

NEXT GENERATION
TECHNOLOGY >



HARLEQUIN[®] EMBEDDED SDK (v3.7)

PDL INTERPRETATION
AND RENDERING
SOLUTIONS FOR EMBEDDED
CONTROLLERS



the smarter alternative™
GLOBAL GRAPHICS®

HARLEQUIN ^{PLUS} EMBEDDED SDK



The Harlequin PLUS Embedded SDK forms part of a new generation of world-class printing and electronic document technology from Global Graphics®. It provides printer and Multi Function Peripheral (MFP) manufacturers with high performance components for Page Description Language (PDL) interpretation and rendering on embedded controllers, shortening development cycles and accelerating time to market. The Harlequin PLUS Embedded SDK is one of a range of scalable implementation options from Global Graphics that allow OEM partners to deploy native PDL solutions across all their products using a common architecture.

The highly customizable Harlequin PLUS Embedded SDK is based on Global Graphics' new Raster Image Processor (RIP) architecture, and delivers native PostScript®, PDF, PCL and XPS interpretation for a wide range of embedded controller architectures and operating systems.

Configurable support for multiple PDL formats, a compact and efficient software kernel, and sophisticated graphics and color handling routines ensure the Harlequin PLUS Embedded SDK delivers the ideal software solution suited for a vast array of devices, including MFPs and both monochrome and color printers.

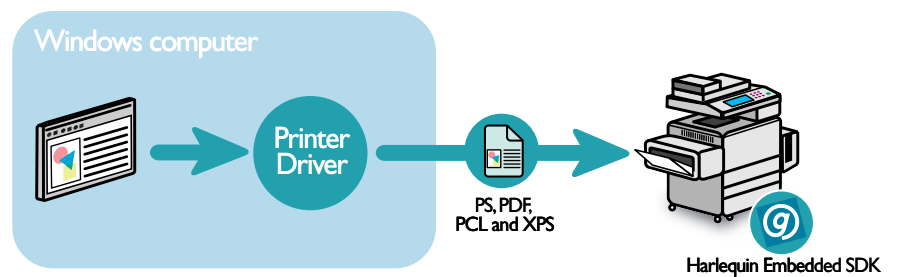
Implementation options range from OEMs utilizing comprehensive SDK documentation with support via Global Graphics' Technical Services team, to a full integration service which gives access to our dedicated embedded development team who provide custom API deliverables that are specific to OEM requirements, as well as on-site integration support.

CONFIGURABLE RIP CORE

The Harlequin PLUS Embedded SDK provides printer/MFP manufacturers with many key capabilities including:

- True native PDL interpretation - without conversion first to another format - for PostScript, PDF, PCL and XPS. OEMs may choose to take all these PDLs, or any combination and build them into a single solution. For specific PDL implementations OEMs should contact Global Graphics with their requirements
- Modular architecture enabling small footprint and low memory operation

A TYPICAL EMBEDDED IMPLEMENTATION



- Highly flexible APIs facilitating easy integration of OEM or 3rd party intellectual property including:
 - color management
 - font handling
 - screening
 - compression/decompression
- Extensive programmatic configuration language for
 - PDL interpretation (PostScript, PDF, PCL, XPS)
 - Transparency support
 - Color management
 - Trapping
 - Screening; AM, FM, EDS (Error Diffusion Screening)
- Disk and diskless operation, with the ability to use a RAM-based file system if required
- Device resident font support
- Emulation of body text fonts in single-byte scripts, and facilities for font substitution
- Support for a wide variety of print resolutions, bit depths, color models and interleaving styles
- Cross-platform support.

HIGH PERFORMANCE

Global Graphics' technology is renowned for its high performance and reliability. The Harlequin PLUS Embedded SDK is built on mature technology: it uses a new iteration of the RIP kernel found at the heart of the proven Harlequin RIP, with significant expansion and optimization. The Harlequin PLUS Embedded SDK provides the tools that allow a peripheral manufacturer to engineer competitive differentiation into their solution and achieve superior performance, quality and PDL fidelity.

