Version 1.0

Xerox® B1022/B1025 Multi-Function Printer

Document Version: 1.0 (May 2018).

Contents

1.0 Introduction

This document describes the locations, capacities and contents of volatile and non-volatile memory devices within the Xerox® B1022 and Xerox® B1025 .

1.1 Purpose

The purpose of this document is to disclose information for the Xerox® B1022 and Xerox® B1025 products with respect to device security. Device Security, for this paper, is defined as how image data is stored and transmitted, how the product behaves in a networked environment, and how the product may be accessed, both locally and remotely. Please note that the customer is responsible for the security of their network and the Xerox products do not establish security for any network environment.

The purpose of this document is to inform Xerox customers of the design, functions, and features of the Xerox® B1022 and Xerox® B1025 products relative to Information Assurance (IA).

This document does NOT provide tutorial level information about security, connectivity, PDLs, or Xerox® B1022 and Xerox® B1025 products features and functions. This information is readily available elsewhere. We assume that the reader has a working knowledge of these types of topics. However, a number of references are included in the Appendix. Additional information also available in the Xerox® B1022 and Xerox® B1025 System Administrator guide.

1.2 Target Audience

The target audience for this document is Xerox field personnel and customers concerned with IT security.

1.3 Disclaimer

The information in this document is accurate to the best knowledge of the authors, and is provided without warranty of any kind. In no event shall Xerox Corporation be liable for any damages whatsoever resulting from user's use or disregard of the information provided in this document including direct, indirect, incidental, consequential, loss of business profits or special damages, even if Xerox Corporation has been advised of the possibility of such damages.

2.0 Device Description

This product consists of an input document handler and scanner, marking engine including paper path, controller, and user interface.

