SmartSource™ Series
Capabilities Overview

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SmartSource™ Series Capabilities Overview

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Section 1
Introducing SmartSource

From the company that defined the benchmark for distributed capture, Unisys now offers the most advanced series of remote capture devices in the industry: Unisys SmartSource™ Series. Its unique network connectivity and choice of features meet a wide range of business needs. SmartSource series devices are the ideal solution for front- and back-counter processing as well as retail, commercial, remittance, and remote deposit capture environments.

Expert, Professional, and Value Series

Based on the latest technology for distributed capture devices and over five decades of company experience, SmartSource series devices have a compact and ergonomic design with full-featured document processing and "state-of-the art" image processing and security capabilities. A SmartSource Professional series device is shown in Figure 1–1.

Figure 1–1. SmartSource Professional Series (Single-Pocket Model)

The SmartSource family offers a choice of three series to meet your unique document and image processing requirements:

- **SmartSource Expert series**—offers document and image processing in a networked "thin client" application environment. Expert series devices have onboard intelligence for embedded computing to internally perform Magnetic Ink Character Recognition (MICR) and Optical Character Recognition (OCR) read, image capture, franking, and endorsement. Image quality decisions and image security, through application of a digital signature to images, are done at time of capture within the device, thus reducing network traffic and eliminating image security risks.

  Expert series devices process items at throughput rates from 30 to 120 documents per minute (dpm). Available options include a document auto-feeder, front franker stamp, OCR-A and OCR-B optical character recognition, high-resolution ink jet endorser with text or graphics printing, single-pocket document disposition, and color image capture.

- **SmartSource Professional series**—offers all the document and image processing capabilities of the Expert series in a PC-based application environment. Professional series devices can process items at throughput rates from 30 to 120 dpm. Available options include a document auto-feeder, OCR-A and OCR-B optical character recognition, front franker stamp, high-resolution ink jet endorser, two-pocket document disposition, and color image capture.

- **SmartSource Value series**—offers an easy-to-use and affordable platform to convert to image-based processing when document processing volume is low and future increased platform performance or functionality is not required. Like the Professional series, Value series devices provide document and image processing in a PC-based application environment. As an entry-level platform, Value series devices are limited to single-item feeding, single-pocket disposition, and processing throughput rates as high as 30 dpm. Available options include OCR-A and OCR-B optical character recognition, high-resolution ink jet endorser, and color image capture.

Image Capture

The SmartSource series offers convenient and powerful desk-top devices with a range of features supporting distributed, image-based processing in a variety of operational environments. Front and rear image capture is at 300 dots per inch (dpi) for improved image quality. Image renditions available across all SmartSource devices include black and white, grayscale, or color. Front images are captured early in the processing stream to enable pocketing decisions based on image OCR read or an image quality defect. Rear images are captured after endorsement—all in a single pass—to maximize processing efficiency.

Benefits associated with using SmartSource devices in a distributed processing environment include the following:

- In a branch truncation environment, necessary document information is captured as early as possible, for example, in a branch office, for electronic forwarding.
- In a remote deposit capture environment, deposit transaction images are captured and forwarded to a financial institution for image-based clearing with these advantages:
  - Final processing is completed much sooner in a business day, or a bank can accept items later during the day while still accomplishing same-day clearing.
  - Image-based clearing reduces transportation expenses.
  - Images are available to create an automatic deposit archive for subsequent research.

SOA Vision

Unisys SOA Vision provides web services in a Service Oriented Architecture (SOA). Device Suite offers track control along with functions for image quality assessment and image security and also returns MICR and OCR results for programming applications. Device Pro service functions are embedded for SmartSource Expert series devices. The Perfect Image service offers a single-call service to access character recognition (CAR/LAR/ICR/ MICR), image quality and usability assessment functions, and image security on a post-image capture basis to ensure image suitability for electronic exchange. Refer to the *SOA Vision Device and Perfect Image Suites Capabilities Overview* (4326 8861).

Product Ordering

SmartSource series products are orderable through a Unisys sales representative or a variety of Unisys partners. SmartSource series devices can be upgraded after purchase through software entitlement. Refer to "Upgrades" in Section 2.

Section 2
Standard Features and Options

SmartSource Expert, Professional, and Value series devices share many of the standard features and options that are described in this section. Refer to Section 3 for a description of additional features for Expert series devices.

Overview

SmartSource **Expert** and **Professional series** devices share these features:

- Processing throughput of 30, 45, 70, or 120 dpm for six-inch documents depending on style and upgradeable to any offered throughput (see below)
- MICR read with auto-detect of E13B and CMC7, MICR/OCR combined read for improved MICR performance, and optional inline optical character recognition of OCR-A and OCR-B—all supporting run-time pocketing decisions
- Optional one- to four-line, height-adjustable rear endorsement that can be modified at runtime based on the MICR code line for the item (Expert series devices also support graphics)
- Front and rear image capture at 300 dpi for improved image quality with early capture of front images to support pocketing decisions based on image data (for example, image quality suspect items) without interrupting item flow
- Multiple image renditions per item and a 300-dpi color option
- Automatic feeding of single documents, batches of as many as 50 documents, or unlimited feeding as the operator refills the hopper during processing; feeder has double document detection to identify overlapping items
- Auto-sensing feeder or start/stop button to control flow of items along with an automatic track clearing function initiated from start/stop button
- Hopper and pocket capacity for as many as 100 documents; two-pocket option (standard for Expert series) for remittance processing or outsorting of rejects
- Optional front franker stamp to show the item has been electronically processed
- Open track design for access to items in track without removing the covers
- Removable covers for easy, operator access to consumables

The SmartSource **Value series** has the same common platform as other SmartSource series devices and offers these features:

- Processing throughput as high as 30 dpm for six-inch documents
- Single-item feed and pocketing
- MICR, MICR/OCR combined read, and optional OCR-A and OCR-B read
- Front and rear image capture with multiple image renditions and a 300-dpi color image option
- Optional one- to four-line endorsement
- Single pocket with up to 20-document capacity
- Ergonomic design with automatic restart, an open track, and removable covers

Figure 2–1 shows a SmartSource **Value series** device intended for clients with lower volume requirements.