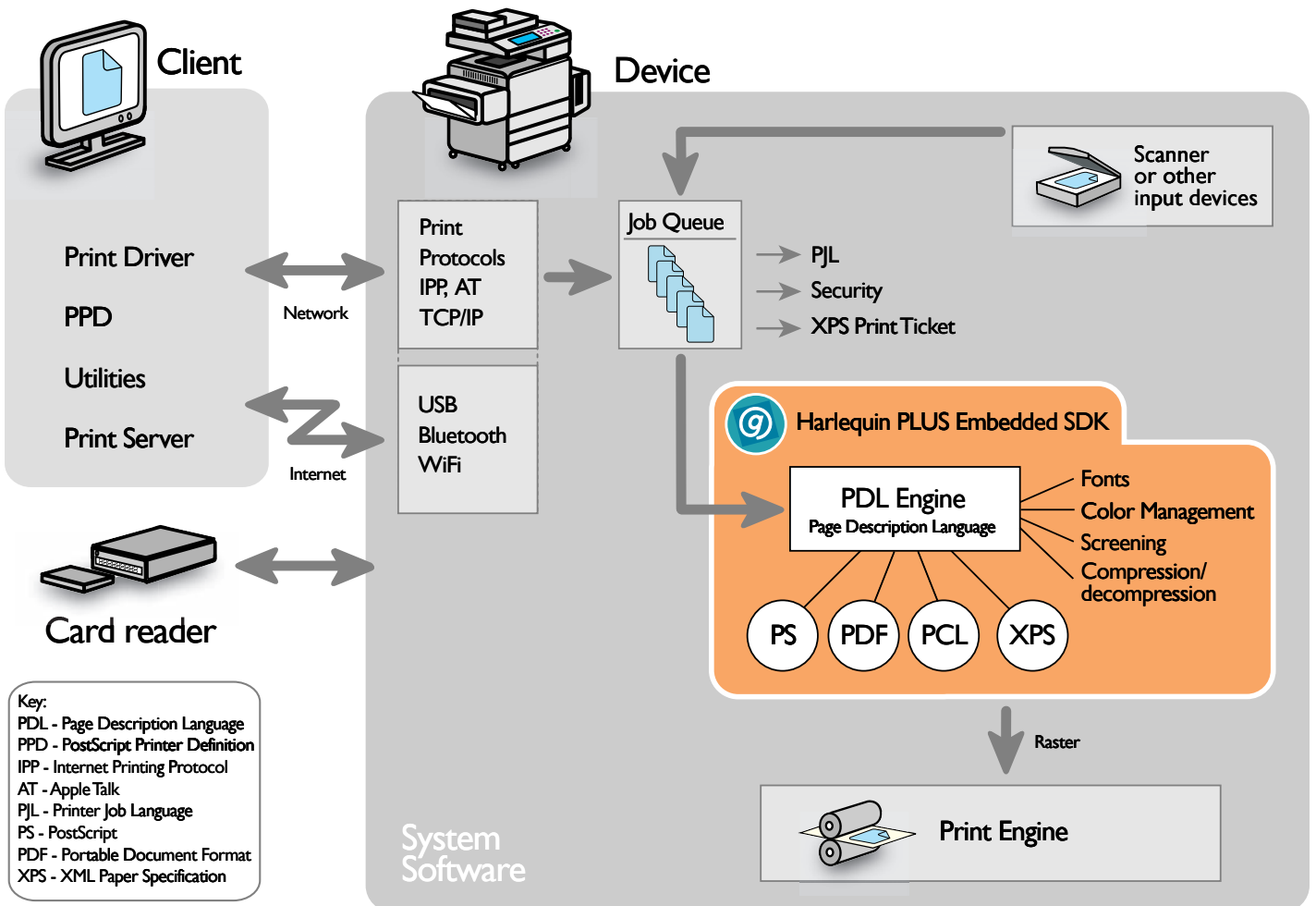
LOW COST

Using the Harlequin PLUS Embedded SDK, low costs are achieved through a code base designed for portability to common embedded processors and real time operating systems, and to run in low memory environments.

