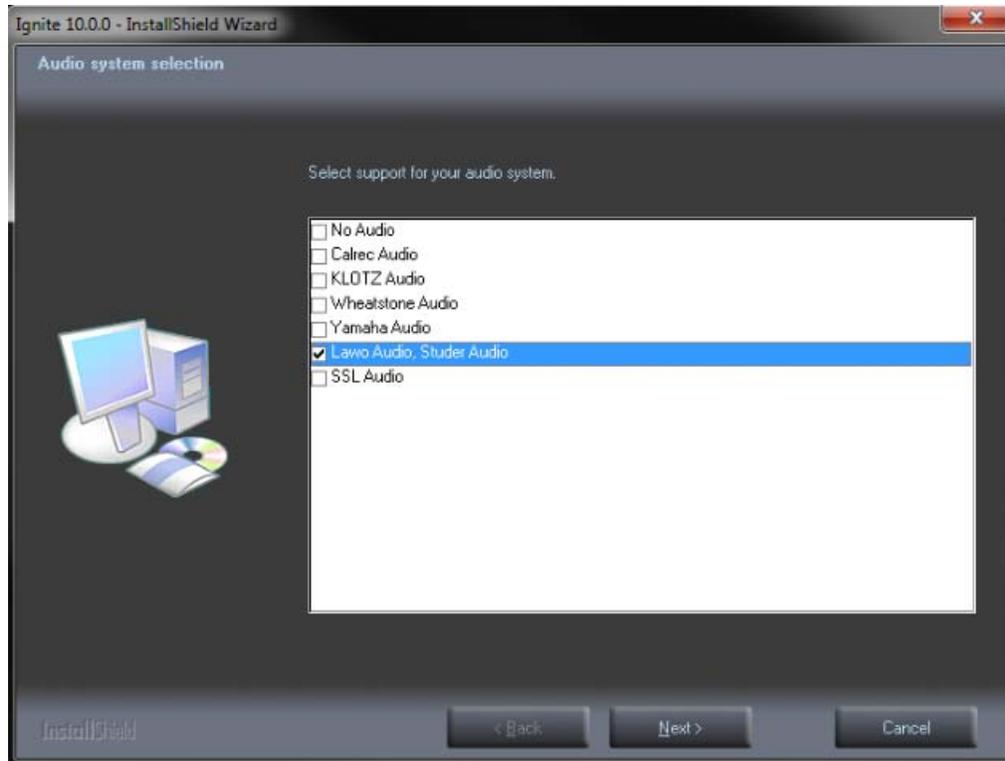
9. Tap on it and then tap **Install** to commence the installation process.
10. Once installation is complete, the Automation Soft Panel will be accessible from the Apps drawer.

**Note** Just like with a Katalyst panel, Ignite connects to ASP devices when they are enabled in the current mode.

## CONFIGURATION NOTE 6

If you have Studer Audio Mixer in your operation, configure as follows:

1. Run the Ignite 10.0.0 Installer.exe and select **Lawo Audio, Studer Audio** in the Audio system selection window.

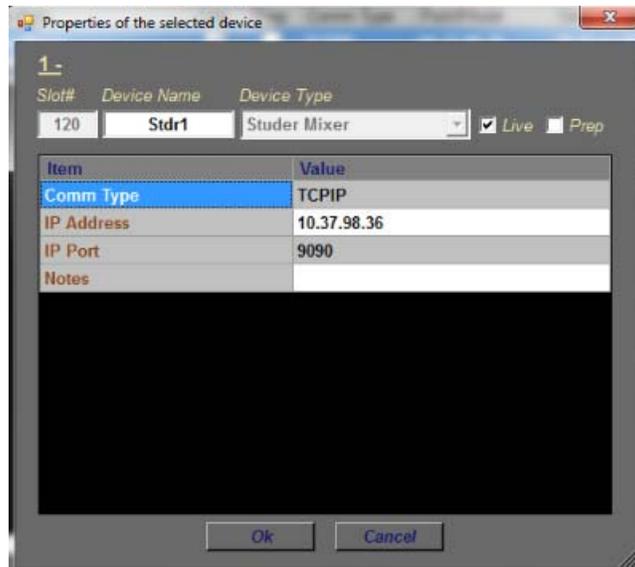


The following will be installed:

- Lawo
  - Studer
2. Click **Finish** at the end of installation wizard.
  3. Launch the Ignite application.
  4. On the Event Timeline module, select **Setup | Configuration and Device Setup**.