Figure 1 - Xerox® B1025 Multi-Function System

2.1 Security-relevant Subsystems

2.1.1 Physical Partitioning

The security-relevant subsystems of the product are partitioned as shown in

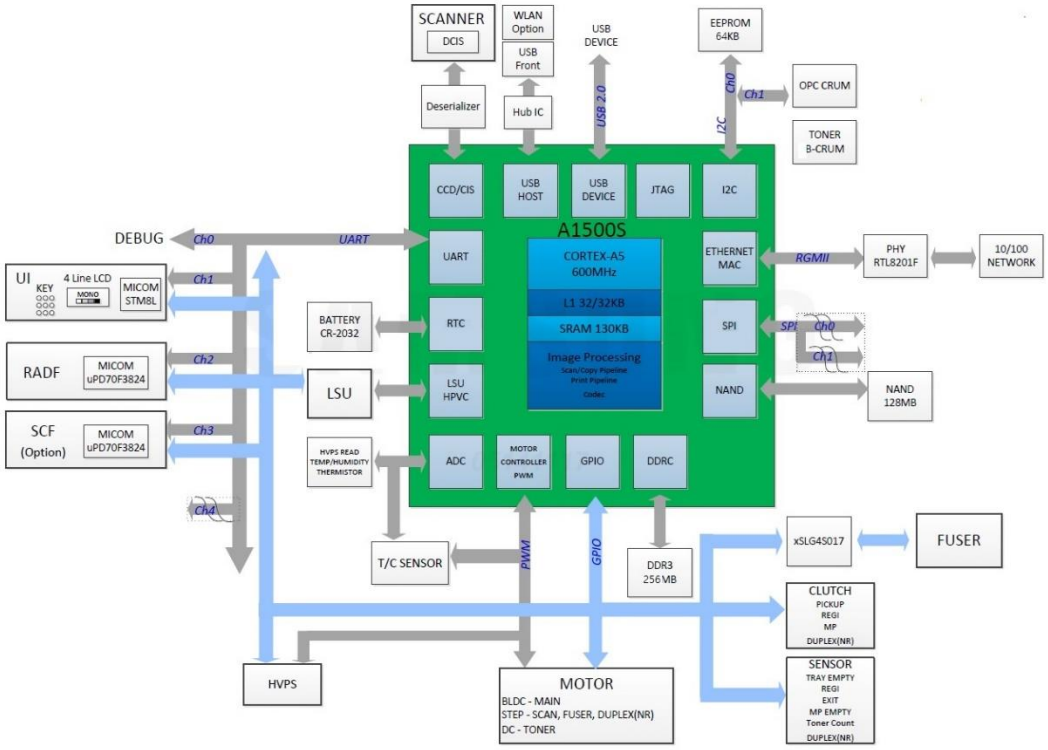


Figure 2 - B1022 System functional block diagram

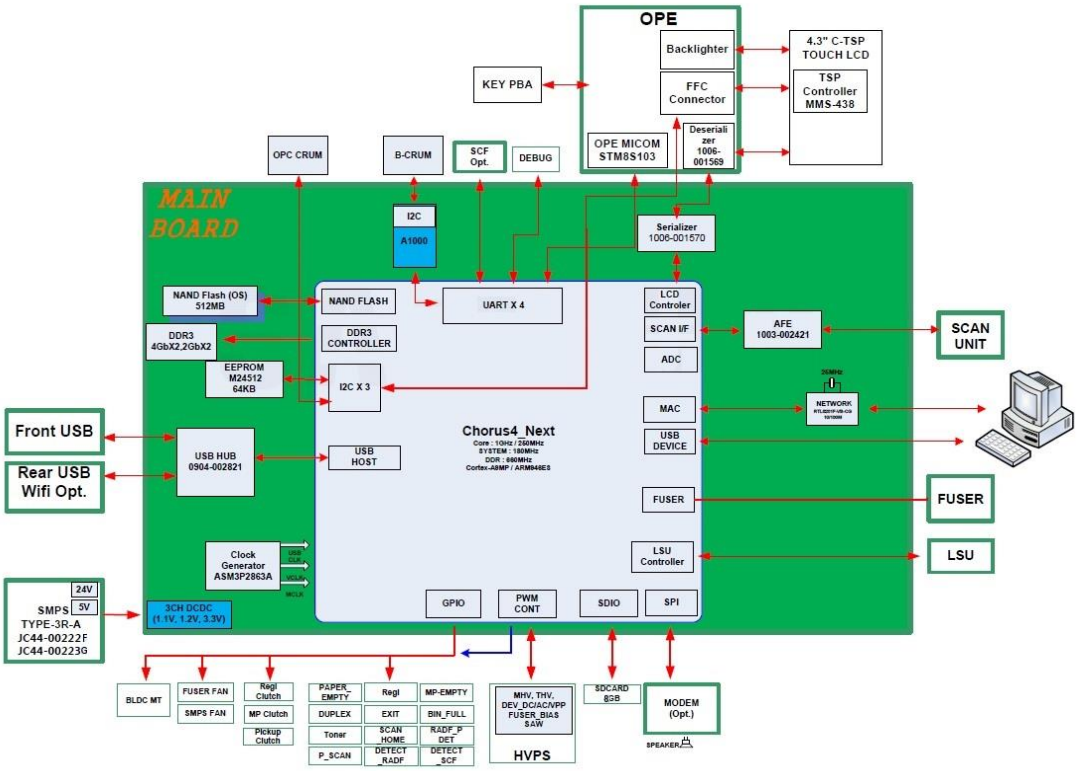


Figure 3 - B1025 System functional block diagram

2.2 Controller

2.2.1 Purpose

The controller provides both network and direct-connect external interfaces, and enables copy, print, email, network scan, and fax functionality. The controller also incorporates a web server that exports a Web User Interface (WebUI) through which users can submit jobs and check job and machine status, and through which system administrators can remotely administer the machine.

The controller contains the image path, which uses proprietary hardware and algorithms to process the scanned images into high-quality reproductions. Scanned images may be temporarily buffered in DRAM to enable electronic pre-collation. When producing multiple copies of a document, the scanned image is processed and buffered in the DRAM in a proprietary format. The buffered bitmaps are then read from DRAM and sent to the Image Output Terminal (IOT) for marking on hardcopy output. For long documents, the production of hardcopy may begin before the entire original is scanned, achieving a level of concurrency between the scan and mark operations.

The controller operating system is VxWorks 6.9. Unnecessary services such as rsh, telnet and finger are disabled in the Operating System. Ramona Supports Scan To Service (Scan to FTP/SMB/HTTP/HTTPS/SFTP).

The controller works with the Graphical User Interface (GUI) assembly to provide system configuration functions. A System Administrator can access these functions.

The controller software can be updated via USB or WebUI.

2.2.2 Memory Components

2.2.2.1 Controller Module

Program Memory: B1022/B1025 model uses NAND Flash as a Program memory which stores System Program and can be upgraded through USB Device Interface.

Capacity: 128MB for B1022 and 512MB for B1025

2.2.2.2 General Memory Information

2.2.2.2.1 Volatile Memory

All volatile memory listed is cleared after power is removed (decay occurs generally within 20 seconds at room temperature).

All volatile memory listed is required for normal system operation and during service and diagnostic procedures.

Removal of any volatile memory will void the warranty.

2.2.2.2.2 Non-Volatile Memory

All non-volatile memory listed is required for normal system operation and during service and diagnostic procedures.

Removal of any non-volatile memory will void the warranty.

Non-volatile memory in the system cannot be accessed by accidental keystrokes.

2.2.2.3 Controller Module

B1022 Volatile Memory

Type (SRAM, DRAM, etc.)	Size	User Modifiable (Y/N)	Function or Use	Process to Clear:
DDR3 SDRAM 1333MHz , 16bit	256MB	N	Executable code, Printer control data, temporary storage of job data	Power Off System
Additional Information: B1022 uses DDR3 SDRAM for Swath Buffer in Printing, Scan Buffer in Scanning, System Working Memory Area				

B1025 Volatile Memory

Type (SRAM, DRAM, etc.)	Size	User Modifiable (Y/N)	Function or Use	Process to Clear:
DDR3 SDRAM 1333MHz , 16bit	1.5Gbytes	N	Executable code, Printer control data, temporary storage of job data	Power Off System
Additional Information: B1025 model uses DDR3 SDRAM for Swath Buffer in Printing, Scan Buffer in Scanning, System Working Memory Area				

B1022 Non-Volatile Memory

Type (Flash, EEPROM, etc.)	Size	User Modifiable (Y/N)	Function or Use	Process to Clear:
NAND	128Mbytes	Via Diagnostics	Flash as a Program memory which stores System Program and can be upgraded through USB Device Interface.	NA
EEPROM	64Kbytes		Frequently used data, Network Settings, MAC Address, Serial Number etc is stored in EEPROM,	
Additional Information:				

B1025 Non-Volatile Memory

Type (Flash, EEPROM, etc.)	Size	User Modifiable (Y/N)	Function or Use	Process to Clear:
SD CARD	8Gbytes	via Diagnostics	Control set points, configuration settings, Boot Memory	NA
NAND	512Mbytes	Via Diagnostics	Flash as a Program memory which stores System Program and can be upgraded through USB Device Interface.	NA
EEPROM	64Kbytes		Frequently used data, Network Settings, MAC Address, Serial Number etc is stored in EEPROM.	
Additional Information: .				

Non-Volatile Hard Disk Memory

Drive / Partition (System, Image):	Removable Y / N	Size:	User Modifiable: Y / N	Function:	Process to Clear:
N/A					
Additional Information: No hard disks on Xerox B1022/B1025 devices					

RFID Devices

RFID Device and location	Purpose
N/A	No RFID Devices are contained in the device

Media and Storage Descriptions

Type (disk drives, tape drives, CF/SD/XD memory cards, etc.):	Removable Y / N	Size:	User Modifiable: Y / N	Function:	Process to Clear:
N/A					

Marking Engine Modules

Volatile Memory

Type (SRAM, DRAM, etc.)	Size	User Modifiable (Y/N)	Function or Use	Process to Clear:
DRAM (MCU PWBA)	32M x 16 bit	N	Temporary Storage of variables	Power Off System
RAM (UI PWBA)	1kbyte	N	Temporary Storage of variables	Power Off System

Non-Volatile Solid State Memory

Media and Storage

Type (disk drives, tape drives, CF/SD/XD memory cards, etc.):	Removable Y / N	Size:	User Modifiable: Y / N	Function:	Process to Clear:
N/A					

2.2.2.3 Feeder and Finisher Modules

No additional memory for feeder and finishing modules.

Feeder Modules

The standard tray along with the optional tray does not have memory.

