

HARLEQUIN® multiRIP™

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## HMR Release Notes



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# Harlequin® MultiRIP™ v12.0r1 Release Notes

Global Graphics Software Limited (GGSL) is pleased to announce the release of the Harlequin® MultiRIP™ v12.0r1 (HMR).

This release note contains the following information:

- [“New features and improvements” on page 2.](#)
- [“Notes about this release” on page 3.](#)
- [“Documentation change details” on page 5.](#)
- [“Change details” on page 6.](#)

## I New features and improvements

The following improvements have been made to HMR v12.0r1:

- Added Object-based black point compensation control (377235/377209HHR #2286), which is also available in v11.0r7.
- OutputFile in a Harlequin Contour Processor configuration may now be null to mean that no output file should be opened. (US 377947/US 377927/Call #125253).
- Provided [“Pantone tables with M1 values instead of M2 values in the NamedColor DB files - 378099 \(HHR #2445\).](#) For information see [Page 3.](#)

## 2 Notes about this release

This section contains notes about the changes made to v12.0r1.

### 2.1 Procset changes

The following procsets have been changed between v12.0r0 and v12.0r1:

HqnContour, HqnImpose2, HqnMissingFonts, HqnNamedColor

### 2.2 Pantone tables with M1 values instead of M2 values in the NamedColor DB files - 378099 (HHR #2445)

We provided additional Pantone NamedColor databases provided for all cases where Pantone have supplied color data using M1 measurement. These have the same name as the existing (M2) measurements, with “\_M1” appended.

### 2.3 Improved smoothness for wide strokes - 378247

For information see the *Extensions manual*, StrokeOffsetCurveWidth user parameter.

### 2.4 GGS operating subsidiary URW++ is now known as “URW Type Foundry”

## 3 Updates to supported platforms and compilers

There are no changes to the supported platforms between 12.0r0 and 12.0r1.

## 4 Plugins and utilities

Build plugins for Harlequin MultiRIP v12.0r1 with MSVC 2015.

Any plugins distributed with this release are supplied solely for use with the Harlequin MultiRIP v12.0r1.

**Note:** The Harlequin MultiRIP will support OEM and third-party plugins using input and output, color management and screening APIs.

The following table lists the standard and optional plugins and the various utilities available with the Harlequin MultiRIP v12.0r1:

| Availability | Plugin/Utility  | v12.0r1 | v12.0r0 |
|--------------|---|---------|---------|
| Standard     | Migrate   | 9.0r0   | 9.0r0   |
| Standard     | Genlin  | 3.1r1   | 3.1r1   |
| Standard     | SetGold   | 5.3r0   | 5.3r0   |
| Standard     | LDK utilities   | 1.8r0   | 1.8r0   |
| Standard     | Spro2ldk  | 2.0     | 2.0     |
| Standard     | LDK Runtime   | 7.63    | 7.63    |
| Standard     | Socket  | 3.2r3   | 3.2r3   |
| Standard     | Spool folder  | 3.6r3   | 3.6r3   |
| Standard     | PDF Raster  | 1.4r3   | 1.4r3   |
| Standard     | Testdev (none)  | 3.2r4   | 3.2r4   |
| Standard     | TIFF  | 4.5r0   | 4.5r0   |
| Standard     | CRD Generator plugin  | 60.0    | 60.0    |
| Standard     | XPS PrintTicket Device  | 12.0r1  | 12.0r0  |
| Optional     | CIP3  | 1.6r2   | 1.6r2   |
| Optional     | OKI PCL C9650 laser printer   | 1.7r2   | 1.7r2   |
| Optional     | OKI C931/C941/C942  | 2.4r3   | 2.4r3   |
| Optional     | NT Pipe   | 1.1r3   | 1.1r3   |
| Optional     | Plugin Kit  | 20.3    | 20.3    |
| Optional     | vDot4 plugins for Epson Stylus Pro<br>4900, 7890, 7900, 9890, 9900  |         |         |
| Optional     | vDot5 plugin for Epson<br>SC-P6000, SC-P8000, SC-P7000 (SE),<br>SC-P7000 (CE), SC-P9000 (SE),<br>SC-P9000 (CE). |         |         |

**Table. I** Standard and optional plugins - Harlequin MultiRIP v12.0r1

## 5 Documentation change details

This section contains details of the various documents which have been created or updated for HMR v12.0r1:

| Document                             | Status        | Format  |
|--------------------------------------|---------------|---------|
| <i>Release Notes</i> (this document) | Final version | PDF/MIF |
| <i>Extensions Manual</i>             | Final draft   | PDF     |
| <i>API Reference Manual</i>          | Final draft   | PDF     |

**Table. 2** Documentation change details - Harlequin HMR v12.0r1

**Note:** HMR documentation is available on the support FTP site at:  
<http://support.globalgraphics.com/login.html>. Go to: **/HQN\_Common/HMR\_Doc/**.