EASY INTEGRATION

Highly flexible APIs and extensive configuration options facilitate easy integration with the OEM's print controller/system software, allowing inclusion of OEM intellectual property in the interpretation process and an optimized implementation for the specific target hardware.

THE HARLEQUIN PLUS EMBEDDED SDK IN A TYPICAL CONTROLLER ENVIRONMENT



WORK WITH THE EXPERTS!

- Acknowledged experts in technology for the interpretation, rendering and conversion of Page Description Languages, our track record is extensive: native interpretation of PostScript® since 1988, PDF since 1993, and also PCL and XPS
- Global Graphics is unique in its ability to offer native PostScript, PDF and XPS solutions using a common architecture across a range of devices from desktop ink-jet printers to high-end digital presses and including solutions to support legacy devices and workflows
- We have a long history of providing cross-platform technology and were early to implement cross-platform support for XPS
- Our open architecture, flexible solutions have set the standard for quality and performance in demanding environments
- Experts in a full range of print and electronic document technology, our portfolio includes software for document conversion and manipulation, color management, and components for digital workflow
- Microsoft drew upon Global Graphics' experience in print and document technology when they chose us to provide consultancy and proof of concept development services for XPS.

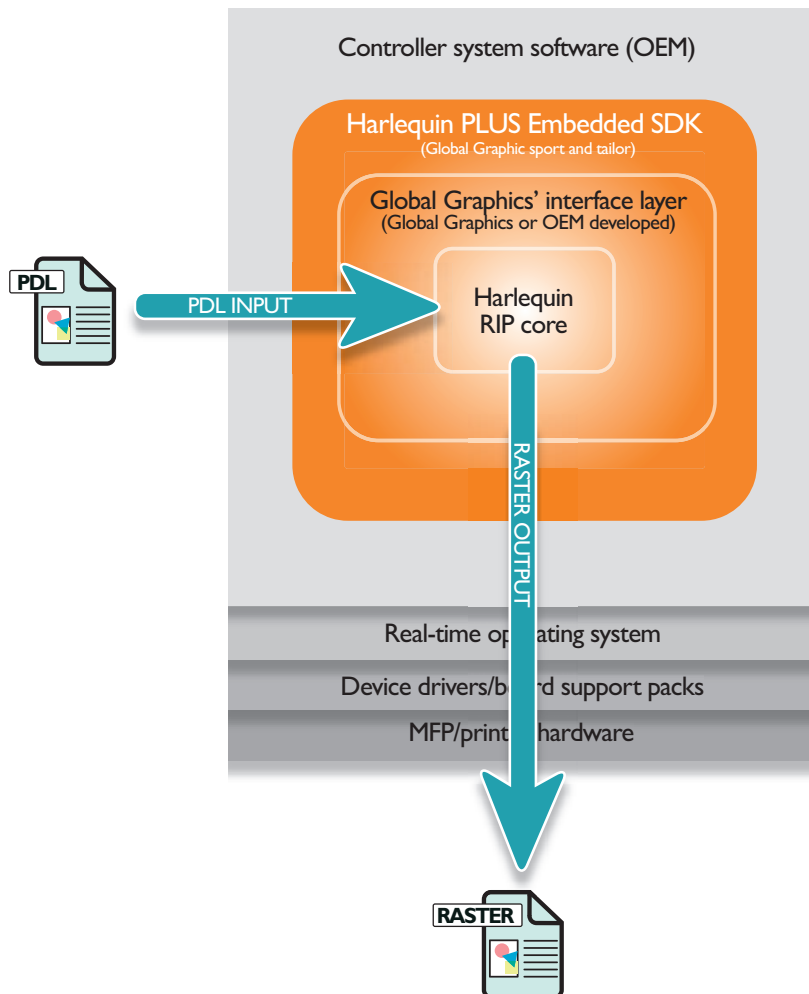
LOW RISK

The Harlequin PLUS Embedded SDK assists peripheral manufacturers to deliver projects on time and on budget with the minimum of risk. We insulate our OEMs from PDL interpretation worries and provide support through an entire product lifecycle including product specification, design, integration and ongoing support with the product in the market.

