Product Brief

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IPS DDK, Zoran's feature-rich high performance driver development kit, is targeted to color and monochrome printers and multifunction peripherals (MFPs). IPS DDK supports raster, JBIG, PCL 5, PCL XL (PCL 6) and PostScript on laser, inkjet and other marking technologies. In the past, only monolithic drivers met OEM requirements for features, customization, performance and print quality. By extending the capabilities of the standard

Microsoft Unidrv and PScript provided in Windows, IPS DDK eliminates the requirement for developing both monolithic and Unidrv/PScript based drivers. This can now be accomplished in one development effort. In addition, IPS DDK offers user interface consistency across Windows operating systems including Windows Vista and print language technologies.

Benefits

- Conforms to Microsoft Unidrv/PScript architecture; fully Windows-compatible (x86 and x64 versions) and WHQL compliant; prepares development for future Windows releases including Windows Vista

- Full customization capabilities and control over user interface design and feature set

- Easy integration of OEM intellectual property: proprietary color management, halftone algorithms (error diffusion and screens) and other image quality improvement algorithms, finishing options, document processing and other device features

- Source code availability provides independence, design flexibility and facilitates value-added customization

- Single code base for worldwide distribution that can be localized to all native Windows languages and locales; only one executable to distribute

Key Features

- Easily customized user interface design, portable to both Unidrv and PScript, and compliant with both Microsoft in-box and OEM UI specifications

- Full range of feature enhancements to standard Unidrv and PScript: page and device preview, watermark generation, N-up formatting, complex booklet printing, reverse ordering, manual duplex, scaling features and more

- High-fidelity color and quality, object-specific rendering and digital halftoning

- Integrated high-speed, assembler-optimized, JBIG compression module for raster page devices

- Reference implementation for page (e.g. laser) and serial (e.g. inkjet) raster devices and PDL devices

Description

IPS DDK Driver Development Kit

Zoran's IPS DDK is specifically designed to comply with Microsoft's Printing Architecture to ensure complete compatibility with Windows operating systems. It takes full advantage of the standard spool system, I/O architecture and OS-supplied components in Windows 2000, Windows XP and Windows Server 2003, including x64 editions. Using IPS DDK, OEMs can create drivers using:

- Microsoft's Unidrv-based PCL 5 and PCL XL emitters
- Microsoft's PScript-based PostScript emitter
- Zoran's JBIG and inkjet raster emitters
- Their own proprietary formats

The DDK supports both color and monochrome output in bitonal, multi-bit, N-color or contone format for laser, inkjet and other marking technologies.

Windows Vista Ready

IPS DDK is compatible with the legacy print path in Windows Vista, adding extensible support for PrintTicket and PrintCapabilities in the new operating system. Because IPS DDK leverages standard Microsoft interfaces, print drivers developed with IPS DDK can seamlessly migrate between past, current and future operating system releases.

x64 Edition Support

IPS DDK was designed from the ground up with 64-bit computing in mind. It is the ideal platform for OEMs looking to support Windows XP x64 Edition and Windows Server 2003 with full-featured print drivers. Both 32-bit and 64-bit drivers can be generated from a single source code project.

Plug-In Architecture

Zoran has built on the Unidrv and PScript architecture with an innovative plug-in model that takes full advantage of the Microsoft core components and adds powerful functionality and customization capabilities. The IPS DDK plug-ins are implemented as a small number of DLLs.

User Interface Plug-In

Full customization of the driver's user interface is provided by the User Interface Plug-In. Various OEM custom designs are possible: rich graphics in the user interface such as logos, printer configuration images, page preview, etc. are standard. The user interface is controlled through a combination of extended Generic Printer Description (GPD) files or PostScript Printer Description (PPD) files; more complex UI constraints are supported by easily debugged source code.

Feature Plug-Ins

Features that are not natively supported by Unidrv or PScript are implemented using advanced controls and processing options in the Feature Plug-Ins:

- Document Transformation features add functionality to application features, including zooming, watermarks, N-up, booklet and more.
- An enhanced Page Preview allows the user to see at a glance what print options are active (e.g. watermarks, N-up, booklet printing, binding options, etc.)