**Note:** All HMR technical notes are located at: **/HQN\_Common/HMR\_Doc/Technical\_Notes/**.

## 6 Change details

| Reference | Description   |
|-----------|---|
| 374217    | Correct handling of color management switches in named color support added in the HqnContour procset.   |
| 374728    | Tune handling of shaded fills in HVD scanning to significantly reduce memory requirements   |
| 376434    | Revise cmyk to luminosity conversions for soft masks to match more completely specified requirements in PDF 2.0   |
| 376475    | (SW Call #124874) Don't reset colorant list if changing to dotshape of same type  |
| 377023    | Untiled patterns are now clipped automatically for memory savings   |
| 377140    | Improve performance for groups with shfill patterns in them   |
| 377223    | Make IgnorePSXobjects also ignore XObjects where Subtype is /Form and Subtype2 is /PS   |
| 377235    | (HHR #2286) Object based black point compensation - feature request   |
| 377399    | Provide an option to change the orientation of a screen.  |
| 377472    | (HHR #2309) Amend interpolation of ICC DeviceLink profiles with an RGB input color space to give smoother results.  |
| 377558    | (HHR #2092) Memory use for combinations of complex clips with patterned object masks has been reduced.  |
| 377672    | (HHR #2371) Define new render rule, AccurateRender  |
| 377732    | Improve error message when trying to activate an HL product key as if it were an SL license   |
| 377933    | (HHR #2404) Correct handling of text clips applied to images when using HVD   |
| 377947    | (SW Call #125253) Various minor fixes for HqnContour  |
| 377955    | (SW Call #125254) Support strings with Unicode BOMs in PDF FileSpecs. Those are not described in the PDF standard, but are used in files created by the customer's software |
| 377982    | Corrected missing fonts call in HqnMissingFonts procset   |
| 378022    | Suppress unnecessary allocations in LIBTIFF   |
| 378036    | Ensure that uniXXXX style glyph names are re-mapped when used in combination with a Differences array in a TrueType font.   |

**Table. 3** Changes made for Harlequin MultiRIP v12.0r1

| Reference | Description  |
|-----------|--|
| 378053    | Improve memory handling for large images with soft masks, reducing likelihood of triggering VM errors.                       |
| 378145    | (HHR #2476) Prevent configuration errors when using ID with a DeviceGray named color   |
| 378201    | Correct plugin kit examples to re-enable output to separations   |
| 378226    | (SW Call #125312) Correct handling of spots with non-empty halftone transfer functions                                       |
| 378247    | Improved smoothness for wide strokes. For information see the <i>Extensions manual</i> StrokeOffsetCurveWidth user parameter |
| 378319    | (HHR #2496) Don't apply stroked text rendering mode to Type 3 fonts in PDF   |
| 378483    | (SW Call #125389) Correct handling of modular screening plugin versions  |
| 378484    | For PDF ICC color spaces, test profile and /N agree and if they don't choose the N value                                     |
| 378501    | (HHR #2601) Revise re-positioning of off-page, widely spaced pattern   |
| 378519    | Add new Pantone databases based on the M1 illuminant   |
| 378598    | (HHR #2612) Add support for individual content streams over 2GB long, compressed   |

**Table. 3** Changes made for Harlequin MultiRIP v12.0r1



## 7 Historical information for changes made to Harlequin v12.0r0 HMR and HHR

### 7.1 Procset changes

**The following procsets have been changed between HHR v11.0r6 and v12.0r0:**

DCSCommentParser, GGFonEmulation, HqnAssert, HqnColorDatabase, HqnControl, HqnGIF, HqnHtm, HqnHVDPParams, HqnICCBased, HqnImage, HqnImportICC, HqnImpose2, HqnLayout, HqnLocal, HqnMissingFonts, HqnOPICCommon, HqnParseComments, HqnPDFPages, HqnPushCalibration, HqnUNC, HqnXPRPrintTicket

**The following procsets have been removed from HMR v12.0r0:**

HqnBlob, HqnPSToCORBA, SOARInFlight

### 7.2 PDF 2.0 support

The latest iteration of the PDF standard was published by ISO as ISO 32000-2 in August 2017. It's the first new version of PDF since ISO 32000-1 was published in 2008.