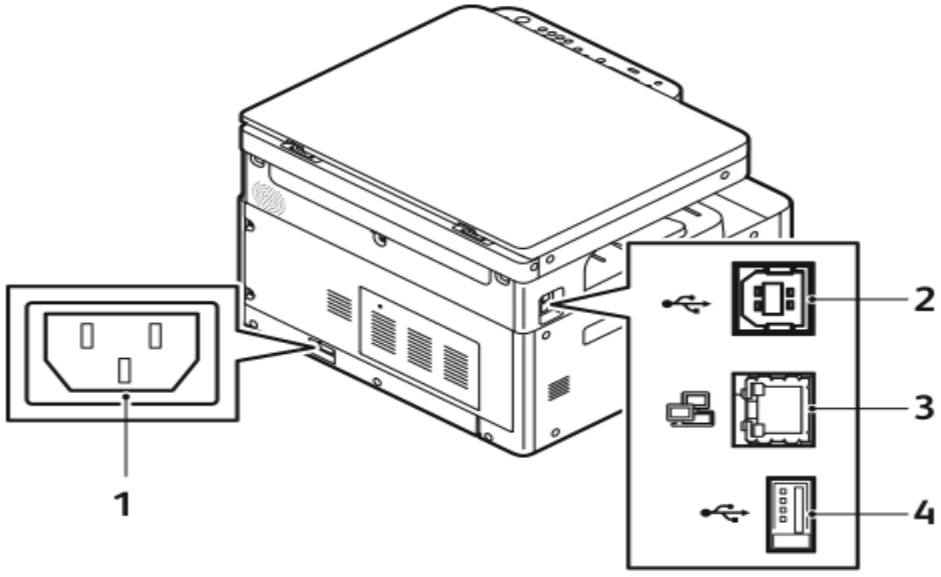
Finisher Modules

NA

2.2.3 External Connections

The controller printed wiring boards are physically mounted in the device. An optional fax board may also be installed (for the B1025 only).

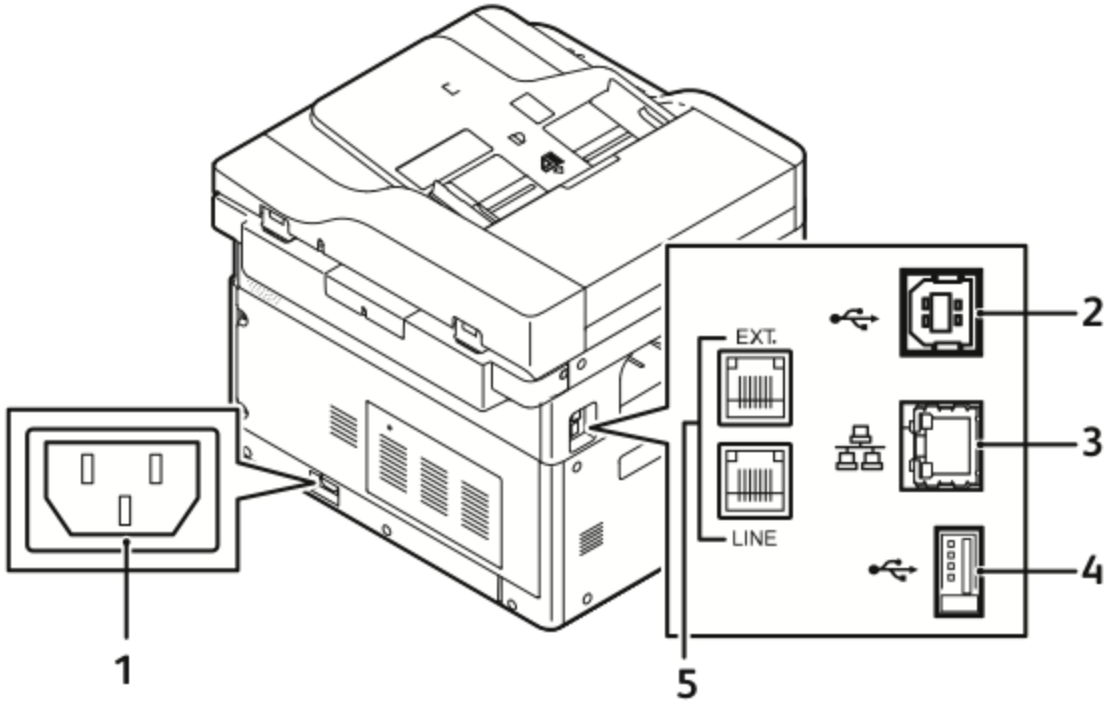
B1022 Rear View



1. Power Receptacle
2. USB Port, B-Type
3. Ethernet Connection
4. USB Port, A-Type

Figure 4

B1025 Rear View



1. Power Receptacle
2. USB Port, B-Type
3. Ethernet Connection
4. USB Port, A-Type
5. Fax Line Connection, option

Figure 5

Interface	Description / Usage
USB Target Port	Diagnostics and service; Xerox Copier Assistant
Dual USB Host Ports	SW upgrade; USB Printing; Scan to USB
Ethernet Port	Network Connectivity
Optional FAX (Single or Dual)	Allows insertion of optional “Land Line” Fax card

Controller External Connections

2.2.3.1 USB Ports

The Xerox® B1022 and Xerox® B1025 contains a host connector for a USB flash drive, enabling upload of software upgrades and download of network logs or machine settings files and scan jobs.

Autorun is disabled on this port. No executable files will be accepted by the port.

Modifying the software upgrade, network log or saved machine settings files will make the files unusable on the Xerox® B1022 and Xerox® B1025

USB Port(s)

USB port and location	Purpose
Front panel – 1 Host port	User retrieves print ready files from Flash Media or stores scanned files on Flash Media. Physical security of this information is the responsibility of the user or operator. Upload of software upgrades, download of network logs, download and upload of machine settings for setup cloning.
Rear panel – 1 Host ports	User retrieves print ready files from Flash Media or stores scanned files on Flash Media. Physical security of this information is the responsibility of the user or operator. Upload of software upgrades, download of network logs, download and upload of machine settings for setup cloning.
Rear panel – 1 Target port	User PC direct connection for printing,
Additional Information A number of devices can be connected to the 3 USB Host ports. Once information has been copied (either as a back-up data set or as a transfer medium, physical security of this information is the responsibility of the user or operator.)	