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Imaging-IPS DDK-PB-2.1

Product Brief

Description (continued)

- Interactive Printer Configuration Preview graphically reflects the current hardware configuration of the printer and the selected settings and finishing options
- Manual Duplex and Reverse Print Order provide double-sided printing without a mechanical duplexing device installed in the printer

Raster Render Plug-In

Print quality superior to standard Unidrv is achieved through the Raster Render Plug-In DLL. OEM proprietary color management systems and halftones can be implemented as an alternative or in addition to Windows ICM. This unique feature enables OEMs to protect and retain their intellectual property and to reuse many man-years of research in a Unidrv-based raster driver solution.

Through object recognition and object-specific rendering, it can be determined whether an object is text, vector graphics, bitmap image or background. Then each object type can be rendered using a distinct method. Digital halftoning can be specific to engine, resolution and bit depth. Bit-depth conversion is performed from internal 8x8x8 RGB to device-specific bit depth and the number of engine marking colors in order to maintain the highest image fidelity. The number of engine marking colors and the bit-depth of each color can be arbitrary.

PDL Co-Renderers

IPS DDK includes innovative co-renderers to enhance or extend the PDL generation capabilities built into Unidrv and PScript. These can be used by OEMs to implement optimized PDL data streams or language variants.

Zoran JBIG Compression Module

The IPS DDK raster driver uses the ITU standard JBIG compression format to efficiently encode printer data. The JBIG compression module is assembler-optimized to generate an extremely compact data stream that can be sent over any standard port. Driver code is highly optimized to provide the performance required by today's high-speed print devices and low cost color page printers. The compression module takes advantage of white-space-skip, black-plane separation and features supported by Zoran's Quatro™ family of System-on-Chip (SOC) solutions.

Cross-Driver Consistency

With the User Interface Plug-In, a fully customized look-and-feel can be applied to a family of drivers, including raster and multiple PDLs, in a single design and development effort. The IPS DDK driver development kit enables designs for Unidrv-based drivers to be reused to customize PScript drivers by reconciling the differences between the architectures.

Ease of Development

IPS DDK is provided as C++ language source and object code with extensive documentation and reference driver source code.

The highly object-oriented code base does not require proprietary development tools; the entire development environment is integrated into Microsoft Visual Studio.NET. Since interfaces are based on COM, customized extensions are forward- and backward-compatible.
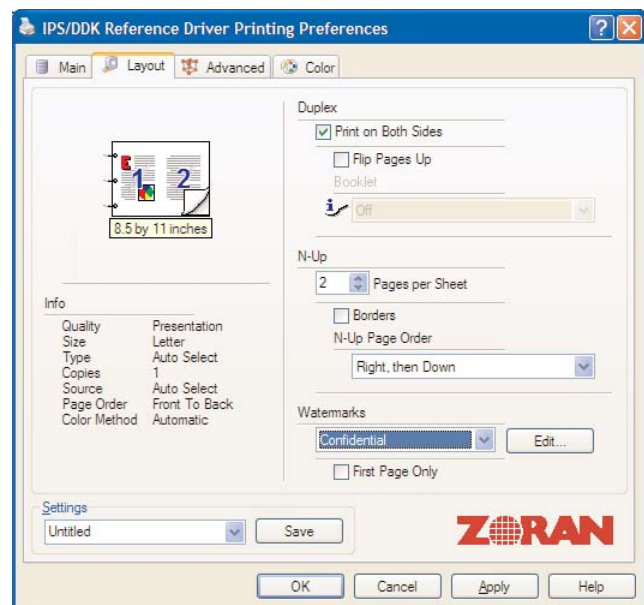
Ease of Localization

All strings in the user interface and help system can be fully localized into all native Windows languages and locales using Unicode, including support for double-byte and right-to-left layouts. A preview utility is provided with the DDK to enable localization experts to easily match each string ID to its location and size in dialogs. Multiple languages can be combined in a single binary if desired by the OEM.

Support for In-Box and Windows Update

Drivers built with IPS DDK can be dynamically switched between the Microsoft standard Common Property Sheet User Interface (CPSUI), or "tree view", and the OEM-specific dialog designs. This allows a single driver development effort to meet both Microsoft and OEM UI requirements for broadest distribution with a single binary.

Zoran Engineering Support Services

Zoran offers Source Code Maintenance and Engineering Support Programs that can shorten development cycles and ensure that the latest operating system and print language features are available as new drivers are developed. The Source Code Maintenance Program also provides technical consulting, including informative technical bulletins, service packs and updates. Zoran's Engineering Support Program provides direct software integration assistance and design recommendations, or NRE development, to optimize the quality, feature set and performance of the driver collection.

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