Harlequin 12 supports all of the features of PDF 2.0 that are relevant for production printing at least as far as the standard requires, and beyond in some cases:

- AES-256 encryption
  - Note that this is the new AES-256 encryption specified in PDF 2.0; it is not the same as that documented in Adobe's ExtensionLevel 3, which is sufficiently flawed that its use is prohibited in a PDF 2.0 file.
- Unicode passwords
  - In previous versions of PDF the encoding used for encryption passwords was undefined, which could lead to what appeared to be the same password working on one platform and not working on others.
- Zero-length axial blends (where both ends of the blend are at the same location) are now not drawn at all, even if they define extensions colors. This is to match a clarification in PDF 2.0.
- The HTO graphics state key is supported to define halftone offsets. It can be very useful when imposing for very large format output to ensure that halftone registration doesn't drift across the sheet.
- The UseBlackPtComp graphics state key is supported, to control the use of black point compensation.
- "Text strings" in PDF files may now use any of PDFDocEncoding, UTF-16 or UTF-8.
- Output Intents may now be used at the page level as well as at the document level.
  - PDF 2.0 defines how these should be encoded into the PDF file, but does not provide guidance on when and how to use them. Harlequin will use them if the file is PDF 2.0 and if the output intent self-identifies as a PDF/X intent.
  - Some of the samples that we have seen so far do not conform to the PDF/X requirements around output intents, so we are keen to investigate with real-world files as they start to become available. We have ensured that files that don't fully conform will process in a reasonable way, but will show a warning.

- Device color spaces as transparency group blending color spaces are now replaced with an equivalent CIE-based color space from an ancestor, if present.
- Equivalent inheritance is applied for graphics defined in device color spaces when the current blending color space, or that of an ancestor group, is an equivalent device-independent color space.
- The value of SpotFunction in a halftone may now be an array instead of a name or function. When an array is specified (and Harlequin has not been configured to ignore screens defined in the job) then the first one supported by the RIP will be used.
- PDF 2.0 also removes the restriction that only SpotFunction name values defined in the PDF specification itself can be used. Harlequin has not enforced that restriction for several years.
- PDF metadata reported in the RIP log and used for page annotations etc is now taken from the file's document-level XMP metadata stream, if present, instead of the info dictionary.
- PDF 2.0 also includes a number of clarifications, especially around when the color of graphical objects should be transformed into a blending color space for transparency. In the vast majority of cases Harlequin was already aligned with the clarified text and did not need to be changed.

And PDF 2.0 deprecates a number of features of older versions of PDF, meaning that an application creating a PDF 2.0 file should not write them and that an application reading the file “should ignore them”. We have taken the decision that, at least for Harlequin 12, they will be acted on as if they were not deprecated because Harlequin is a tool for production, not a preflight or validation application. Examples include all encryption methods other than AES-256.

You can find additional information that may be useful in preparing your own team and your sales channels at:

- White paper: <https://www.globalgraphics.com/globalgraphics-software/impact-of-pdf-2-0-on-print-production>
- Webinar: <https://www.youtube.com/watch?v=anhTN7FI1Ow>

If you feel you need access to the PDF 2.0 standard itself it can be obtained from <https://www.iso.org/standard/63534.html>. Alternatively you may find it cheaper to purchase from your own national standards body (e.g., NPES in the USA, BSI in the UK, DIN in Germany, etc).

PDF 2.0 will be included in your standard product automatically as long as your contract includes PDF support. The special PDF 2.0 preview licenses provided for Harlequin 11 RIPs are no longer required.

## 7.3 ColorPro included with all Harlequin MultiRIP 12 licenses

As from Harlequin MultiRIP version 12 ColorPro will be bundled in all MultiRIP licenses. This doesn't mean that we're immediately removing the capability of using "no color management" color setups; those will be retained for the foreseeable future and setups migrated from older versions will continue to use them.

You don't need to do anything special to get ColorPro; we will add it into the LDK licenses for both new orders and upgrades automatically.

