Embedded Web Server

Administrator's Guide

October 2018 **www.lexmark.com**

Models:

C2132, CS310, CS317, CS410, CS417, CS510, CS517, CX310, CX317, CX410, CX417, CX510, CX517, M1140, M1140+, M1145, M3150, M5155, M5163, M5170, MS310, MS312, MS315, MS317, MS410, MS415, MS417, MS510, MS517, MS610, MS617, MS710, MS711, MS810, MS811, MS812, MS817, MS818, MS911, MX310, MX317, MX410, MX417, MX510, MX511, MX517, MX610, MX611, MX617, MX710, MX711, MX717, MX718, MX810, MX811, MX812, MX910, MX911, MX912, XC2130, XC2132, XM1135, XM1140, XM1145, XM3150, XM5163, XM5170, XM5263, XM7155, XM7163, XM7170, XM7263, XM7270, XM9145, XM9155, XM9165 Printers and MFPs

Contents

Overview

Use this document to configure the Embedded Web Server (EWS), a web-based management software embedded within the printer that allows remote configuration of options and features. Administrators can configure and manage devices remotely by using a web browser to access the EWS.

The EWS lets users with the proper access do the following:

- Configure and troubleshoot security settings.
- Set up network configurations.
- Configure basic and advanced fax, e-mail, and scan settings.
- Configure other printer settings.
- Manage downloaded solutions.
- Print reports on device status and settings.

Supported devices

Simple-security devices

Series	Printer models
C Series	C2132, CS310n, CS310dn, CS317dn, CS410n, CS410dn, CS410dtn, CS417dn, CX310n, CX310dn, CX317dn
M Series	M1140, M1140+, M1145, M3150dn, M5163dn, MS310d, MS310dn, MS312dn, MS315dn, MS317dn, MS410d, MS410dn, MS415dn, MS417dn, MS510dn, MS517dn, MS610dn, MS610dtn, MS617dn, MS711dn, MS711dn, MS810n, MS810dn, MS811n, MS811dn, MS812dn, MS817dn, MS817n, MS818dn, MX310dn, MX317dn

Advanced-security devices

Series	Printer models
C Series	CS510de, CS510dte, CS517de, CX410de, CX410e/dte, CX417de, CX510de, CX510dhe/dthe, CX517de
M Series	MS610de, MS610dte, MS810de, MS812de, MX410de, MX417de, MX510de, MX511de, MX511dhe, MX511dte, MX517de, MX610de, MX611de, MX611dhe, MX611dte, MX617de, MX710de, MX710dhe, MX711de, MX711dhe/dthe, MX717de, MX718de, MX810de, MX810dfe, MX810dme, MX810dte, MX810dtfe, MX810dtme, MX810dxe, MX810dxfe, MX810dxme, MX811de, MX811dfe, MX811dme, MX811dte, MX811dtfe, MX811dtme, MX811dxe, MX811dxfe, MX811dxme, MX812de, MX812dfe, MX812dme, MX812dte, MX812dtfe, MX812dtme, MX812dxe, MX812dxfe, MX812dxme, MS911de, MX910de, MX911, MX912
X Series	XM1140, XM1145, XM3150, XM5163, XM5170, XM7155, XM7163, XM7170, XC2132