Figure 2–1. SmartSource Value Series

Hardware Platform

The hardware platform for the Expert, Professional, and Value series is based on a common set of features and options packaged in a stylish unit with a small footprint and U-shaped track. Based on the style ordered, devices are entitled for certain configurable options (for example, throughput), and come with or without "add-on" hardware options (for example, a franking stamp). Unique design features of SmartSource series devices ensure efficient processing. Refer to Section 2 for a description of factors affecting throughput.

All SmartSource series devices are designed for installation by a client without field service assistance. Refer to Appendix B for hardware specifications.

Operator Interface

Three-LED indicators for status are standard across all series. Devices are equipped with a power switch.

Removable Covers

Two covers are easily removable for access to track components for consumables replacement, operator maintenance, and accessing documents involved in some exception conditions. For most exception conditions, however, the open track design provides easy access to items in the track without removing the covers.

Feeder and Hopper

Whereas Value series devices limit an operator to feeding single documents, Professional and Expert series devices offer three options for document feeding. Documents can be hand-fed one at a time, in batches of as many as 50, or in unlimited number as the operator refills the hopper during processing for continuous feeding. The feeder supports two modes: manual start/stop and auto-sense. A start/stop button controls document feeding when operating in manual start/stop mode.

Advanced **double-document detection** using optical sensors controlled by system software is standard for Expert and Professional series devices. The track is stopped when a double-document is detected, and a yellow indicator is illuminated under application control to alert the operator. With devices in all series, the feeder self-adjusts to paper thickness, minimizes skew effects to better handle poorly prepared work, and supports feeding of ATM envelopes with somewhat reduced performance.

Professional and Expert series devices have a hopper that holds as many as 100 documents (24-pound paper). A document feeder flag is part of the hopper and is ergonomically designed to enable single-handed operation when loading documents in the hopper. The flag also facilitates reloading the hopper while documents are feeding. An empty hopper detector stops the feeder when no documents are available.

SmartSource devices process documents with damage from normal handling. Limited work preparation by the operator is necessary for optimal processing performance and includes aligning bottom and leading document edges and also removing staples, paper clips, rubber bands, loose correction strips or labels, adding machine tapes, and scrap paper. Crumpled or folded documents must be straightened or placed in carrier envelope.

MICR Reader

The Magnetic Ink Character Recognition (MICR) reader senses the magnetic content in the character code line and delivers the information to the system software for recognition processing. The reader automatically detects if the MICR format on a document is E13B or CMC7 so that no operator or application intervention is required. Both of these formats are read using the same MICR reader. Recognizing a mix of E13B and CMC7 characters in a single MICR code line is not supported. MICR reader options include "fewest mis-reads" or "fewest can't reads" modes. A combined MICR/OCR read function for all SmartSource series devices provides exceptional read rates with a slightly lower maximum throughput.

Optical Character Recognition

E13B recognition from an image is a standard implementation across all SmartSource series devices. Optical recognition of the following fonts is optional:

- OCR-A numeric and alphanumeric
- OCR-B numeric and alphanumeric

Two scan bands, each 1.27 cm (0.50 inch) in height, are supported with a maximum of 96 characters per band. The position of the bands is configurable and controlled by the application. With combined MICR/OCR read, only one additional scan band is available.

Imaging

A front, 300-dpi image scanner based on contact image sensor (CIS) technology captures front images of documents after passing the MICR reader. The early capture of front images allows for pocketing decisions based on image data without interrupting item flow. A rear, 300-dpi image scanner is positioned after the endorser to capture a "complete data" rendition of the rear of documents. SmartSource devices offer these strategic imaging options:

- High-resolution front and rear document image capture
  - 300-dpi spatial resolution
  - 10.67-cm (4.20-in.) vertical field of view (maximum document height imaged)
- Two image capture modes
  - Grayscale with 256 gray levels
  - Color with 24 bits per pixel (RGB)

- Image pre-processing
  - Image normalization, framing, and transposition
  - Image down-scaling (100, 120, 200, and 240 dpi)
  - Adaptive black and white image thresholding
  - Image "spot noise" removal for black and white images
  - Gray-level image contrast enhancement (Expert series only)
  - JPEG image quality level selection
- Seven available image renditions
  - 200- or 240-dpi black and white, CCITT Group 4 compressed
  - 200 or 240-dpi grayscale (front only), JPEG compressed
  - 100- or 120-dpi grayscale, JPEG compressed
  - 300-dpi color, 24 bits per pixel (RGB), uncompressed
- As many as two black and white and three grayscale images per document combined to produce a maximum of three front and two rear images
- As many as two color images (one front and one rear) per document
- Image processing
  - Electronic image de-skewing with Device Suite Standard or Pro
  - Image quality flags (IQFs) following X9.37 or X9.100-180 standards and image security using a digitally encrypted signature with Device Pro

Image renditions are passed to the subscribing application by means of a Tagged Image File Format (TIFF) 6.0 or a bitmap (BMP) image file format. CCITT and JPEG compressed images use the TIFF 6.0 format, while color image capture is provided using the BMP format.

Rear Endorsement

An optional, non-impact, 600-dpi ink jet rear endorser prints as many as four lines of text or graphic (Expert series only) information under application control and can be based on a document code line. With Device Suite, information from a previous MICR code line can be repeated in the endorsement of the subsequent item.

The endorser is located in the track before the rear image scanner. An operator positions the print head in one of two vertical positions for height control. The application controls horizontal positioning. A programmatically controlled cleaning cycle sprays small amounts of ink from all nozzles to maintain proper print head functioning. The ink-drop count is tracked (and reset when the ink cartridge is changed) to deliver a low or out-of-ink warning message that can be displayed by an application.