## 7.4 Dynamic overlays for variable data printing

Over the last few years we've put a lot of effort into increasing the speed of PDF/VT and optimized PDF files using Harlequin VariData. But there are still some opportunities that are a better fit for a simpler approach to variable data.

In Harlequin 12 we've added support for adding overlays on top of a single page PDF file. A configuration file specifies where marks should be added, and what form they should be in, and the data itself is either supplied in a CSV file or as automated counters.

The mark types available in Harlequin 12 are:

- Text, with control over font, size, color, alignment etc
- Graphics, with control over scaling, rotation etc
- Barcodes, with control over which symbology to use, color, size etc

Example use cases run from simple serial numbers on labels to QR Codes for personalized URLs to postal barcodes and addresses on envelopes.

The configuration file format is documented - see the *Extensions Manual* - but Global Graphics is not producing any tools to create such files at this time.

We're describing these as "overlays" because that's how we expect them to be used most often. But they can also be used to generate pages from scratch (e.g., for simple labels) or for imprinting over pre-printed backgrounds. And if you're driving an inkjet press using electronics that can merge multiple buffers on the fly, you can configure your workflow to load the background page into one buffer and the overlays into others for merging.

The dynamic overlays are included in the Simple Imposition layered option. You will need the new barcode layered option as well to use the Harlequin Barcode Generator in dynamic overlays.

For more information see the *Extensions Manual*, Chapter 7 - Simple imposition.

## 7.5 Run Length Encoding (RLE) and Object Map delivery

Harlequin Host Renderer up to v3 included support for two different methods of delivering additional metadata about individual pixels in the output alongside the raster data itself. Neither of these were supported in v4 or v11, but they have both been reinstated in Harlequin v12.

For more information see the *SDK Developer's Guide*, Chapter 4 - Capabilities.

### 7.5.1 RLE output delivery

RLE output can deliver 10- or 12-bit color contone data (or 8-bit mono) in a proprietary compressed form, rather than the 8- or 16-bit uncompressed contone data that is normally made available. More than 8-bit (256 levels) is especially useful in avoiding stepping/banding if post-RIP processing adjusts tone-values, but regular 16-bit contone can be very large. RLE is usually much more compact than delivering 16-bit contone data.

RLE can also encapsulate the object type and other gstate data from which each output pixel is derived for use in post-RIP processing. But RLE needs an RLE-specific consumer to process it; it is no longer “just” a raster.

If you have used RLE in the past, please note that the “transparency” RLE mode for post-RIP transparency blending has not been re-instated for v12.

## 7.5.2 Object type map delivery

An object type map is an additional channel that is delivered alongside the colorant channels in the raster data. It can be used to inform post-RIP processing what the original object type was for each pixel in the raster (e.g., to trigger different post-RIP screening).

The configuration structures for object maps have been completely reworked for v12 and it can now be used with any interleaving rather than only with band.

## 7.6 Server mode, multiple configurations and hot folder support

The Harlequin RIP core was designed for server-mode operation: a persistent process accepting input from multiple sources, rasterizing and sending output to different destinations. In Harlequin 12 Global Graphics have added production-ready code to support server configurations both in the `clrip` test harness executable and for tighter integration into OEM code.

Great care has been taken to ensure that the default behavior of both `clrip` and the SDK is unchanged if you do not make use of the new functionality.

For more information see the *SDK Developer's Guide*, Chapter 13 - New input methods for HHR.

The work falls into several parts:

### 7.6.1 Configuration

To date `clrip` has enabled a single configuration file to be loaded and that file must be stored in `SW/TestConfig`. From v12 multiple layered configuration files (or, more accurately, a configuration file and additional features) may be applied. Those configuration files may now be in any location on any accessible drive.

### 7.6.2 Automatic identification of input file types

Harlequin 12 will now automatically identify the type of any supported file when submitted. Post-Script input streams will also now be seekable and will report the “real” file name on disk rather than being described as `%config%`.

### 7.6.3 Persistent input sources (including hot folders)

HHR now has support for persistent input sources. One such source, for hot folders, is included in the SDK. If a persistent input source is available, HHR will stay active when it has processed any command-line jobs, waiting for new input to be available from the input source. A special “quit job” must be sent to the RIP (e.g., written into a hotfolder) to cause the RIP to quit, or the persistent input sources must be withdrawn programmatically, using new SDK APIs.