Lawo and Studer Audio are both available to be selected in the Device Configuration dialog.

5. Select **Studer Mixer** for the Device Type and configure as follows:



6. Click **OK**.

### CONFIGURATION NOTE 7

For the delay operation with GPI16, a toggle is enabled in the registry to allow users to choose between execute or discard a delay when a play command is hit while GPI16 is performing a delay.

1. Ensure you already upgraded your Ignite application.
2. Run this file at `C:\Program Files\GrassValley\Ignite\RegisterModules.exe`
3. Select “R” when prompted.
4. Navigate to `C:\Program Files\GrassValley\Ignite\MiscApps`
5. Select a file for the buffer command to be On or Off from the list below:
  - `GPI_16_BufferCommandsOff64.reg`
  - `GPI_16_BufferCommandsOn64.reg`
6. Double-click to execute the .reg file.

A prompt appears with this confirmation dialog: “Are you sure you want to continue?”

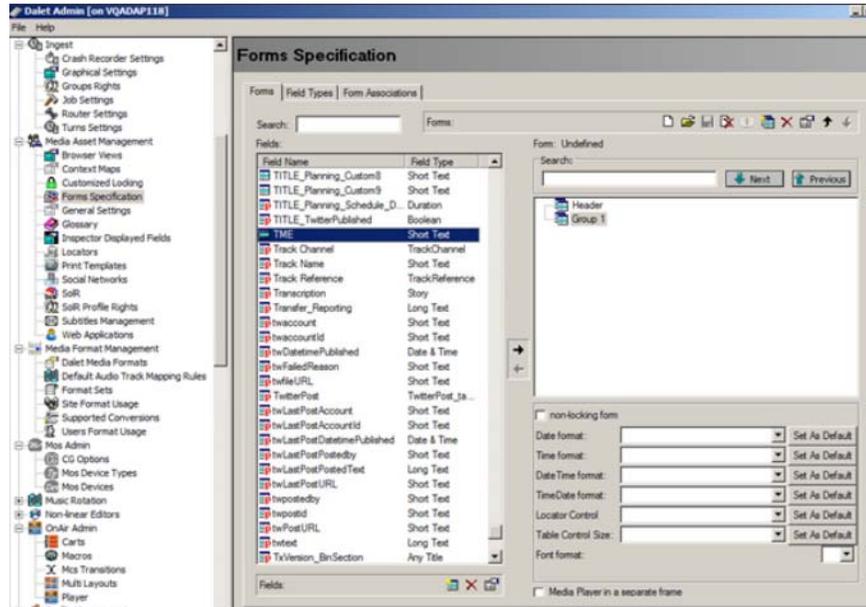
7. Click **Yes**.

**Note** If Buffer Commands Off is selected, Ignite will execute the play command, and discard the delay. If Buffer Commands On is selected, Ignite will execute the delay and play command will resume later.

## CONFIGURATION NOTE 8

Users can now insert a TME column into the Dalet Newsroom Computer System as follows:

1. Launch the Dalet Admin application and go to **Media Asset Management | Forms Specification**.

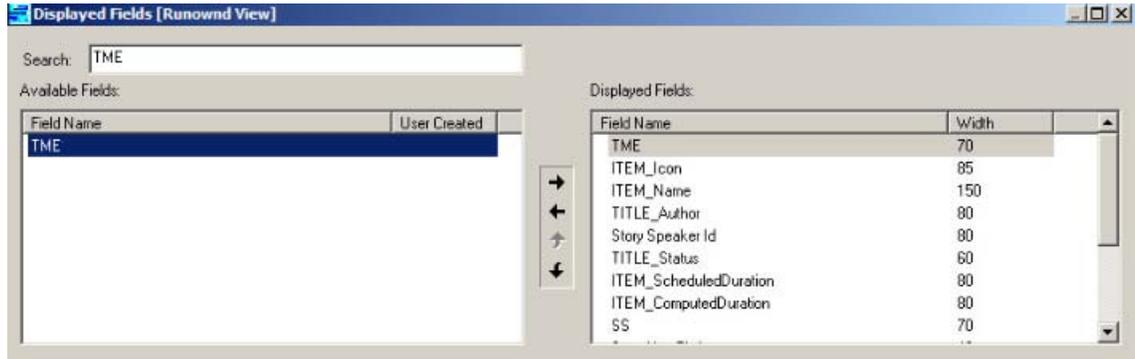


2. Click on the **New** icon. 
3. Enter properties of the TME column as follows:



4. Click **OK**.
5. In the Dalet Admin application, select **Scheduling | Rundown Views** and click **Change**.

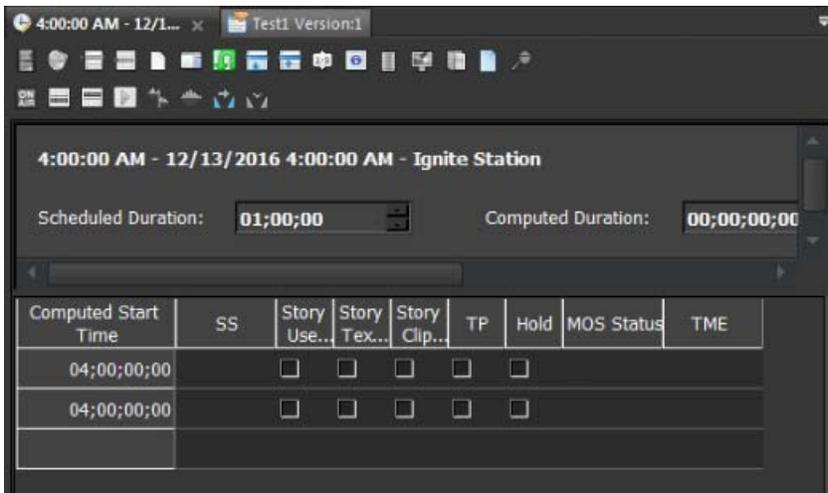
6. Search for the newly added field and click the arrow (->) to add it into the Displayed Fields section.



7. Click **OK**.

**Note** If you have more than one rundown view, add the new column into other rundown views as well.

8. Launch the Dalet Galaxy application and open a rundown. The newly added column appears on the rundown as can be seen below:



### CONFIGURATION NOTE 9

Ignite users with the latest Chyron HyperX driver or existing users with previous versions of the software suite must perform the following configuration in the Ignite device manager:

1. Launch the Ignite application.
2. On the Event Timeline module, select **Setup | Configuration and Device Setup**.
3. Select Chyron in the Devices Configuration screen and click **Edit**.