2.3 Optional Fax Module (for the B1025 only)

2.3.1 Purpose

The embedded FAX service uses the installed embedded fax card to send and receive images over the telephone interface. The FAX card plugs into a custom interface slot on the controller.

2.3.2 Hardware

The Fax Card is a printed wiring board assembly containing a fax modem and the necessary telephone interface logic. It connects to the controller via a serial communications interface. The Fax Card is responsible for implementing the T.30 fax protocol. All remaining fax-specific features are implemented in software on the controller. The fax telephone lines are connected directly to the Fax Card via RJ-11 connectors.

Name	Size	Purpose / Explanation
MODEM #1	NA	Optional Fax modem 2 ports

Fax Module components

2.4 Scanner

2.4.1 Purpose

The purpose of the scanner is to provide mechanical transport to convert hardcopy originals to electronic data.

2.4.2 Hardware

The scanner converts the image from hardcopy to electronic data. A document handler moves originals into a position to be scanned. The scanner provides enough image processing for signal conditioning and formatting. The scanner does not store scanned images. All other image processing functions are in the copy controller.

2.5 Graphical User Interface (GUI)

2.5.1 Purpose

The GUI detects soft and hard button actuations, and provides text and graphical prompts to the user. The GUI is sometimes referred to as the Local UI (LUI) to distinguish it from the WebUI, which

is exported by the web service that runs in the controller. Images are not transmitted to or stored in the GUI.

2.6 Marking Engine (Image Output Terminal or IOT)

2.6.1 Purpose

The Marking Engine performs copy/print paper feeding and transport, image marking and fusing, and document finishing. Images are not stored at any point in these subsystems.

2.6.2 Hardware

The marking engine is comprised of paper supply trays and feeders, paper transport, LED scanner, xerographics, and paper output and finishing. The marking engine contains a CPU, BIOS, RAM and Non-Volatile Memory.

2.7 System Software Structure

2.7.1 Software Installation

Software can be installed by the customer via 2 different methods, USB and **CenterWare Web (Web UI).** The most current release of software can be found on Xerox.com Software.

2.7.2 Verification Test

This test can be executed in CWIS. This test verify's the software integrity by confirming the installed software has not been modified.

2.7.3 Operating System Layer in the Controller

The OS layer includes the operating system, network and physical I/O drivers. The controller operating system is VxWorks 6.9 (UI 4.3 touch screen is O.S. Linux kernel v. 2.6.35 and Android version 2.3 which is known as Gingerbread).

IP Filtering is provided by the kernel.

Open Source Details

Open Source Software Module Name	Open Source Software Version	Type of the Open Source license	Obligation
uboot	101	GPL v2	1) Insert the full license text in the manual (or product) 2) State use of the GPL software (software title, license) in the manual (or product). 3) Provide a written offer that is valid for at least 3 years for provision of the GPL source code.
Linux Kernel	2.6.35	GPL v2	1) Insert the full license text in the manual (or product) 2) State use of the GPL software (software title, license) in the manual (or product). 3) Provide a written offer that is valid for at least 3 years for provision of the GPL source code.
iptables	1.3.7	GPL v2	1) Insert the full license text in the manual (or product) 2) State use of the GPL software (software title, license) in the manual (or product). 3) Provide a written offer that is valid for at least 3 years for provision of the GPL source code.
Android	Gingerbread	Apache 2.0	Insert the full license text in the manual (or product)
libxml	Not Available	MIT	none
freetype	Not Available	FreeType Project LICENSE	acknowledge somewhere in your documentation that you have used the FreeType code
JPEG	6b	Independent JPEG Group License	State the acknowledgment in the manual (or product): "This software is based in part on the work of the Independent JPEG Group."
Expat	1.95.8	MIT	none
xpm	Not Available	MIT	none
tiff	3.8.0	TIFF License	none
png	1.2.6	libpng license	none
zlib	1.2.3	zlib license	none
mDNS	Not Available	Apache 2.0	Insert the full license text in the manual (or product)
AUTH1X	Not Available	BSD	Insert the full license text in the manual (or product)
Kerberos 5	1.6.3	MIT	none
OpenLDAP	Not Available	OpenLDaP Public License	Insert the full license text in the manual (or product)
OpenSLP	Not Available	Open SLP License	Insert the full license text in the manual (or product)
OpenSSL	1.1.0c	OpenSSL Combined License	State acknowledgment in the manual (or product): "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)", "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)."
PCRE	Not Available	BSD	Insert the full license text in the manual (or product)
uIP	Not Available	BSD	Insert the full license text in the manual (or product)
InfoZIPLib	Not Available	InforZIPLib license	Insert the full license text in the manual (or product)

