

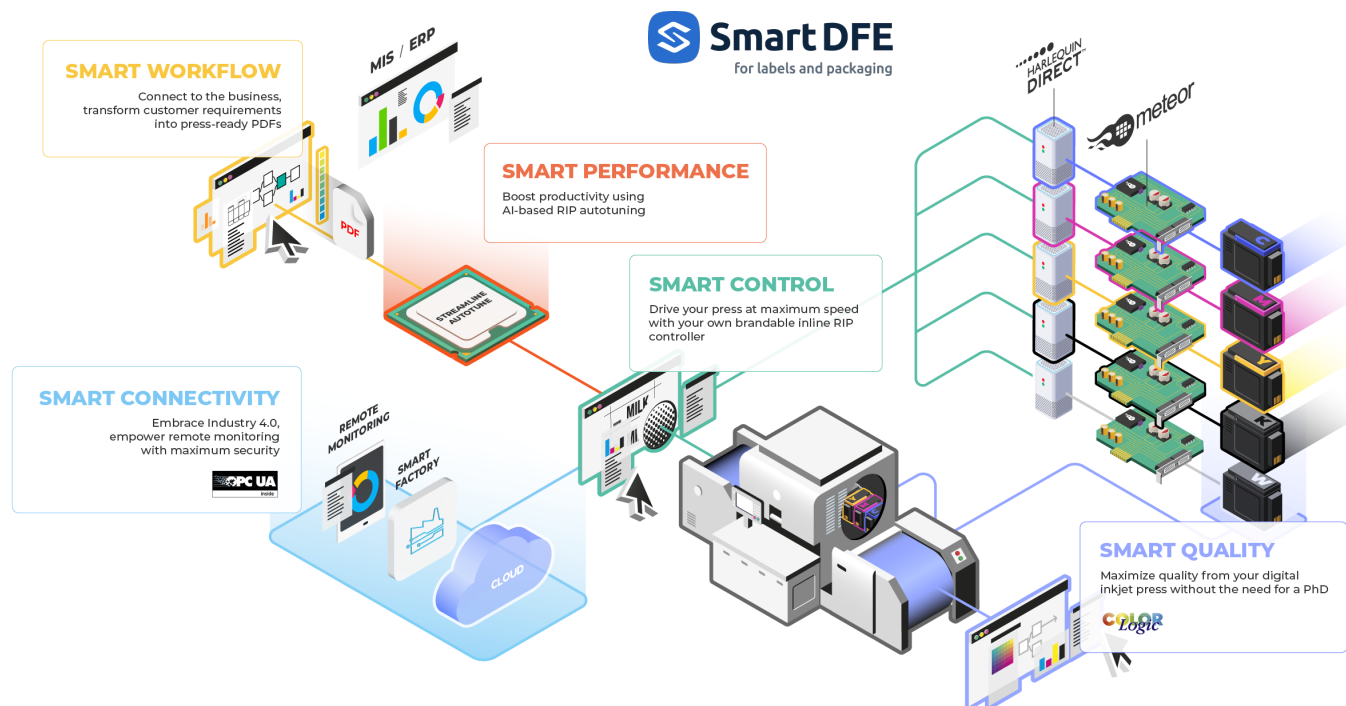
Engineered for DFE evolution.
Get to market faster. Build
what makes you different.



SmartDFE for Labels and Packaging

Built on over 40 years of digital print expertise, SmartDFE for Labels and Packaging is a platform for building digital front ends (DFEs) for labels and packaging presses. Designed for demanding production environments, it provides a proven

foundation including workflow automation, operator workflows, job management, color management, high-performance RIP technology, printhead integration, and industrial connectivity.



Features and benefits

Smart Workflow and Prepress Tools

- **Smart Workflow**

Seamless MIS integration via MISLink (Hybrid Software's CLOUDFLOW)
Built-in Label Studio within the DFE
Tailored for label press operators
Real-time preview of the final job
VDP imposition for variable data labels
Step-and-repeat for static labels
Support for lead-in and lead-out (LILO) pages
Add information pages as required

- **Smart Job Cost Estimator**

Equip your customer's sales team with the most accurate job estimation software

- **PACKZ (Optional)**

All-in-one solution for prepress and VDP – based on PDF
Designed for labels and packaging
Full, brandable front end
Optimized PDF creation for on-the-fly printing at full speed
Define templates for dynamic document design
Export die cut for toolmaking

Smart Control

- With Harlequin Direct, leverage your system's GPU to process complex jobs much faster, reducing RIP times and lowering overall bill of materials
- Drive your press at maximum speed with your own brandable inline RIP controller
- Full, brandable front end
- Harlequin Direct at Heart: designed to drive the fastest, widest and highest resolution inkjet devices
- Full variable data streamed directly to the device electronics
- Instant printing, no need to RIP ahead
- Easily scalable with extended gamut and special colors

Smart Performance

- Boost productivity using AI-based RIP tuning
- Patented Streamline Estimate technology estimates achievable line speed before committing to run a job, saving waste and making inline RIPping a true production capability
- Simple traffic light system lets the operator know the job can be run at press speed
- Patented Streamline Autotune technology optimizes and intelligently configures the system for each job, achieving maximum levels of productivity
- Convert formats to streamlined PDF including (eg IJPDS and PPML)