Characteristics of the endorser are as follows:

- Endorsing in real-time based on MICR code line with reduced throughput rates for some configurations
- Ink-jet endorser printing at 10 characters per inch
- Two manually selectable height positions, each with as many as four lines of printing at programmable positions
- Variable horizontal print location of as many as 56 characters for a six-inch document, controlled by the application
- Three levels of print quality (economy, standard, or premium)
- Support for one or two resident fonts
- Support for graphics

Franker Stamp

Some workflow applications require placing a "frank" (or static message) on the front of a document to indicate it has been processed. The frank mark helps prevent reprocessing fraud by providing a visual queue to indicate the document has already been processed. After completing front image capture, an ink roller applies the fixed frank as a document passes. If a processing exception occurs, the frank is not applied. Franking is not offered on Value series devices. Franking actuation is controlled programmatically and can also be based on MICR code line results.

Pockets

Single-pocket devices receive and stack as many as 100 documents in the order of processing. Two-pocket devices have a selector gate for programmatically disposing a document to one of two pockets, each of which has capacity for 100 documents. Pockets have wire pocket extenders that are adjustable to the expected size of documents. One- and two-pocket configurations are offered for Expert or Professional series devices. Value series devices have a single pocket.

SmartSource Expert and Professional series devices enable run-time pocketing decisions at throughputs as high as 120 dpm for six-inch documents based on MICR code line read results. Added capability with combined MICR/OCR enables pocket decisions at throughput rates as high as 120 dpm for Expert series devices and slightly lower throughput rates for Professional or Value series devices. Pocketing decisions can also be based on image quality flags or, when running Perfect Image, on image usability results.

Device Connectivity

SmartSource devices connect to either a PC or an Ethernet local area network. Additionally, Expert series devices provide a USB 2.0 host port for attaching USB-based peripherals such as a magnetic stripe reader.

Professional and Value series devices are physically connected to a PC by means of a USB 2.0, high-speed connection. Expert series devices are connected by 10/100 Base-T Ethernet as true network devices (with no PC required) to communicate remotely with host applications running on a central server. DHCP or manual TCP/IP addresses are employed to support a direct network connection.

Upgrades

After initial purchase, SmartSource series device features can be upgraded by means of entitlement for the following additional purchased options:

- OCR-A, OCR-B
- Color image capture
- Rear ink jet endorser

Additional upgrade options for Professional and Expert series devices are as follows:

- Processing throughput (45, 70, or 120 dpm)
- Feeder stop interval (50 documents per batch or continuous feeding)

Throughput

SmartSource Value series devices process six-inch documents and provide all platform functions at a throughput rate as high as 30 dpm. Professional and Expert series devices process six-inch documents at a throughput rate of 30, 45, 70, or 120 dpm depending on device style. At throughput rates of 30, 45, and 70 dpm, all the following platform functions are supported for normal, real-time processing without any reduction in processing throughput:

- MICR read
- Capture of three images
  - Front, black and white, CCITT compressed image
  - Front, grayscale, JPEG compressed image
  - Rear, black and white, CCITT compressed image
- Franker stamp

- Rear endorsement (single line)
- Pocket selection

SmartSource Professional devices configured for 120-dpm operation support all of the aforementioned platform functions at the rated speed. However, the following factors may result in lower processing throughput:

- Host PC configuration (processor speed and memory)
- In-line, real-time processing operations
  - OCR read
  - MICR/OCR combined read
- Color image capture at 300-dpi, 24-bit-per-pixel for uncompressed images, (processing throughputs are reduced by lower track speeds, image file size, and data transfer limitations associated with the USB 2.0 interface; additionally, OCR functionality is not available during color capture)

SmartSource Expert devices configured for 120 dpm operation can perform all platform functions at the rated throughput with the exception of color image capture. When capturing 300-dpi, 24-bit-per-pixel uncompressed color images, OCR functionality is not available, and processing throughput is reduced by lower track speeds, image file size, and data transfer limitations associated with the 10/100 Base-T Ethernet interface and network.

PC Configuration

The recommended minimum host PC configuration for normal processing at 30 dpm for Value series or 30, 45, or 70 dpm for Professional series is as follows:

- 2.0-GHz Pentium 4 processor
- 512 MB of memory
- USB 2.0 host connection for Professional and Value series devices

No host PC is required for Expert Series devices.

When capturing three CCITT or JPEG compressed images per document, a 3.2-GHz Pentium 4 processor with 1 GB of memory supports the maximum processing throughput rate of 120 dpm. A 2.4-GHz, Core 2 Duo processor with 1 GB of memory supports capture of four or five CCITT or JPEG compressed images per document at the maximum processing throughput rate of 120 dpm.

When in-line OCR or MICR/OCR combine read is enabled, the processing throughput is highly dependent on the host PC processor speed. Using a 2.4-GHz, Core 2 Duo processor with 1 GB of memory, processing throughput with in-line OCR enabled is slightly over 100 dpm.

Application Platforms

SmartSource devices run in a distributed capture environment under control of applications. The following application platforms are supported:

- Professional and Value series devices run with Device Suite or an API emulation to interface with legacy software applications in existing environments, for example, applications controlling a [Web]Source NDP.

- Expert series devices offer an Ethernet connection while running with either an embedded Device Pro service for track control and image processing or Unisys Common API or DLL interface for legacy applications.

Web services are the building blocks for applications in a Service-Oriented Architecture (SOA) where functions are accessed through a network. Whether physically connected to a PC or functioning as a web device, SmartSource devices communicate with applications that can be installed locally or in a central location.

As part of SOA Vision, Unisys offers two web services platforms that include feature-rich web services along with a tool set:

- Device Suite

  Device Suite offers two services: Device Standard provides basic track control for document processing, while Device Pro adds functions for image processing, image quality flags, image security, automated track control, and enhanced code line read. A tool set supports configuration, testing, operation, and administrative functions. For example, an exception handler application displays exception information from devices for incorrectly processed items.