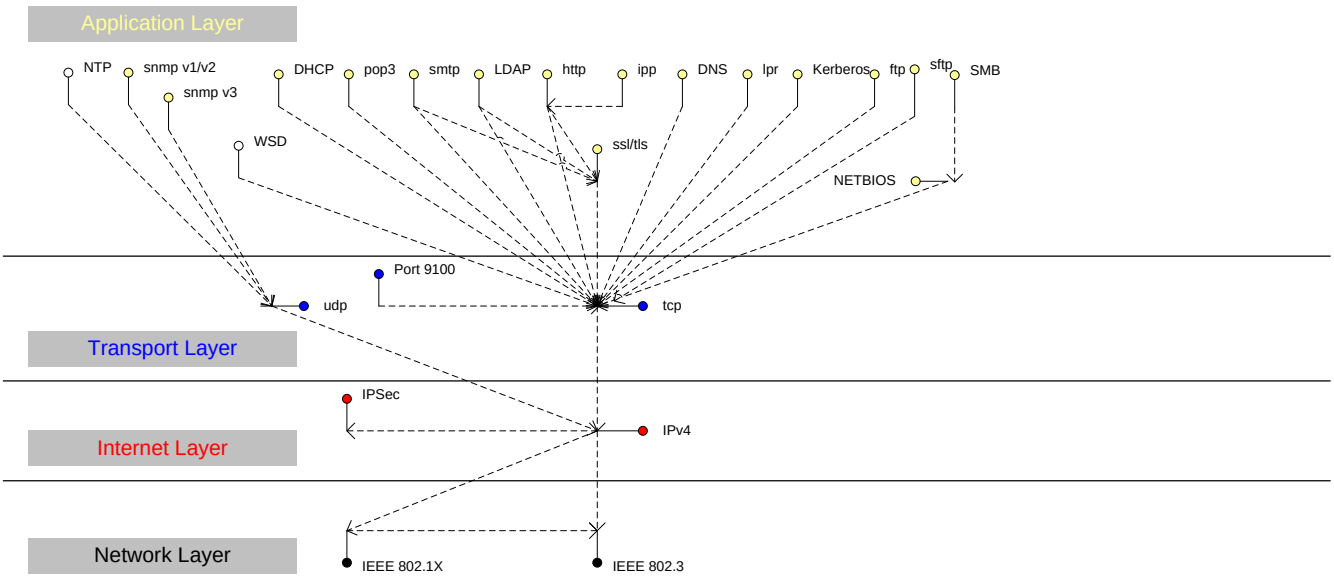
2.7.4 Software Verification Test

This test can be executed in CWIS. This test verify's the software integrity by confirming the installed software has not been modified.

2.7.5 Software Installation

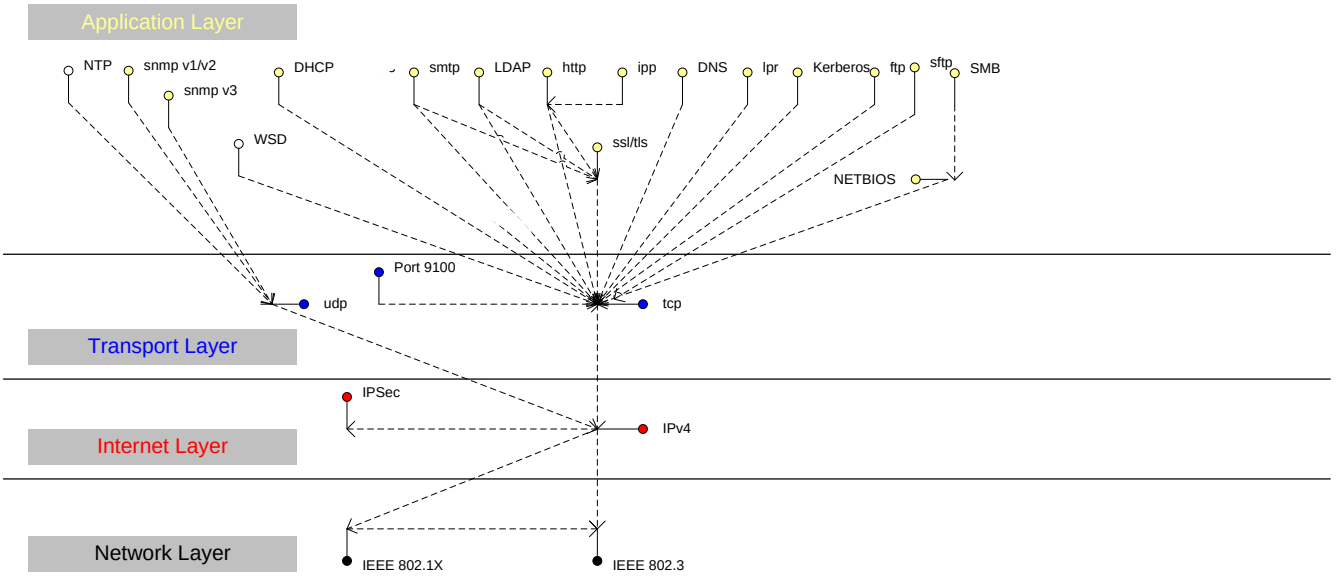
Software can be installed by the customer via 2 different methods, USB and **CenterWare Web (Web UI).** The most current release of software can be found on Xerox.com.

2.7.6 Network Protocols



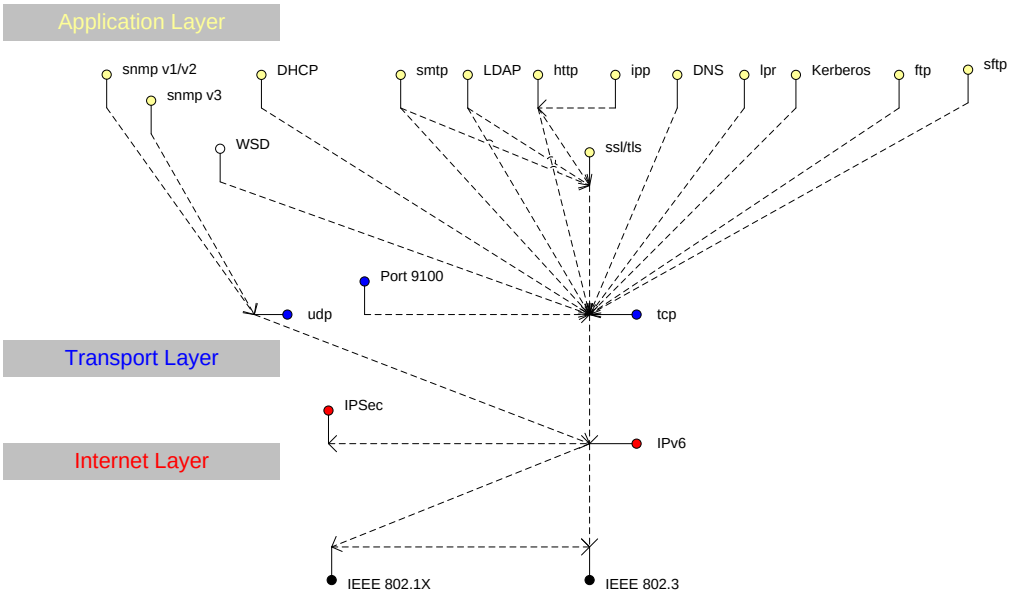
Interface diagrams depicting the IPv4 and IPv6 protocol stacks supported by the device, annotated according to the DARPA model.

Figure 6



IPv4 Network Protocol Stack

Figure 7



IPv6 Network Protocol Stack
Figure 8

2.8 Logical Access

2.8.1 Network Security

A variety of network protocols is supported. There are no 'Xerox unique' additions to these protocols.