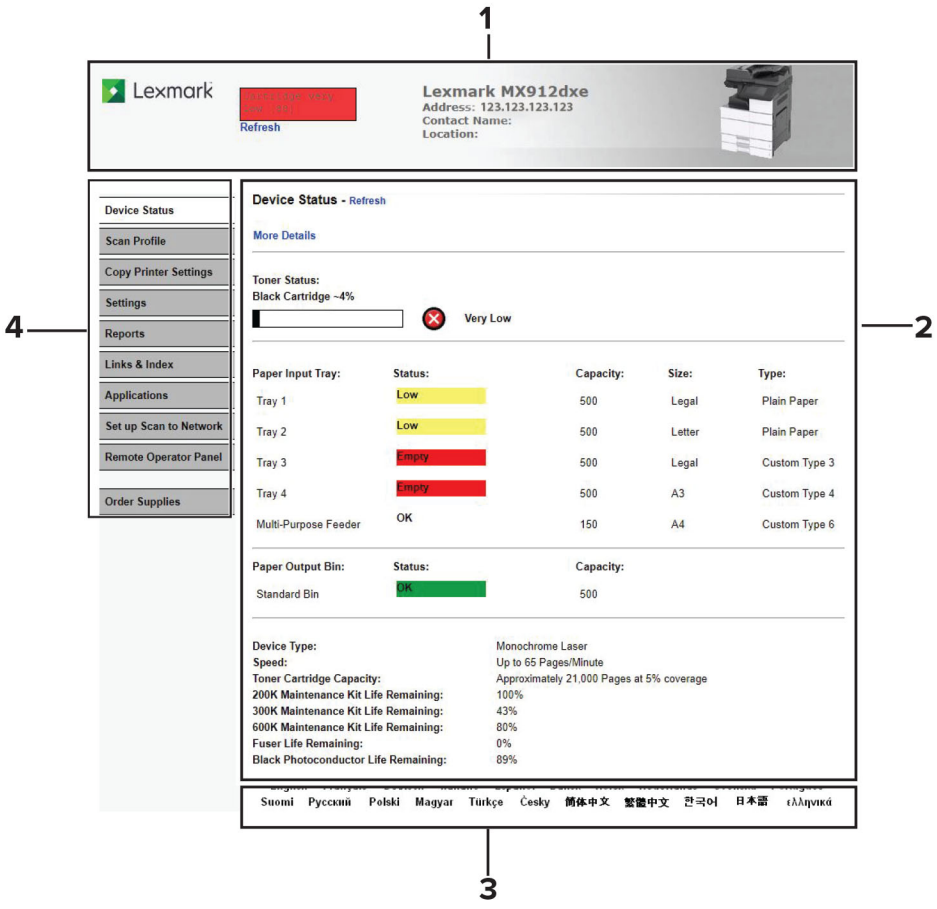
Supported web browsers

- Google Chrome™ version 32 or later
- Internet Explorer™ version 11 or later
- Microsoft Edge™
- Mozilla Firefox version 24 or later
- Safari version 6 or later

Accessing the Embedded Web Server

1. Obtain the printer IP address. Do either of the following:
   - Locate the IP address on the printer home screen.
   - View the IP address in the Network Overview section or in the TCP/IP section of the Network/Ports menu.
2. Open a web browser, and then type the printer IP address.

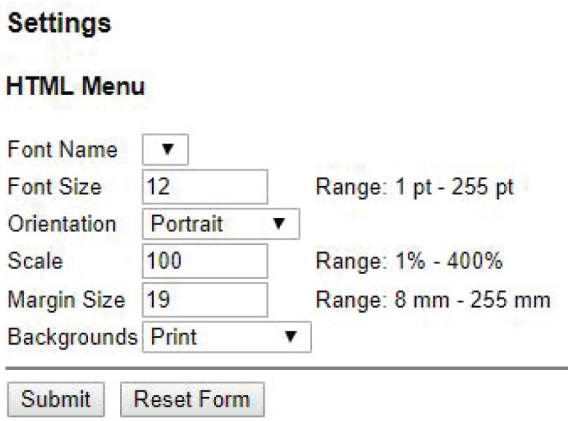
Parts of the Embedded Web Server



	Section	Description
1	Top	Shows device information and current status. For more information, see “Viewing the status of printer” on page 7.
2	Center	• Shows specific information on the selected section of the web page. • Allows user to change configurations and settings. • Generates reports and logs. For more information, see “Generating reports and logs” on page 8.
3	Bottom	Allows user to change the language of the web page. **Note:** Changing the language of the web page does not affect the language on the printer display.
4	Left	Contains links to major sections of the EWS.