OTHER RIP SOLUTIONS

Global Graphics' products are scalable, allowing printer manufacturers to deploy native PDL solutions across all their devices; we offer host driver-based and server-based solutions which use the same RIP kernel as the Harlequin PLUS Embedded SDK. Together, they can provide solutions for low-end inkjet printers up to high speed digital presses.

TYPICAL EMBEDDED SYSTEM SOFTWARE ARCHITECTURE



TECHNICAL SPECIFICATIONS

Global Graphics' dedicated embedded development team is able to port to most embedded environments with typical feature support including, but not limited to, the following:

Supported environments

- VxWorks®
- Monta Vista® Linux®
- Embedded XP
- ThreadEx
- Embedded Linux
- Other platform support available on request

File Format Support

- PostScript Language Level 1, 2, 3
- PDF 1.0 - 1.6 support, including transparency and JBIG2/JPEG 2000 compression
- PCL 5c, 5e, XL
- XPS 1.0, including native transparent rendering model to support XPS opacity; support for all XPS image formats including JPEG, PNG, TIFF and HD Photo; and extensible Print Ticket; and XML namespace support

Fonts Options

- Type 0, Type 1, Type 2, Type 3, Type 32, Type 42
- Multiple master fonts
- TrueType® fonts, directly and as Type 42
- OpenType (CFF and TrueType outlines)
- Monotype Imaging Microtype (UFST) fonts
- Bitstream Font Fusion fonts
- CID fonts (CID Font Type 0, 1, 2, 4)
- Morisawa encrypted Kanji fonts
- Emulation of missing fonts in single-byte scripts, and extensive capabilities for font substitution
- API to link to 3rd party or custom fonts

Screening

- AM, FM and Error Diffusion Screening (EDS)
- API to link to 3rd-party or custom screening

Graphics Support

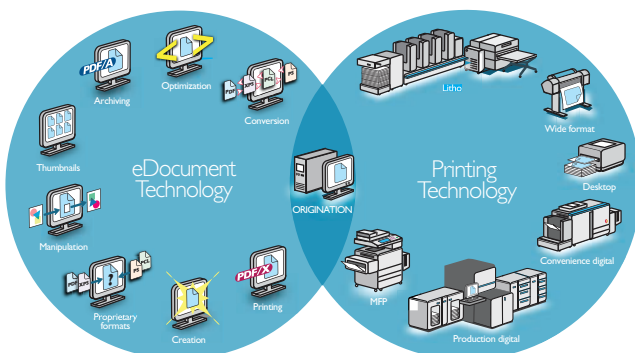
- Separated/composite output:
DeviceGray, deviceRGB, Device CMYK, DeviceN colorspaces
- Bit Depth: 1, 2, 4, 8, 16
- Raster delivery in pixel, band, frame, separation, colored separations or progressive separations

Color Management

- Support for PostScript Language CRD's
- Custom Rendering Intents
- Global Color Correction in LAB space
- Emulation - Allows for RGB-LAB-CMYK
- WCS support
- ICC profile support, (including ICC v4.0): N-color profile support; Grey Profile support "device-link" profile support for direct CMYK-to-CMYK color transformations; Black point compensation
- API to link to 3rd-party Color Management Systems

Memory Requirements

- Code size: ranges from 3.5MB for single PDL to 8.5MB for all 3 PDLs (uncompressed) - depending on processor and compiler
- PostScript language resources: typically 2-3MB (configurable depending resources selected e.g. fonts)
- Working RAM: minimum 21MB for mono, 32MB for color when processing PostScript or PCL.



PDL SOLUTIONS FROM GLOBAL GRAPHICS

At the heart of some of the world's best-known brands of printing devices and electronic document applications lies technology from Global Graphics. Our next generation printing and eDocument PDL solutions mean both software and hardware vendors only have to support one architecture across their entire product range.

ONE OPEN ARCHITECTURE MANY PDL APPLICATIONS INFINITE OPPORTUNITIES

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