Smart Connectivity

- Integrate into your own front end and connect to Industry 4.0 (OPC UA)
- Create or integrate using most development languages
- Integrate into the wider factory and SCADA systems
- Connect securely to the Cloud and remote monitoring systems

Smart Quality

- Enable your customer's press operators to achieve the best quality without the need for print specialists
- Create a library of predefined media definitions describing all the settings needed for perfect color and quality
- Supercharged by ScreenPro with advanced inkjet-specific screens and custom screen design service
- Powered by the award-winning PrintFlat technology, taking inkjet quality to the next level
- Enhanced with industry-leading color tools with ColorLogic Inside

SmartQI

- Stream data directly to industry-standard inline quality inspection systems
- Areas of interest highlighted (eg labels, variable data)
- Generates color-managed RGB raster data for every page

Printhead Drive Electronics

- SmartDFE can support any printhead drive electronics and file types (eg PRT or TIFF)
- Meteor printhead electronics are supported out of the box
- Powerful printhead-independent drive electronics
- Choose the right inkjet printheads for your application
- Mix printhead models within the same press
- Change your mind about inkjet printheads with minimal risk
- Simulate output before you are ready - saving ink, media and production time

System requirements

This section outlines the typical hardware and system requirements for running Smart Print Controller (SPC) and RIP Server. Actual requirements will vary depending on job size and resolution, throughput requirements and use of features such as RIPAhead and proofing.

Performance considerations

SPC can perform additional roles such as:

- Proofing
- RIPAhead

These features increase system load. If you plan to use RIPAhead, ensure that the SPC machine has sufficient CPU and memory, as it must match the memory requirements of the RIP Server.

System configuration requirements

Antivirus

Antivirus software is optional
Recommendation: Do not run antivirus on SPC or RIP Server systems. Can significantly impact RIP and data throughput performance

Firewall and ports

Firewall configuration is implementation-dependent
SPC and RIP Server communicate using:

- A shared folder
- Network ports (configuration-dependent)

If a firewall is enabled, required ports must be opened to allow communication.

File sharing

The RIP Server must expose a shared folder. This folder must be:

- Accessible from the SPC machine
- Configured with read/write permissions

This is required for job transfer and processing.

Time synchronization

Not strictly required
Recommended: Keep SPC and RIP Server system clocks synchronized

This simplifies log correlation and troubleshooting.

Typical SPC system requirements

Component	Requirement
OS	Windows 11 Pro
CPU	Intel i7 (=14 cores)
GPU	NVidia RTX 4060 or better
RAM	64 GB DDR5 (recommended)
Storage	Sufficient for input jobs and temporary data

Typical RIP server system requirements

Component	Requirement
OS	Windows 11 Pro / Linux (Ubuntu) 24.04. LTS
CPU	Intel i7 (=24 cores)
GPU (optional)	NVidia RTX 4060 or better
RAM	128 GB DDR5 (recommended)
Storage	Sufficient for raster output (if writing to disk)

Key differences: SPC vs RIP Server

1	SPC (Control + optional RIPAhead)
2	Moderate CPU
3	High RAM (if RIPAhead enabled)
4	Handles job orchestration + optional processing
5	Sufficient for input jobs and temporary data
6	RIP Server (Processing Engine)
7	High CPU
8	Very high RAM
9	Handles raster generation and output

SmartDFE for Labels and Packaging editions

SmartDFE for Labels and Packaging is available in two editions, each featuring a different combination of Hybrid Software components.

Features	Workflow edition	Server edition	
Smart Control (including Harlequin Direct)	●	●	● Included as standard
Smart Quality	●	●	◐ Included with all variants apart from "Static"
ColorLogic Inside	●	●	▲ Optional purchase
PrintFlat	◐	◐	
Smart Connectivity	●	●	
Smart Performance	●	●	
Smart QI	●	●	
Meteor Ready	●	●	
Smart Job Cost Estimator	●	●	
CoPrA and ColorAnt from ColorLogic	▲	●	
PACKZ	▲	▲	
Smart Workflow	●	—	

SmartDFE speed variants

There are four variants of SmartDFE with different hardware requirements and price points. The lowest variant is Static; this is recommended where the press is only going to print many copies of a static design ie a single piece of content printing many times. The top variant is Ultra High Data Rate (UHDR), which is designed to produce the huge amounts of data generated by fully variable data on the fastest, highest- resolution, widest, and best-quality inkjet printing presses.

Variants	Abbreviation	Example Data Rate	Description
Static	Static	NA	A single PC running all the software and generating a static raster which will be printed many times.
Standard Data Rate	SDR	Up to 3GB/s	Typically, two PCs, one running Harlequin Direct and the other the workflow and controller software. Designed for less demanding variable data, lower-resolution, narrower and lower-speed presses.
High Data Rate	HDR	Between 3GB/s and 18 GB/s	Typically, more than one PC running Harlequin Direct and another running the workflow and controller software. Designed for most common variable data and main stream press capabilities.
Ultra High Data Rate	UHDR	Above 18 GB/s	Typically multiple state-of-the-art PCs driving Harlequin Direct. Designed to produce the huge amounts of data generated by fully variable data on the fastest, highest resolution, widest and best quality inkjet printing presses.

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