Understanding helper texts

Helper texts are short and concise texts that describe a setting or page, indicate their usage, or provide details on printer behavior when the change is applied. They appear to the right of the setting field, below page or section headers, or at the bottom of the web page. They also provide the user with a range of acceptable data entries.

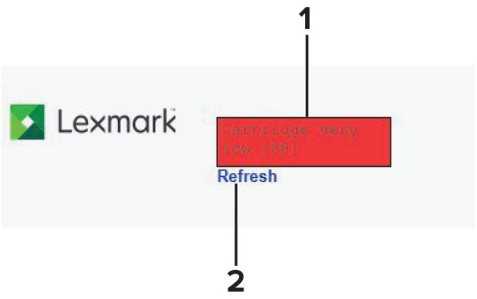


Notes:

- When the value of any setting marked with an asterisk (*) or cross (+) is changed, the printer automatically restarts after submitting the change.
- For settings marked with a cross, make sure that the printer is in a Ready state before submitting any change.

Managing printers

Viewing the status of printer



	Parts	Desription
1	Remote Status Screen	Shows the current status of the device. By default, the status information is updated every two minutes. **Notes:** • A yellow status screen indicates the printer is in a warning condition. The printer will require future intervention to ensure continued processing and printing. Examples of common warning conditions include low paper, low toner, or full output bin. • A red status screen indicates the printer is in a critical condition. It requires user intervention to restore printer functions and proper working condition. Examples of critical conditions include empty trays or used-up toner.
2	Refresh link	Updates status screen information on demand.

Checking the status of parts and supplies from the Embedded Web Server

Note: Make sure the computer and printer are connected to the same network.

1 Open a Web browser, and then type the printer IP address in the address field.

Notes:

- View the printer IP address in the TCP/IP section in the Network/Ports menu. The IP address appears as four sets of numbers separated by periods, such as 123.123.123.123.
- If you are using a proxy server, then temporarily disable it to load the Web page correctly.

2 Click **Device Status** > **More Details**.

Generating reports and logs

1. From the Embedded Web Server, click **Reports**.
2. Select the report or log.
   - **Device Statistics**—Show printer usage and supply status.
   - **Device Settings**—Show printer preferences, settings, and configurations.
   - **Device Information**—Show information on current firmware version of the printer.
   - **Print Directory**—Show resources that are stored on the flash drive or printer hard disk.

     Note: This report is available only when a flash drive or printer hard disk is installed.
   - **Shortcut List**—Provide information on all shortcuts created and stored on the printer.
   - **Fax Job Log**—List the last 200 completed fax jobs.

     Note: This report is available only when Enable Job Log is enabled.
   - **Fax Call Log**—List the last 100 attempted, received, and blocked calls.

     Note: This report is available only when a flash drive or printer hard disk is installed.
   - **E-mail Shortcuts**—Provide information on e-mail shortcuts created on the Shortcut Setup page and stored on the printer.
   - **FTP Shortcuts**—Provide information on FTP shortcuts created on the Shortcut Setup page and stored on the printer.
   - **Fax Shortcuts**—Provide information on fax shortcuts created on the Shortcut Setup page and stored on the printer.
   - **Copy Shortcuts**—Provide information on copy shortcuts created on the Shortcut Setup page and stored on the printer.
   - **Profiles List**—List all the profiles created and stored on the printer.
   - **Print Server Setup Page**—Show details on print server settings.

Configuring supply notifications from the Embedded Web Server

You can determine how you would like to be notified when supplies run nearly low, low, near end-of-life, or reach their end-of-life by setting the selectable alerts.

Note: The percentage of estimated remaining supply that prompts the alert can be set on some supplies for some supply conditions.