- Perfect Image

  Perfect Image offers a single-call service to access character recognition (CAR/LAR/ICR/MICR), image quality and usability assessment functions, and image security functions. A tool set for configuration, testing, and administration is provided and includes a Parameter service for central storing of parameters for retrieval across an enterprise.

Refer to the *SOA Vision Device Suite and Perfect Image Capabilities Overview* (4326 8861) for more information about Unisys web services offerings.

Device Suite Features

SmartSource Professional and Value series devices access the Device Standard or Pro services through a local PC. Expert series devices have the Device Pro service embedded for direct connection to a network application. Whereas the Device Standard service offers basic track control and image de-skew to carry out document processing functions through an application, the **Device Pro service** offers advanced track control through document processing rules with these additional features:

- Image security—enables the creation of a digital signature at point of capture for as many as five renditions of each captured image. Image security detects whether an image has been altered or replaced. It does not protect images from being altered or replaced.

- Image quality analysis—detects image quality defects (ANS X9.100-180 or X9.37) in real time and reports Image Quality Flags (IQFs) based on set thresholds. The following IQFs are supported under ANS X9.100-180 and can be applied globally or individually to document fronts and rears:

  – Undersize or oversize image
  – Folded or torn document edges or corners
  – Document framing error
  – Excessive document skew
  – Piggyback document
  – Image too light or too dark
  – Horizontal streaks or excessive spot noise
  – Below minimum or above maximum compressed image size
  – Front-rear image dimension mismatch
  – Image out of focus

- Document processing rules—enable real-time decisions based on the document code line for endorsing, imaging, pocketing, or other device functions. Applications use the local rules in custom routines to perform functions. Document processing rules can implement a sort pattern capability to enable the selection of image quality and usability parameters based on the MICR code line, thus providing for parameter customization on a document-by-document basis.

- Combined MICR/OCR read—combines a second, OCR read of an E13B code line with the MICR read for a near-perfect E13B code line read rate to further reduce costly data corrections and mis-posting of items.

Legacy APIs and Emulation

Support for introducing SmartSource devices into existing environments with other Unisys distributed capture devices is provided as follows:

- Unisys Middleware API emulation for SmartSource Professional or Value series
- Unisys Source NDP Common API or Unisys Source NDP DLL for SmartSource Expert series

An application vendor can replace an existing Unisys distributed capture device with a particular SmartSource device by employing an API or emulation to run legacy applications while migrating to a Device Suite service. An application may require minor changes to run a SmartSource series device in emulation mode.

Application Operating Environment

An application that controls a device through Unisys Device Suite, a web service interface, can operate in any hardware platform or operating system environment. It interacts with Unisys Device Suite over the network to perform document processing functions.

The Unisys Device Suite software itself runs in a Windows XP SP2 operating system environment with .NET 3.0 framework using Windows Communication Foundation (WCF) for the web services infrastructure.

If an application is running on the same machine as Device Suite software then it must run in the Windows XP environment.

When running an Expert series Smart Source the Unisys Device Suite software is embedded in the device so no PC is required between the application and the Expert series transport.

When running an Expert series device, the end application simply needs to make web service calls and, therefore, has no limitations with respect to an application environment.

Applications using an emulation must run in the Windows XP environment.

Section 3
Expert Series Features and Options

The SmartSource Expert series is the only self-contained network device for document processing and image capture in the industry. No other device in its class benefits from the engineering experience and manufacturing quality of a major manufacturer of document processing and distributed capture systems such as Unisys.

Distinguishing Features

Expert series devices are distinguished by these unique features:

- Embedded computing that provides the following on-board functionality and "intelligence" independent of an external host PC or server:
  - Unisys Device Pro service
  - Embedded operating system (Windows CE)
  - Track control with document processing rules
  - Image capture, preprocessing, and compression
  - Image quality flags (IQFs)
  - Image security
  - Image and data caching with on-board storage
- Ethernet 10/100 Base-T network connectivity suitable for thin-client environments (eliminates the need for a dedicated PC)
- A USB 2.0 host port for supported peripherals such as a magnetic stripe reader
- Enhanced operator interface using a multi-line backlit LCD display (two-lines, eight characters per line)
- Two-pocket standard configuration

Figure 3–1 shows an Expert series device.

Figure 3–1. SmartSource Expert Series (Two-Pocket Model)

Embedded computing for nearly all platform functions differentiates the SmartSource Expert series from the Professional and Value series. The embedded computing architecture transforms a SmartSource Expert series device into an "intelligent" device. The addition of a network interface enables the SmartSource Expert device to perform as a network appliance that can operate in a true thin-client environment. As a network appliance, a SmartSource Expert series device offers an additional user interface (backlit LCD display) to communicate operational status and/or exception conditions directly to the operator.

The addition of a USB 2.0 host port interface supports future operability enhancements by providing a direct connection for qualified USB peripherals. A peripheral, such as a magnetic stripe reader, can be accessed by the connected Expert series device and/or by an application through Device Pro. The standard two-pocket configuration provides for outsorting documents when run-time document processing exception conditions are detected.

Operator Interface

In addition to a feeder start/stop button with a manual "track-clear" function and three-LED status indicators, the Expert series device operator interface (Figure 3–2) has a back-lit LCD display that is programmatically controlled to display operator and application messages.

Figure 3–2. Expert Series Operator Interface

Onboard Intelligence

A SmartSource Expert series device operates as a network appliance by means of an Ethernet connection. Embedded computing provides "onboard intelligence" that supports image processing operations in real-time at throughput rates of 30, 45, 70 or 120 dpm.