2.8.1.1 IPSec

The device supports IPSec tunnel and transport mode. The print channel can be secured by establishing an IPSec association between a client and the device. A shared secret is used to encrypt the traffic flowing through a tunnel.

2.8.1.2 802.1x

IEEE 802.1X is a security standard for port based network access control. It secures Ethernet and/or Wi-Fi networks against unauthorized access by requiring device authentication with a central server before network access and data transmissions are allowed.

2.8.1.3 IP Filtering

The devices contain a static host-based firewall that provides the ability to prevent unauthorized network access based on IP address and/or port number. Filtering rules can be set by the SA using the WebUI. An authorized SA can create rules to (Accept / Reject / Drop) for ALL or a range of IP addresses. In addition to specifying IP addresses to filter, an authorized SA can enable/disable all traffic over a specified transport layer port

2.8.2 Ports

The following table summarizes all potentially open ports and subsequent sections discuss each port in more detail. All ports can be disabled if not needed under control of the system administrator.

2.8.2.1 Port 22, SSH

SSH is used to encrypt ftp data being transferred to a network server/repository.

2.8.2.2 Port 23, SNTP

This port is used to retrieve the time from a network server.

2.8.2.3 Port 25, SMTP

This unidirectional port is open only when Scan to E-mail is exporting images to an SMTP server, or when email alerts are being transmitted. SMTP messages & images are transmitted to the SMTP server from the device.

2.8.2.4 Port 53, DNS

Designating a DNS server will allow the device to resolve domain names. This can be configured via the WebUI.

2.8.2.5 Port 68, DHCP

This port is used only when performing DHCP, and is not open all of the time. To permanently close this port, DHCP must be explicitly disabled. This is done in User Tools via the Local User Interface or via the TCP/IP page in the Properties tab on the WebUI.

2.8.2.6 Port 80, HTTP

The embedded web pages communicate to the machine through a set of unique APIs and do not have direct access to machine information:

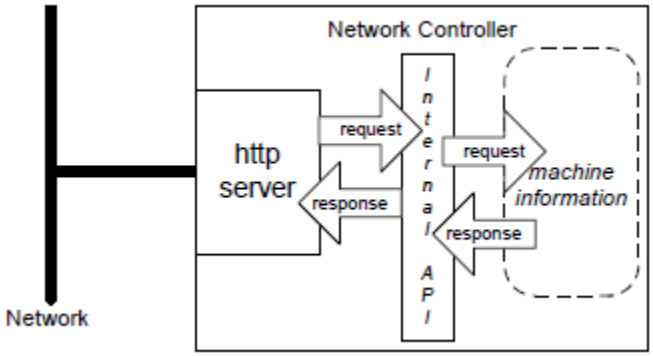


Figure 9

The HTTP port can only access the HTTP server residing in the controller. The embedded HTTP server is Apache 2.0. The purpose of the HTTP server is to:

- Give users information of the status of the device;
- View the job queue within the device and delete jobs;
- Allow users to upload print ready files

The HTTP server can only host the web pages resident on the memory of the device. It does not and cannot act as a proxy server to get outside of the network the device resides on. The server cannot access any networks (or web servers) outside of the customer firewall.
When the device is configured with an IP address, it is as secure as any device inside the firewall. The web pages are accessible only to authorized users of the network inside the firewall.
This service (and port) may be disabled in User Tools via the Local User Interface or via the TCP/IP page in the Properties tab on the WebU. Please note that when this is disabled, IPP Port 631 is also disabled.
HTTP may be configured to use HTTPS for all traffic.

2.8.2.7 Proxy Server

The device can be configured to communicate through a proxy server. Features that can make use of a proxy server include the Automatic Meter Read feature, and scanning to a remote repository.

2.8.2.8 Port 88 Kerberos

This port is only open when the device is communicating with the Kerberos server to authenticate a user, or to request a TGT /TGS to access the LDAP server. To disable this port, authentication must be disabled, and this is accomplished via the Local User Interface.
This version of software has Kerberos 5-1.6-3 with DES (Data Encryption Standard), 3DES and AES encryption. The Kerberos code is limited to user authentication, and is used to authenticate a user with a given Kerberos server as a valid user on the network. Please note that the Kerberos server (a 3rd party device) needs to be set up for each user. Once the user is authenticated, the Kerberos software has completed its task. This code will not and cannot be used to encrypt or decrypt documents or other information.

This feature is based on the Kerberos program from the Massachusetts Institute of Technology (MIT). The Kerberos network authentication protocol is publicly available on the Internet as freeware at http://web.mit.edu/kerberos/www/.

Please note:
The device does not require much of the information provided by Kerberos for authenticating. For the most part, the device only uses information that indicates whether authentication has passed. Other information that the server may return (e.g. what services the user is authenticated for) is ignored or disabled in the Xerox implementation. This is not an issue since the only service a user is being authenticated for is access to an e-mail directory. No other network services are accessible from the Local UI.

Xerox has received an opinion from its legal counsel that the device software, including the implementation of a Kerberos encryption protocol in its network authentication feature, is not subject to encryption restrictions based on Export Administration Regulations of the United States Bureau of Export Administration (BXA). This means that it can be exported from the United States to most destinations and purchasers without the need for previous approval from or notification to BXA. At the time of the opinion, restricted destinations and entities included terrorist-supporting

states (Cuba, Iran, Libya, North Korea, Sudan and Syria), their nationals, and other sanctioned entities such as persons listed on the Denied Parties List. Xerox provides this information for the convenience of its customers and not as legal advice. Customers are encouraged to consult with legal counsel to assure their own compliance with applicable export laws.

2.8.2.9 Ports 137, 138, 139, NETBIOS

For print jobs, these ports support the submission of files for printing as well as support Network Authentication through SMB. Port 137 is the standard NetBIOS Name Service port, which is used primarily for WINS. Port 138 supports the CIFS browsing protocol. Port 139 is the standard NetBIOS Session port, which is used for printing. Ports 137, 138 and 139 may be configured in the Properties tab of the device's web page.

For Network Scanning features, ports 138 and 139 are used for both outbound (i.e. exporting scanned images and associated data) and inbound functionality. In both instances, these ports are only open when the files are being stored to the server. For these features, SMB protocol is used.