4. Enter the properties of the Chyron CG device. The Root Folder value should be set to **CAMIO4** in this release.



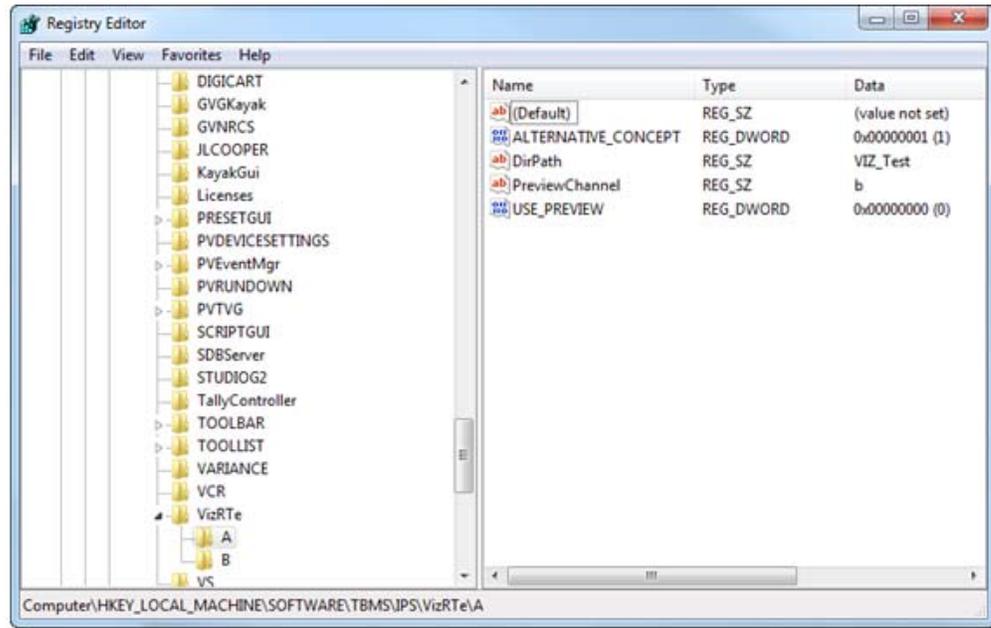
**Note** For users of CAMIO 3 or earlier, you can leave the Root Folder field blank by default or insert values depending on the version of Chyron software suite in use. Possible values for the root folder are CAMIO, CAMIO2, and CAMIO3.

5. Click **OK**.

### CONFIGURATION NOTE 10

The support for VizRT Concept is disabled by default.

To enable it, add ALTERNATIVE\_CONCEPT parameter to registry as shown below. Set it to 1 and then only start Ignite. This is applicable to every channel.



To insert the Concept into Ignite, do the following:

1. In the CG hotkeys window, enter the correct path for profile and showname: **<Profile>/<ShowName>**
2. Open the TME page, and select the preload icon as shown below:



3. Enter the concept name in the **Function** text box.

4. Code your TME icon as below:

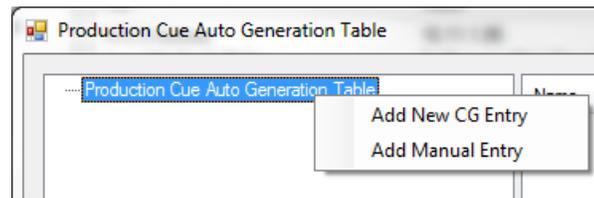


- a. The first icon from left is to change the concept.
- b. The middle icon is to load a CG.
- c. The last icon is to play a CG.

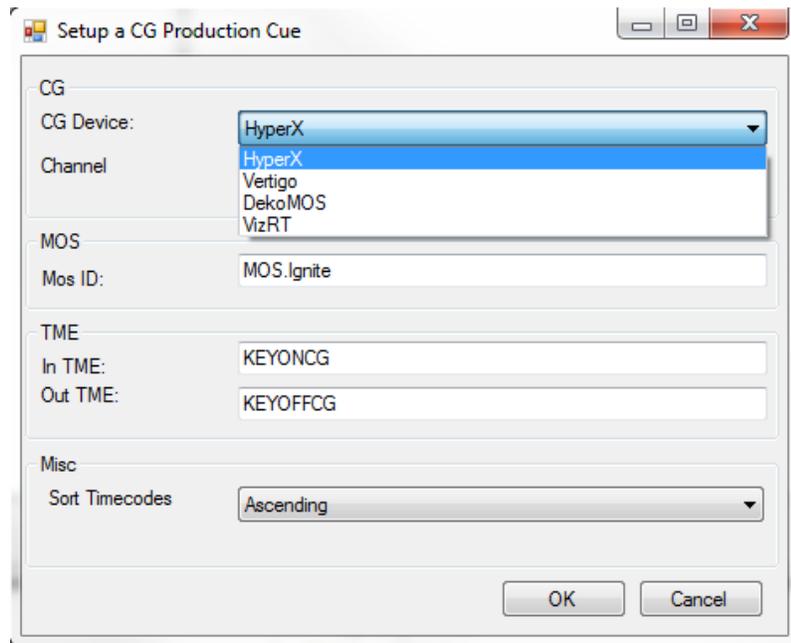
### CONFIGURATION NOTE 11

To setup a CG production cue for VizRT, please do the following:

1. Go to *C:\Program Files\GrassValley\Ignite\* and launch *IQConfigurator.exe* from the directory.
2. In the IQ Configurator, select **Tools | Production Cue Auto - generation** to open the Production Cue Auto Generation table.
3. Right-click on the table and select **Add New CG Entry** to launch the **Setup a CG Production Cue** window.



4. Select **VizRT** as the CG Device and configure the CG production cue for your operation.



### CONFIGURATION NOTE 12

The support of tri-monitor display for Ignite application is on 16:9 monitors by default.

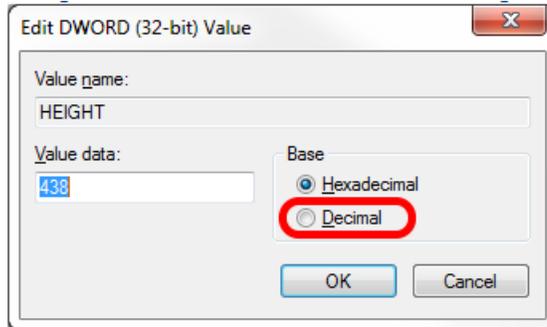
For customers with 4:3 monitors, screen setting values must be manually modified in the registry.

- For KONNECT screen, edit values as shown in the location below:

HKEY\_LOCAL\_MACHINE\SOFTWARE\TBMS\IPS\Switcher

(Default)	REG_SZ	(value not set)
HEIGHT	REG_DWORD	0x00000438 (1080)
LEFT	REG_DWORD	0x00000a00 (2560)
TOP	REG_DWORD	0x00000000 (0)
WIDTH	REG_DWORD	0x00000500 (1280)

Switch to decimal base in the registry for easy reference.



- For Ignite middle screen, edit values as shown in the location below:

HKEY\_LOCAL\_MACHINE\SOFTWARE\TBMS\IPS\STUDIOG2

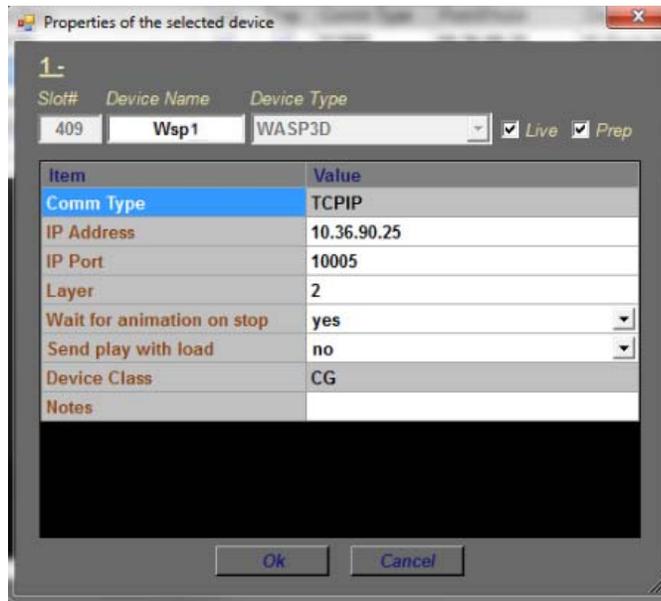
LBN_DISPLAY_LEFT	REG_DWORD	0x00000280 (640)
LBN_DISPLAY_TOP	REG_DWORD	0x000002bc (700)

### CONFIGURATION NOTE 13

To include the WASP3D CG device in your operation, the following configuration must be done in the Ignite device manager:

1. Launch the Ignite application.
2. On the Event Timeline module, select **Setup | Configuration and Device Setup**.

3. Enter properties of the WASP3D CG device as below:



Ignite supports multiple layers in the configuration of WASP3D CG device to provide more access to multiple text and animated graphics.