Onboard intelligence is realized on Expert series devices by adding specialized Digital Signal Processor (DSP) and Advanced RISC Machine (ARM) processors to the platform electronics. DSP processors are used to perform MICR and OCR recognition processing as well as image preprocessing, image compression, image quality defect detection, and security computations. All recognition and image processing is performed in real-time with results available internally to support run-time document processing rules. An ARM processor provides an integrated application programming interface (the Device PRO service), internal control and storage of data (for example, image data), and the communication protocols for the external Ethernet and USB 2.0 interfaces.

Flash memory capacity is increased for SmartSource Expert series devices to provide internal storage and caching of MICR, OCR, and image files. The added flash memory makes it possible for document processing operations to continue during periods when the network is interrupted or data transfer rates are reduced due to increased network traffic.

The embedded computing and storage resident in a SmartSource Expert device, coupled with the network connectivity capabilities, provides the following strategic and operational benefits:

- Reduced network transmission and remote server processing by providing internal processing for MICR, OCR, image processing, image compression, image quality, and image security
- Internal document processing rules to reduce or eliminate the dependency on a remote server
- In-built MICR/OCR combine read available in real time to ensure exceptional read rates and accuracy
- In-built image quality analysis to identify defects at the time of capture
- Image security performed internally to provide a higher level of protection against image alternation
- Improved device availability by supporting internal storage of images and MICR/OCR results, thereby supporting continued document processing even when the network is not available or interrupted
- Reduced total cost of ownership by eliminating the need for a dedicated PC for every SmartSource Expert series device

Refer to the *SOA Vision Device Suite and Perfect Image Capabilities Overview* (4326 8861) for a description of track control, image quality, and image security for the Device Pro service, which is embedded in SmartSource Expert series devices.

Options

Hardware options for SmartSource Expert series devices are as follows:

- Feeder stop interval (50 documents per batch or continuous feeding)
- Processing throughput (45, 70, or 120 dpm)
- OCR-A and OCR-B
- 300-dpi color image capture
- Front franker stamp
- Rear ink jet endorser with text and graphics printing
- Single pocket

Section 4
SmartSource Series Deployment

SmartSource series devices offer flexible deployment options while operating under a common platform for image-enabled, transaction-based check clearing with the potential for sophisticated image security as well as image quality and usability assessment. At the device level, "intelligent" processing decisions based on code lines or early-capture of front images add efficiency to document processing.

Overview

Whether deployed in a branch backroom, at a teller station, or in a remote deposit capture environment—in a small-scale, small business, or enterprise-size network—SmartSource deployment is flexible to provide competitive advantage regardless of the environment. As shown in the simple network example in Figure 4–1, Professional and Value series devices connect by USB 2.0 to a PC. Device control is provided locally by Unisys Device Suite services. An Expert series device with on-board "intelligence" connects to a network through Ethernet enabling operation in a standard or thin-client network environment, eliminating the need for a dedicated PC.

In a standard or thin-client environment, processing power is hosted on a central server for reduced complexity and lower cost. Not only is risk mitigated because administration tasks are centralized, but implementation is faster. Thin-client solutions also have inherently greater security. By offsetting the network and infrastructure costs associated with "thick-client" solutions, SmartSource Expert series devices offer potential to extend transaction-based processing into merchant environments.

Common Platform

SmartSource devices operate under a Unisys common platform based on Service Oriented Architecture (SOA): Unisys SOA Vision. The platform standardizes application software development, technical help desk support, and supplies management to streamline operations and improve efficiency while providing a foundation for introducing or expanding remote deposit capture with multiple devices of various configurations.