2.8.2.10 Port 161, SNMP

This port support the SNMPv1, SNMPv2c, and SNMPv3 protocols. Please note that SNMP v1 does not have any password or community string control. SNMPv2 relies on a community string to keep unwanted people from changing values or browsing parts of the MIB. This community string is transmitted on the network in clear text so anyone sniffing the network can see the password. Xerox strongly recommends that the customer change the community string upon product installation. SNMP is configurable, and may be explicitly enabled or disabled in the Properties tab of the device's web pages.
SNMPv3 provides a secure channel to transmit SNMP data. It can be configured to use MD5 authentication with DES encryption. SNMP can also be secured using IPSec.

2.8.2.11 Port 389, LDAP

This is the standard LDAP port used for address book queries in the Scan to Email feature.

2.8.2.12 Port 427, SLP

When activated, this port is used for service discovery and advertisement. The device will advertise itself as a printer and listen for SLP queries using this port. It is not configurable. This port is explicitly enabled / disabled in the Properties tab of the device's web pages.

2.8.2.13 Port 443, HTTPS – HTTP over TLS

This is the default port for Secure HTTP communication. This can be configured via the device's web pages.

SSL/TLS version 1.2 is used and compliant to the SSL 3.0 IETF specification. SSL can be disabled through within the IPP protocol section of properites.

HTTPS may be enabled so that the device can be securely administered from the web UI. SSL (now TLS) uses X.509 certificates to establish trust between two ends of a communication channel.
To administer the device securely, the user's browser must be able to verify the certificate supplied by the device. A certificate signed by a well-known Certificate Authority (CA) can be installed on the device, or the device can generate a self-signed certificate. In the first instance, the device creates a Certificate Signing Request (CSR) that can be downloaded and forwarded to the well-known CA for signing. The signed device certificate is then installed on the device.

Alternatively, the device will generate a self-signed certificate. In this case, the generic Xerox root CA certificate may be downloaded from the device and installed in the certificate store of the user's browser.

The device supports only server authentication.

2.8.2.14 Port 445, SMB 2.0, 3.0 (Microsoft – DS)
This port is open and used only when SMB (Microsoft Networking/Active Directory) is enabled.

2.8.2.15 Ports 500/4500, ISAKMP
ISAKMP defines the procedures for authenticating a communicating peer, creation and management of Security Associations, key generation techniques, and threat mitigation (e.g. denial of service and replay attacks). ISAKMP defines procedures and packet formats to establish, negotiate, modify and delete Security Associations. ISAKMP can be implemented over any transport protocol. All implementations must include send and receive capability for ISAKMP using UDP on port 500. Port 500 will only be open on the device if the IPsec service is enabled.

2.8.2.16 Port 515, LPR
This is the standard LPR printing port, which only supports IP printing. It is a configurable port, and may be explicitly enabled or disabled in the Properties tab of the device's web pages.

2.8.2.17 Port 631, IPP
This port supports the Internet Printing Protocol. It is not configurable. This is disabled when the http (web) server is disabled.

2.8.2.18 Port 1900, SSDP
This port behaves similarly to the SLP port. When activated, this port is used for service discovery and advertisement. The device will advertise itself as a printer and listen for SSDP queries using this port. It is not configurable. This port is explicitly enabled / disabled in the Properties tab of the device's web pages.

2.8.2.19 Port 3702, WSD Discovery, WS Discovery Multicast
This is the default port for WS-Discovery (the discovery of services in an ad hoc network with a minimum of networking services (for example, no DNS, UDDI or other directory services). It does this by announcing or advertising the existence of the printer and its services on the network when it becomes available, and announcing its departure when unavailable. The default state is selected (enabled).

2.8.2.20 Port 4500 ISAKMP
See Port 500. Port 4500 is an alternate port for port 500.

2.8.2.21 Port 5353 Multicast DNS, 5354 Multicast DNS Responder IPC

Multicast DNS provides the ability to address hosts using DNS-like names without the need of an existing, managed DNS server. The Multicast DNS Responder is a client in the printer that replies to multicast DNS requests for services on the local network. The multicast DNS requests and replies conform to RFC 1034 and RFC 2782 and are broadcast to the destination IP address 224.0.0.251 on port 5353. These ports will only be open if the Multicast DNS service is enabled.

2.8.2.22 Port 9100, raw IP

This allows downloading a PDL file directly to the interpreter. This port has limited bi-directionality (via PJL back channel) and allows printing only. This is a configurable port, and may be disabled in the Properties tab of the device's web pages.

2.8.2.23 Ports 53202, 53303, 53404, WSD

Transfer Web Service (53202) and Print Web Service (53303 and 53404) for Microsoft WSD support.

3.0 System Access

3.1 Authentication Model

Authentication is the process of confirming user identities. If you enable authentication, the printer compares the information that users provide to another source of information, such as an LDAP directory.
If the information is valid, the users are considered authenticated.

There are several ways to authenticate a user:

• **Passcode**: This option enables a passcode. To access the printer, at the control panel, users type a passcode. The printer compares the passcode to the stored information.

• **Local Authentication**: The option enables local authentication. To prove their identity, users type their user name and password at the control panel or in Xerox® CentreWare®Internet Services. The printer compares the user credentials to the information stored in the user database. If you have a limited number of users, or do not have access to an authentication server, use this authentication method.

• **Network Authentication**: This option enables network authentication. To prove their identity, users type their user name and password at the control panel or in Xerox® CentreWare® Internet Services.The printer compares the user credentials to the information stored on an authentication server.

Note
The printer can use one of the following authentication server types:
- Kerberos for UNIX, Linux, or Windows ADS
- SMB for Windows ADS or LDAP

3.2 Login and Authentication Methods

There are 3 methods and 4 selections available to Authentication. The following selection are avialble:
1) No Authentication – setting up a new
2) Passcode
3) Local Authentication
4) Network Autherntication

3.3 Scan To

Scan To may require the device to log into a server. The instances where the device logs into a server are detailed in the following table. Users may also need to authenticate for scanning. This authentication is detailed in subsequent sections.