Other options are also provided in the WASP3D device settings such as:

- Wait for animation on stop
- Send play with load

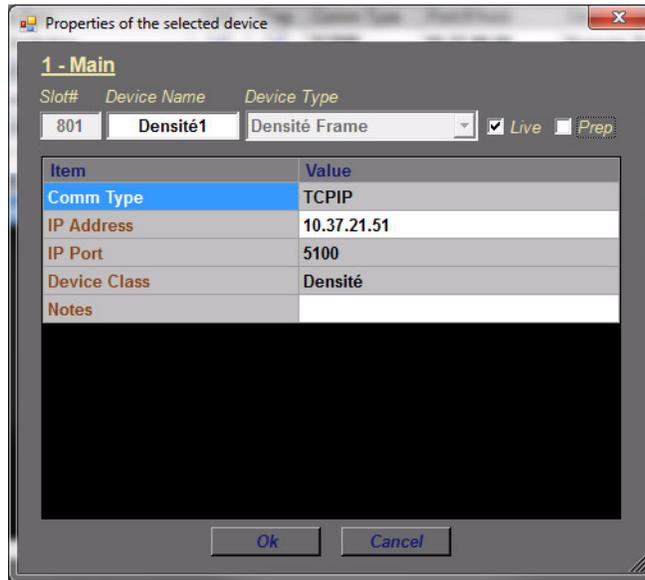
4. Click **OK**.

#### **CONFIGURATION NOTE 14**

To use the Densité Frame with GPI-1501 card for Tally control, the following configuration must be done in the Ignite device manager:

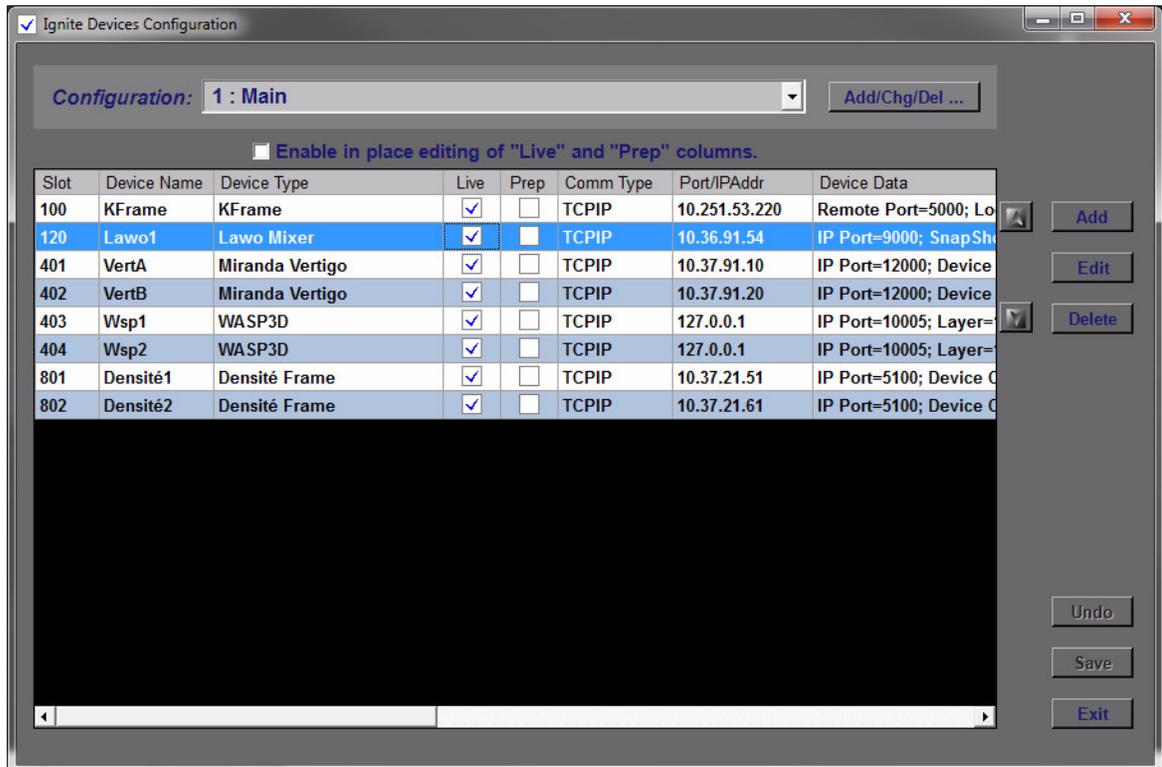
1. Launch the Ignite application.
2. On the Event Timeline module, select **Setup | Configuration and Device Setup**.