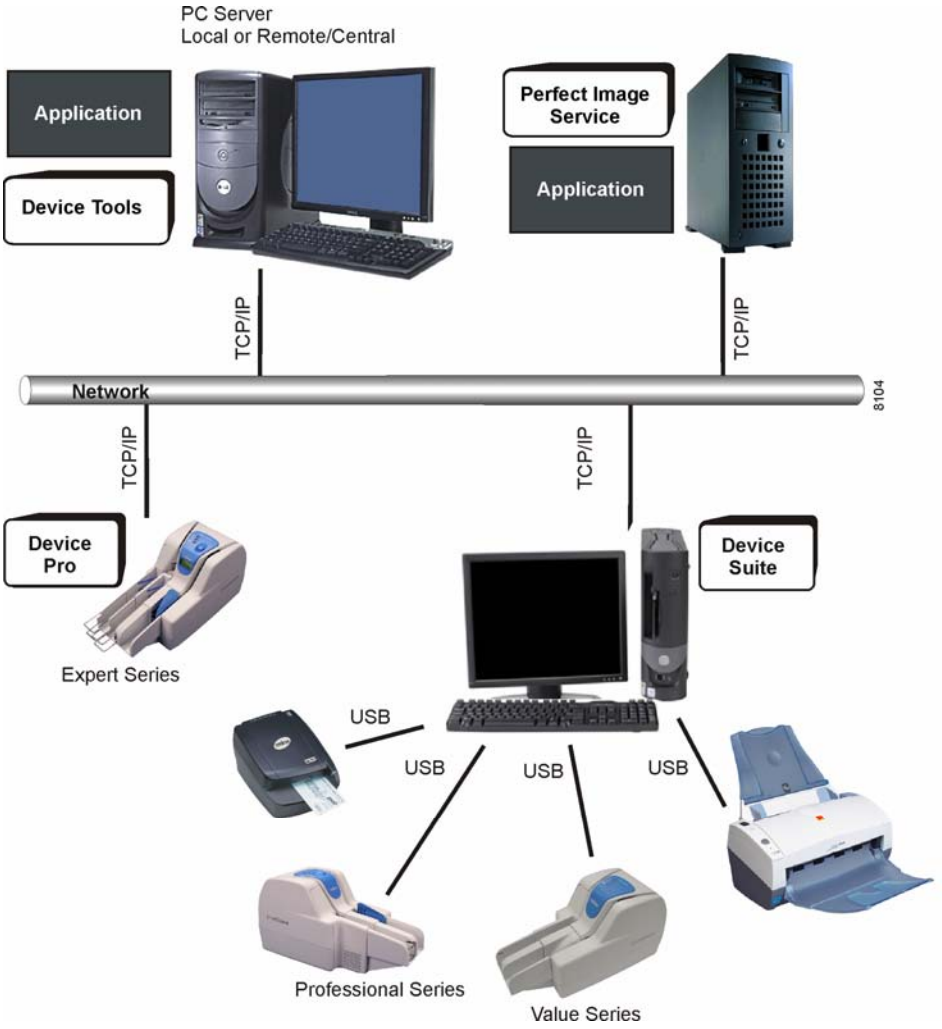

Figure 4–1. Network Implementation with Common Platform

Unisys SOA Vision products form the middleware interface for applications to control SmartSource devices and also offer other essential document processing functions such as character recognition and image quality and usability assessment. Remote capture and distributed document processing is supported by remote management of SmartSource devices with dashboard monitoring, reporting, and troubleshooting. Central administration of downloadable device upgrades is an added benefit of networked implementations. Specifically, Device Suite addresses the challenges of managing a large network in the following ways:

- Central monitoring of performance to identify bottlenecks
- Real-time diagnostic information provided to the application
- Real-time image quality and security
- Remote support capabilities to improve operational efficiency

- Reduced support costs by simplifying the integration of new releases or updates
- Programming applications once for all devices to eliminate redundant investment
- Downloading of embedded application code to enable real-time decision making
- Centralized software integration for software consistency and streamlined support

SOA Vision services are operating system and programming language independent. A web service interface can be called by any language running on any operating system. For example, a Java application running with Linux can drive a SmartSource device.

Refer to the *SOA Vision Device Suite and Perfect Image Capabilities Overview* (4326 8861) for more information about Unisys SOA Vision offerings.

High Volume Scalability

Deploying SmartSource series devices along with Device Suite provides the opportunity to scale processing capability to meet evolving customer needs and growth. For example, when deploying in a thin-client environment, a client application can control multiple devices and capacity is added by simply connecting an Expert series device to the network. There is no need to add an additional PC to host the device. Just adding the device to the Discovery registry makes the device available to the application.

In addition to the inherent scalability of SmartSource series devices, the devices connect to a network that can support additional PCs for throughput scalability and load balancing for distributed capture. With the Unisys Perfect Image service, scalability and high-throughput is afforded for character recognition and image usability through applications that create simultaneous connections to a balancing server by means of the Load Balancer service. The service forwards image processing requests to networked image analysis servers and returns results to the application.

Distributed Capture

Whether deployed in small or large organizations, SmartSource devices offer a best-in-class solution for capturing check images. In a transaction-based processing environment, images are transmitted to a host system for clearing within minutes as a Check 21 item or as an ACH/BOC transaction.

Because time is money, the process of capturing document images at the branch and performing proof operations at regional centers is increasingly being adopted by banks to streamline the check processing workflow. SmartSource devices drive document data and image capture back to the point of initial deposit, which can reduce or even eliminate courier runs and therefore save time while increasing the availability of funds.

Section 5
Service and Support

Over 2,200 clients worldwide recognize the outstanding quality of Unisys products and the superior, international service and support backing every product delivered.

Consumable Items

SmartSource devices are designed for easy replacement of consumable items by an operator. Consumables include the following items:

- Two feed tires and one separator tire for feeder
- Ink cartridge and felt pad for endorser
- Franker roller
- Pocket stacking flexures

Maintenance

Preventive maintenance tasks are designed to be performed by an operator. A cleaning supply kit is available from Unisys. Other regular servicing, for example, by a Unisys field service representative, is not required.

Parts and Supplies

Consumble items and cleaning supplies for SmartSource devices are available from Unisys Direct for world-wide delivery.

Repair

Repairs are based on a contracted maintenance agreement after the one-year warranty period has expired. A maintenance agreement authorizes either Depot Repair (mail-in service) or Advanced Exchange Service. With the exchange service, an exchange unit is sent to the client to replace the failed unit. All calls related to unit returns or warranty repair claims are handled through the Unisys Call Reception Center (CRC).

Product Information

Go to www.unisys.com/go/SmartSource for general product information; go to www.infoadvisor.com for additional information. Or, contact Unisys Direct or a Unisys representative.

Upgrades

Devices have embedded "flash memory" to provide storage for firmware. Software patch or new release upgrades can be delivered by means of a remote, networked server. Selected hardware options can be entitled through software after initial purchase.

Support Contacts

Unisys approved supplies and replacement items are available from Unisys Direct:

- In the United States, call 1-800-448-1424.
- In Canada, call 1-800-387-6127.
- In other countries, refer to www.unisysdirect.com/locations.

Support is available from Unisys for all Unisys products. Refer to the information about support at www.unisys.com, or access "Support Online" at www.service.unisys.com. Clients with support contracts have access to the Unisys Customer Call Center.

Appendix A
SmartSource Series Comparison

Table A–1 compares features for the SmartSource Expert, Professional, and Value series.