The new option `-H` identifies a hot folder location in the command line to `clrip`:

```
clrip -c CMYKComposite300dpi -f output/%J-%p.%o -C -H C:\inputs\hotfolder
```

## 7.6.4 Job and skin timelines

New timelines have been added for the skin overall and for each job, allowing clean, thread-safe access to contextual information (e.g., to determine when the RIP is processing a particular job submitted by the skin).

## 7.6.5 Input queue API

The HHR SDK now includes an input queue API. The API is used for both jobs submitted from the command line and for jobs submitted from persistent sources such as hot folders. The API supports job addition and deletion, pausing and resuming, iteration of configuration names, and notifications of queue changes through events.

## 7.7 Monitor information output

Monitor information output from both the core and the skin is now routed through monitor events. Monitor events carry metadata about the monitor information, including a related timeline, the output channel, and the monitor information type (including an error code and in many cases a machine-parsable unique ID for the message). This is mostly useful for OEMs performing complex integrations. Individual messages can be diverted, suppressed, or used to trigger warnings or alerts in the OEM's DFE or GUI.

For more information see the *SDK Developer's Guide*, Chapter 13 - New input methods for HHR.

## 7.8 New skin devices

### 7.8.1 Union file system

Harlequin Host Renderer 12 may use a union file system to access the SW directory. This means that the RIP can use multiple directory structures on disk, some of which are writable and some of which are not, but it sees the combination as a single directory tree.

The same SW directory can be used by multiple RIP instances. The SW directory itself is read-only. All files written by the RIP ostensibly into its SW directory are actually written into a writable directory that's specific to that one RIP instance, so there is no risk of temporary files from one RIP interfering with the activity of another RIP.

In Harlequin 12 the union file system is either on or off, meaning that the shared SW cannot be updated (e.g., with additional fonts) while the RIPs are all running. Your input on preferences as to future work in this area would be very welcome.

### 7.8.2 Prefix device

The prefix device allows for more efficient access to file system devices other than %os% that are mounted as subdirectories of the SW directory.

## 7.9 Emulation of Esko RIP rendering weights

In the labels and package printing sectors Esko is an important supplier and we take care to ensure that Harlequin can process PDF files generated by the Esko creation workflows.

But Esko also sell their RIPs for use in plate setting (especially for flexography) and in digital front ends for inkjet and toner presses. The original Esko RIP (called the FlexRIP in the flexo world) would render small vector graphics much lighter than Harlequin does by default. More recently Esko have switched to a different RIP based on APPE which now renders heavier/darker than Harlequin.

The differences are very subtle at the high resolutions used for a high quality flexo plate-making, but at resolutions below 1000dpi, common for digital presses, they can be quite significant.

There are some new configurations available in Harlequin 12 that can be used to match the rendering of vector graphics in either of those Esko RIPs. Note that this affects vector graphics rather than text, but a lot of text in labels and packaging is converted to vector outlines before the job reaches the RIP.

## 7.10 URW++ fonts to replace Linotype

Global Graphics acquired the URW++ font foundry (urwpp.de) in 2015, but to date has continued to ship fonts from Linotype with Harlequin RIPs. As from Harlequin 12 we will be switching to supply URW fonts with Harlequin instead of Linotype fonts. If your licenses include the Linotype option that will enable the 35 base URW fonts instead. If you're using the alternative "Shiva" fonts, those will be unaffected.

The URW fonts are significantly higher quality than the Linotype fonts, and this switch allow us to offer an additional pack of 101 fonts to provide the standard 136 "PostScript 3" font set.

It also means that we can offer more fonts, such as non-Latin fonts to help you break into new markets. More information on the URW++ products is available at <https://www.urwpp.de/en/>, but of course that site doesn't provide full information about OEM deals.

Please contact your account manager if you would like more information on options for extra fonts.

## 7.11 Improved error checking for color configurations

In HHR 12 more error checking is performed on the color configuration provided to set `ColorantFamilies`, etc. This should make it much faster and easier to develop a correct configuration. It does, however, mean that you may see new error messages reported when you port your code from HHR 11 to HHR 12 if you had undetected errors or ambiguous data in those old configurations.

## 7.12 SOAR NX

The functionality previously provided by SOAR in Harlequin MultiRIP up to version 11 has been removed in HMR v12. Please contact Martin Bailey if you wish to discuss routes forward.