3.4 Device log on

Scanning feature	Device behavior
Scan to File, Public Template	The device logs in to the scan repository as set up by the SA in the Properties tab on the WebUI. The credentials may be the user's credentials or system credentials.
Scan to E-mail	The device logs into an LDAP Server as set up by the SA in User Tools. It will log into the Server when a user is authenticated and the device is configured for Remote Authorization or Personalization is enabled, and when the user attempts to access LDAP based scan-to-email address books. At the time the LDAP server must be accessed, the device will log into (bind to) the LDAP server. The device uses a simple bind to the LDAP server unless the device was able to obtain a TGS for the LDAP server from the Kerberos Server. In this case, a SASL (GSSAPI) bind is performed... A network username and password may be assigned to the device. The device logs in as a normal user, with read only privileges. User credentials may be used if configured by the SA for this authentication step. The device then logs into the SMTP server as set up by the SA in the Properties tab on the WebUI. The credentials may be the user's credentials or system credentials.

Please note that when the device logs into any server the device username and password are sent over the network in clear text unless one or more of the following have been enabled:

- HTTPS has been enabled
- IPSec has been configured to encrypt the traffic
- The device is logging into an SMB Server in which case the credentials are hashed.

3.5 Device User Database

The Device User Database stores user credential information for local authentication. When you configure local authentication, the printer checks the credentials that users provide against the information in the database. You can export the database for use on other printers.

Managing the Device User Database

1. In Xerox® CentreWare® Internet Services, click **Properties > Login / Permissions**.
2. Click **Device User Database**.
3. Select an option:

Add New: Select this option to add users to the database. To add more than one user, select

Add Another User. Add the user information and password, then click **Save**.

Import from file: Select this option to import user information from a **.csv** file. Select a file to import, then click **Apply**.

Export to File: Select this option to export the Device User Database to a **.csv** file. Select location to store the file.To edit or delete a user, for the user, click the appropriate icon.

4.0 Security aspects of Selected Features

4.1 SMart eSolutions

SMart eSolutions provides the ability to transmit data to Xerox to be used for billing (Meter Assistant) and toner replenishment (Supplies Assistant). The Systems Administrator sets up the attributes for the service via the Web UI, including enable/disable participation in SMart eSolutions, and time of day for the daily polling to the Xerox Communication Server. The device can be set to communicate via a proxy server on the customer's network. The proxy server may be set to auto detect proxy settings or to manually set proxy address using the Web UI.

Meter Assistant

Once the connection with the Xerox Communication Server has been established, the Meter Assistant service will poll the Xerox Communication server daily over the network. The server will check whether it is time in the billing cycle to update the meter readings. If so, the server will request reads from the device, and the device will then respond by sending the meter reads back to the server.

Supplies Assistant

Once the connection with the Xerox Communication Server has been established, the Supplies Assistant service will be automatically enabled by request from the Xerox Communication Server. The device will then automatically send supplies data over the network to the Xerox Communication server at a regular interval.

Maintenance Assistant

Once the connection with the Xerox Communication Server has been established, the Maintenance Assistant service will be automatically enabled by request from the Xerox Communication Server. The device will then automatically send device fault codes and log data over the network to the Xerox Communication server at a regular interval.

4.2 Encrypted Partitions

All memory that store customer data are encrypted with AES256. Encryption keys are encrypted and stored per current relevant US government standards, specifications and guidelines for the SD card.

4.3 Email Signing and Encryption to Self

The device is capable of encrypting emails when the user is authenticated to the device. The device allows encryption to the authenticated user only, supporting 3DES and AES encryption.

5.0 Security @ Xerox (www.xerox.com/security)

Xerox maintains an evergreen public web page that contains the latest security information pertaining to its products. Please see http://www.xerox.com/security

Xerox has created a document which details the Xerox Vulnerability Management and Disclosure Policy used in discovery and remediation of vulnerabilities in Xerox software and hardware. It can be downloaded from this page: http://www.xerox.com/information-security/information-security-article-whitepapers/enus.html

APPENDICES

Appendix A – Abbreviations

API	Application Programming Interface
AMR	Automatic Meter Reads
ASIC	Application-Specific Integrated Circuit. This is a custom integrated circuit that is unique to a specific product.
CAT	Customer Administration Tool
CSE	Customer Service Engineer
DADF/DADH	Duplex Automatic Document Feeder/Handler
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server. A centralized database that maps host names to static IP addresses.
DDNS	Dynamic Domain Name Server. Maps host names to dynamic static IP addresses.
DRAM	Dynamic Random Access Memory
EEPROM	Electrically erasable programmable read only memory
EGP	Exterior Gateway Protocol
GB	Gigabyte
HP	Hewlett-Packard
HTTP	Hypertext transfer protocol
IBM	International Business Machines
ICMP	Internet Control Message Protocol
IETF	Internet Engineering Task Force
IFAX	Internet Fax
IIO	Immediate Image Overwrite
IIT	Image Input Terminal (the scanner)
IT	Information Technology
IOT	Image Output Terminal (the marking engine)
IP	Internet Protocol
IPSec	Internet Protocol Security
IPX	Internet Protocol Exchange
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LDAP Server	Lightweight Directory Access Protocol Server. Typically, the same server that is used for email. It contains information about users such as name, phone number, and email address. It can also include a user's login alias.
LED	Light Emitting Diode
LPR	Line Printer Request
MAC	Media Access Control
MIB	Management Information Base
n/a	not applicable
NDPS	Novell Distributed Print Services
NETBEUI	NETBIOS Extended User Interface
NETBIOS	Network Basic Input/Output System

NOS	Network Operating System
NVRAM	Non-Volatile Random Access Memory
NVM	Non-Volatile Memory
ODIO	On-Demand Image Overwrite
PCL	Printer Control Language
PDL	Page Description Language
PIN	Personal Identification Number
PWBA	Printed Wire Board Assembly
PWS	Common alternative for PSW
RFC	Required Functional Capability
SA	System Administrator
SFTP	Secure File Transfer Protocol
SLP	Service Location Protocol
SNMP	Simple Network Management Protocol
SRAM	Static Random Access Memory
SSDP	Simple Service Discovery Protocol
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TLS	Transport Layer Security
TIFF	Tagged Image File Format
UI	User Interface
URL	Uniform Resource Locator
UDP	User Datagram Protocol
WebUI	Web User Interface – the web pages resident in the WorkCentre Pro. These are accessible through any browser using the machine's IP address as the URL.
XCMI	Xerox Common Management Interface
XSA	Xerox Standard Accounting