Table A–1. SmartSource Series Comparison Chart

	Expert Series	Professional Series	Value Series
Distinguishing Features	√ Network device √ No PC required √ Embedded computing	√ Scalable speed √ Auto-feeding √ One or two pockets	√ Entry-level price √ Single-item processing √ 30 dpm throughput
Operator Interface			
Feeder start/stop button	√	√	
Three LED status lights	√	√	√
Backlit, two-line liquid crystal display (LCD) with 8 characters per line	√		
Document Processing Throughput[1]			
30 dpm	√	√	√
45, 70, or 120 dpm	Optional	Optional	
Document Feeding			
Feeding of single documents	√	√	√
Options for automatic feeding of batches of up to 50 documents, or unlimited feeding as operator refills hopper during processing[2]	√	√	
Hopper Capacity			
Up to 100-item capacity	√	√	Single item
Magnetic Ink Character Recognition			
E13B and CMC7 read with auto detection	√	√	√

continued

Table A–1. SmartSource Series Comparison Chart

	Expert Series	Professional Series	Value Series
Optical Character Recognition			
OCR-A and OCR-B fonts	Optional	Optional	Optional
Combined MICR/OCR read	√	√	√
Image Capture			
Front and rear image capture of two 24-bit color images or a combination of as many as five black and white or 256-gray-level images	√	√	√
Image Renditions[3]			
200- or 240-dpi black and white, CCITT Group 4 compressed	√	√	√
100-, 120-, 200-, or 240-dpi, JPEG compressed with 256 gray levels	√	√	√
300-dpi, 24-bit color (RGB), uncompressed	Optional	Optional	Optional
Endorsement			
Front franker stamp	Optional	Optional	
Rear endorser	Optional	Optional	Optional
• One- to four-line endorsement of 10 characters per inch			
• Two vertical endorsement locations, manually selectable by operator			
• Three print quality options			
Rear endorsement graphics	Included with option		
Output Pockets			
Capacity per pocket	Up to 100	Up to 100	Up to 20
Single pocket	Optional	Optional	√
Dual pocket	Optional	Optional	

continued

Table A–1. SmartSource Series Comparison Chart

	Expert Series	Professional Series	Value Series
Device Connectivity			
USB 2.0 high-speed		√	√
Ethernet 10/100 Base-T	√		
USB host port for attaching a USB-based peripheral	√		
Application Platform			
Device Suite Standard or Pro		√	√
Device Pro service (embedded)[4]	√		
API Emulation		√	√
Unisys Common API	√	√	
Unisys Source NDP DLL	√		
Application Operating Environment			
Windows VISTA Business	√	√	√
Windows XP Pro (SP2)	√	√	√
Windows Server 2003 (SP2)	√		
Linux, UNIX	√		
Options Upgradeable through Entitlement	√	√	√

[1] Throughput is based on six-inch documents under optimal processing conditions and for "normal" features.

[2] When continuously feeding documents, it is recommended that the device does not run for longer than 15 minutes without a comparable idle period.

[3] Refer to Section 2 for factors affecting throughput.

[4] Device Suite tools are installed elsewhere in the network.

Appendix B
Physical Specifications and Connectivity

Table B–1 gives specification information for the Expert, Professional, and Value series.

Table B–1. SmartSource Series Physical Specifications and Connectivity

Dimensions and Weight
Length: 26.7 cm (10.5 inches)
Width: 15.2 cm (6.0 inches)
Height: 17.8 cm (7.0 inches)
Device weight: 3.0 kg (6.5 lbs)
External Power supply weight: 0.34 kg (0.75 lbs)
Power (External Power Supply)
Input voltage: 120/240 VAC, 50/60 Hz
Note: *The SmartSource should be plugged into an electrical outlet on a different branch of the power distribution system where large electrical equipment is not connected to nearby outlets.*
Output voltage: 24 VDC
DC power usage: 48 W (maximum) for Professional or Value series, 60 W (maximum) for Expert series
Surge current: 1.2 A (maximum)
Secure power cable attachment to device with manual release
Certifications and Compliance
Certified by TÜV for UL and CSA compliance (TÜV CUI for Canada, USA, and Europe)
Complies with CE, RoHS, VCCI, Energy Star, FCC Class B
EN60950-1 (Europe), UL60950-1 1st Ed. (US), CAN/CSA-C22.2 No. 60950-1-03 1st Ed. (Canada).
Noise
Idle (not feeding) level: < 50 dBA
Operating noise level: < 65 dBA
Internal Diagnostics
Self-diagnosis at power-up or platform reset

continued

Table B–1. SmartSource Series Physical Specifications and Connectivity

Host and Device Interfaces[1]
USB 2.0 (high speed) interface for Value and Professional series connection to a PC
Ethernet 10/100 BaseT (auto detect or configurable) for Expert series network connection
USB 2.0 host port to attach external peripherals for Expert series
Interface Operating Environment
Windows VISTA Business
Windows XP Professional (SP2)
Windows Server 2003 (SP2) for Expert series
LINUX or UNIX for Expert series
Onboard Windows CE for Expert series
Application Platform
Unisys Device Suite Standard or Professional
API Emulation for Value or Professional series
Embedded Device Pro for Expert series
Unisys Common API interface for Expert and Professional series
Source NDP DLL interface for Expert series

[1]Ethernet network connections use TCP/IP protocol.

Appendix C
Document Specifications

SmartSource series devices are designed to handle standard documents according to the document specifications given in Table C–1.

Table C–1. Document Specifications

	Minimum	Maximum
Length	11.40 cm (4.5 in.)	23.5 cm (9.25 in.)
Height	6.35 cm (2.50 in.)	10.80 cm (4.25 in.)[1]
Length to height ratio	1.5 : 1	--
Thickness	0.1 mm (0.004 in.)	0.15 mm (0.006 in.)
Paper weight (nominal)	75 g/m^2 (20 lb. long grain)	90 g/m^2 (24 lb. short or long grain)
Card stock (produces degraded stop rate)	--	131 g/m^2 (35 lb.)
Automated Teller Machine (ATM) envelope[2] height (produces degraded stop rate)	--	10.80 cm (4.25 in.)
ATM envelope length	--	22.23 cm (8.75 in.)
MICR correction label or strip	Single correction label thickness with strip not to exceed maximum document height	
Carrier envelope	Not to exceed maximum height and length with document inserted	

[1] The maximum viewable image height (field of view) is 10.67 cm (4.20 in.) measured from the bottom of an item.

[2] ATM envelope specifications apply to 75 g/m^2 (20 lb.) or 90 g/m^2 (24 lb.) stock.