## 7.13 The Scalable RIP project

The Scalable RIP is a development project being run alongside Harlequin Host Renderer (HHR) version 12. Its goal is to provide a more complete framework for supporting multiple RIPs on a single computer, and for splitting jobs across those RIPs.

The first stage of this work is complete for HHR 12.0r0. It won't be part of our public announcements around v12, but it is sufficiently well advanced that we have included a technology preview in HHR 12 (don't worry, it won't get used at all unless you specifically call it!).

The Scalable RIP is designed to run multiple instances of HHR on a single computer in a safe, clean and thread-safe manner, and to get as much performance out of the underlying hardware as possible. It makes use of many of the new features in HHR 12, including the union file system, input queues and persistent input sources.

The intention is that the entire Scalable RIP appears to your code as if it were a single RIP. Your code would submit a PDF file to the Scalable RIP and internally the pages from that file would be distributed across multiple RIP instances to maximize throughput. You can use your own raster back end to HHR inside the context of a Scalable RIP, just as you can with HHR now.

The prerequisites for trying the technology preview in the HHR 12 delivery will be:

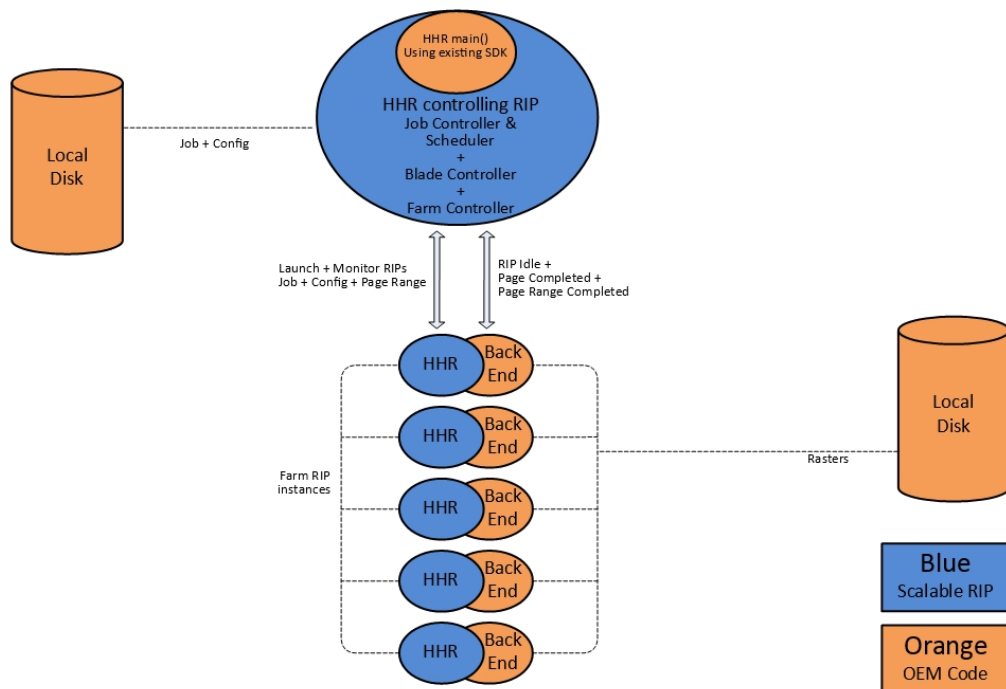
- You are running a 64-bit HHR 12 build on Windows. This platform limitation will be lifted in later releases. Please contact your account manager if you're running on a different platform and would like a Windows build to evaluate the Scalable RIP.
- You have a license that enables multiple RIPs to run. A RIP license is required for each of the RIPs that perform the rendering (Farm RIP), and you will need an extra one for the controller RIP.

This licensing model will be changing in HHR 12.0r1 for the first productized delivery of the Scalable RIP.

At the basic level you will be able to try out the Scalable RIP simply by using an additional option on the command line to the `clrip` executable. We are also providing the API for programmatically requesting that HHR runs as a Scalable RIP and specifying how many rendering RIP instances should be used.

We would be very interested to hear your requirements in this area, and your feedback from evaluation of the technology preview in order to guide the next steps in developing the Scalable RIP.

## Scalable RIP Schematic





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Harlequin® MultiRIP™ – v12.0r1

14 June 2018

HMR Release Notes-OEM

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Other U.S. Patents Pending

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zlib - general purpose compression library

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