3. Select **Densité Frame** as the Device Type and enter device properties as below:



4. Click **OK**.

If needed, you can also connect to more than one Densité Frame in order to access additional GPI-1501 cards.



5. Click **Exit**.
6. Navigate to *C:\Program Files\GrassValley\Ignite\misc\DeviceData*

7. Open the **TallyConfiguration.xml** file from the location above and edit the configuration with your text editor.
8. You can map up to 64 Tally outputs (GPOs) and 32 Tally inputs (GPIs) to Densité Frame-Slot-Pin sets.

**Note** If upgrading from Videoframe to Densité Frame, there is no need to rebuild the event library provided that Ignite GPI/O addresses are mapped to Densité locations.

## Open Source Software Information

For instructions on how to obtain a copy of any source code being made publicly available by Grass Valley related to software used in this Grass Valley product you may send your request in writing to:

**Grass Valley  
Open Source Software Management  
3499 Douglas-B-Floreani, QC  
Canada**

Or email your request to:

ossManagement@grassvalley.com

This document contains additional information regarding licenses, acknowledgments and required copyright notices for open source packages used in this Grass Valley product.

The software components listed below are used by Grass Valley's products.

### Apache

#### License

Apache 2.0

#### Copyright Text

This product includes software developed by

The Apache Software Foundation (<http://www.apache.org/>).

The Windows Installer is built with the Nullsoft Scriptable Install System (NSIS), which is open source software. The original software and related information is available at <http://nsis.sourceforge.net>.

Java compilation software for JSP pages is provided by Eclipse, which is open source software. The original software and related information is available at

<http://www.eclipse.org>.

## Microsoft Public License

### License

Microsoft Public License 1.0 (Ms-PL 1.0)

### Copyright Text

Microsoft Public License (Ms-PL)

This license governs use of the accompanying software. If you use the software, you accept this license. If you do not accept the license, do not use the software.

#### 1. Definitions

The terms “reproduce,” “reproduction,” “derivative works,” and “distribution” have the same meaning here as under U.S. copyright law.

A “contribution” is the original software, or any additions or changes to the software.

A “contributor” is any person that distributes its contribution under this license.

“Licensed patents” are a contributor’s patent claims that read directly on its contribution.

#### 2. Grant of Rights

(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.

(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

#### 3. Conditions and Limitations

(A) No Trademark License- This license does not grant you rights to use any contributors’ name, logo, or trademarks.

(B) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.

(C) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.

(D) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.

(E) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions. You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and non-infringement.

## MIT

### License

MIT License (MIT)

### Copyright Text

The MIT License (MIT)

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT

SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

## Mozilla

### License

Mozilla Public License 2.0 (MPL 2.0)

### Copyright Text

This Source Code Form is subject to the terms of the Mozilla Public License, v. 2.0. If a copy of the MPL was not distributed with this file, you can obtain one at <http://mozilla.org/MPL/2.0/>.

## NSubstitute

### License

BSD License

### Copyright Text

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT

HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.