Contact Unisys with questions about processing documents that are outside of the specification ranges listed above. Refer to *Payment Systems Document Design Guidelines* (4326 6808) to design or evaluate documents for processing with Unisys transports and desktop devices.

Glossary

A

ACH
See Automated Clearing House.

Application Program Interface (API)
An interface used by an application to access devices or processing services.

API
See Application Programming Interface.

Automated Clearing House (ACH)
An electronic network in the U.S. for financial transactions.

B

Back Office Conversion (BOC)
A process for electronically converting checks to ACH debits in a back office environment. *See* Automated Clearing House.

BOC
See Back Office Conversion.

C

CCITT image
A black and white image compressed using the international standard for Group 4 Facsimile compression. High-resolution, CCITT images are well suited for data entry and statement print applications. *See also* JPEG image.

character recognition
Refers to the features associated with Unisys Perfect Image for courtesy amount recognition (CAR), legal amount recognition (LAR), or intelligent character recognition (ICR) to automatically read the hand- or machine-printed information on personal checks, business checks, and internal forms and documents.

Check 21
The Check Clearing for the 21st Century Act is U.S. legislation that allows a "substitute check" created from an image to be substituted as the legal equivalent of the original check. Check 21 is widely expected to promote image interchange between financial institutions.

CIS

See contact image sensor.

CMC7

A font style commonly used in Europe for MICR characters.

contact image sensor (CIS)

An image scanning technology that places a document in near-direct contact with the sensor, which is a linear array of detectors with red, green, and blue LEDs for illumination.

D

Device service

Refers to a service that is part of Unisys Device Suite. The Device Standard service provides track control, while the Device Pro service provides other functions for image quality, image security, and document processing rules.

digital signature

A set of digital data that is created from image data and a private key and is bundled with the image data file. The digital signature is used to verify that the image data bundled with the digital signature has not been altered or replaced by another image.

distributed capture

The electronic capture of data and images from checks or other payment-related documents from distributed or remote locations as compared to traditional, centralized capture. Capture locations can include teller, back counter, remote branch, and customer (merchant) environments. *See* remote deposit capture.

dpi

Dots per inch.

dpm

Documents per minute.

E

E13B

A font style commonly used in the United States and the United Kingdom for MICR characters.

Ethernet

A widely adopted architecture for computer networks based on the IEEE 802.3 standard.

F

franker stamp

A static message or "frank" stamped on an item during first pass and which helps tellers detect the fraudulent redeposit of an item.

I

image quality
Refers to identifying defects in a digital image arising from the original document or imposed during image capture and which might prohibit using the image as a substitute for the original document.

image quality flag
An identifier indicating the presence of an image quality defect.

image security
Refers to producing a digital signature for every captured image using the image data and a private key that is part of a public/private key pair.

image usability
Refers to the automatic identification of defects that might prevent an image from being used as intended.

J

JPEG image
A grayscale or color image compressed using the international standard for baseline, sequential JPEG compression to produce a very high quality image. JPEG images are useful for image archiving and character recognition because the legibility of low contrast printing and endorsements present on many checks is typically retained. *See also* CCITT image.

L

LCD
See liquid crystal display (LCD).

LED
See light-emitting diode (LED).

light-emitting diode
A lighting component used as a visual indicator or for illumination in a machine-user interface.

liquid crystal display
A technology used for display screens.

M

Magnetic Ink Character Recognition (MICR)
Refers to the imprint on checks of magnetic ink characters in special type faces and dimensions or the reading of such characters. The E13B font is employed in the U.S. and some international markets. CMC7 is an internationally recognized font. *See also* Optical Character Recognition.

MICR
See Magnetic Ink Character Recognition.

O

OCR
See Optical Character Recognition.

Optical Character Recognition (OCR)
Refers to the optical reading of preprinted characters on checks, credits, giros, and retail lockbox and remittance documents. Both alphabetic and numeric characters are printed in special type faces and dimensions, including variations of OCR-A and OCR-B as well as MICR E13B and CMC7 fonts. *See also* Magnetic Ink Character Recognition.

P

Perfect Image service
Refers to a service that is part of Unisys Perfect Image to provide character recognition, image quality and usability assessment, and image security.

R

RAM
See random access memory.

random access memory (RAM)
Computer memory for storing data and information for fast access.

read rate
The number of read items interpreted to be correct, usually measured on a document basis in percent.

remote deposit capture
The deposit of checks by a customer through the capture and electronic transmitting of a digital image of the check or ACH data to a financial institution for clearing. Also known as merchant capture. *See* distributed capture.

RGB
Red, green, blue. A system for representing colors in an image for computer storage and display.

S

service oriented architecture (SOA)
A strategy that organizes the discrete functions contained in enterprise applications into interoperable services that can be combined and reused quickly to meet business needs.

SOA
See Service Oriented Architecture.

T

Tagged Image File Format (TIFF)
An industry-standard image (graphics) file format for storing high resolution, grayscale images.

thin client
A low-cost PC with limited processing capabilities, which is managed in a network by a server.

TIFF
See Tagged Image File Format.

throughput (throughput rate)
The number of checks or documents processed per some unit of time.

U

Universal Serial Bus (USB)
Refers to a hardware interface for connecting peripherals such as a keyboard, mouse, or printer.

USB
See Universal Serial Bus.

W

web service
A specific component representing a discrete business function or process and that can be shared and reused by multiple applications in an open systems environment.

X

X9.37

Refers to image quality features implemented as defined by the *Draft Standard for Trial Use (DSTU)* X9.37-2003, *Specifications for Electronic Exchange of Check and Image Data*, published by the American National Standards Institute (ANSI). The standard provides "the financial industry with a format necessary to perform electronic check exchange (ECE), with or without images." *See also* X9.100-180.

X9.100-180

Refers to image quality features implemented based on the successor to the DSTU X9.37 specification, ANS X9.100-180. *See also* X9.37.

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