1. Open a Web browser, and then type the printer IP address.
2. Click **Settings** > **Print Settings** > **Supply Notifications**.
3. From the drop-down menu, select one of the following notification options:

Notification	Description
Off	The normal printer behavior for all supplies occurs.
SNMP Only	The printer generates a Simple Network Management Protocol (SNMP) alert when the supply condition is reached. The status of the supply appears on the menus page and status page.
E-mail	The printer generates an e-mail when the supply condition is reached. The status of the supply appears on the menus page and status page.
Warning	The printer displays the warning message and generates an e-mail about the status of the supply. The printer does not stop when the supply condition is reached.
Continuable Stop[1]	The printer stops processing jobs when the supply condition is reached, and the user needs to press a button to continue printing.
Non Continuable Stop[1,2]	The printer stops processing jobs when the supply condition is reached. The supply must be replaced to continue printing.
[1] The printer generates an e-mail about the status of the supply when supply notification is enabled. [2] The printer stops when some supplies become empty to prevent damage.	

4 Click **Submit**.

Scanning

You can scan documents, photo, or other item directly from your printer to a network folder, an FTP server, or e-mail to a pre-defined recipient or group of recipients. You can also set default values through the Embedded Web Server for frequently used features and settings such as a scan profile, shortcuts, or SMTP server.

Note: Scanning is supported only in a multifunction product.

Creating a scan profile

Notes:

- Create a scan profile to save scanned documents to the computer. Once the profile is created, it cannot be changed. A new profile must be created to change or adjust the settings.
- This feature is available only in some printer models.

1. From the Embedded Web Server, click **Scan Profile** > **Create Scan Profile**.
2. If you want to use a preconfigured template, then click the **Quick Setup** field and then make a selection. If not, then configure the following settings:
   - **Format Type**—Specify the file format for the scanned image.
   - **JPEG Quality**—Set the quality of a JPEG-format image.
   - **Compression**—Set the format used to compress the scanned output file.
   - **Content**—Specify the original document type.
   - **Darkness**—Adjust the darkness of the scanned image.
   - **Source**—Specify how the original document was produced.
   - **Color**—Specify the color of the original document.
   - **Resolution**—Specify the resolution of the scan in dots per inch (dpi). Increasing the image resolution increases the file size and the time needed to scan your original document. Image resolution can be decreased to reduce the file size.
   - **Original Size**—Specify the size of the original document.
   - **Orientation**—Specify the orientation of the scanned document.
   - **Duplex**—Specify the orientation of the original documents loaded in the ADF for two-sided scanning.
3. If necessary, click **PDF Settings**, **Advanced Imaging**, and **Color Balance**, and then configure the settings.
4. Click **Next**.
5. Specify the scan location and file name.
6. Assign the user and scan names.
7. To use the profile for future use, enable **Multiple use profile**.

   Note: This feature also allows groups of scanned pages to be indexed by numbers.
8. Click **Submit**.
9. Take note of the shortcut number assigned to the profile.

Scanning to a computer using a shortcut number

Note: Make sure that the printer and computer are connected to the same network.

1. Load the document into the ADF tray or on the scanner glass.
2. From the control panel, press **#**, and then enter the shortcut number indicated in the Scan Profile window. For more information, see "Creating a scan profile" on page 10.
3. Scan the document.

Adding a Scan to Network destination

Scan to Network allows scanned documents to be stored in a specified network destination.

1. From the Embedded Web Server, click **Set up Scan to Network**.
2. Click **Add**.
3. Type a name for the destination and the destination path.
4. Select an authentication option.
5. In the Save As field, type the file name.
6. Click **OK**.

Scan to FTP

Configuring the FTP settings

1. From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **FTP Settings**.
2. Configure the settings.
   - **Format**—Specify the file format for the scanned image.
   - **PDF Settings**—Set the PDF format of the scanned image.
     - **PDF Version**—Specify the PDF version of the scanned image.
     - **PDF Compression**—Specify whether to compress the scanned image.
     - **Secure**—Specify whether to enable security for the scanned image.
   - **Content Type**—Specify the content type of the original document.
   - **Content Source**—Specify the source of the original document.
   - **Color**—Specify the color when scanning an image.
   - **Resolution**—Set the resolution of the scanned image.
   - **Temperature**—Specify whether to generate a cooler or warmer output.
   - **Darkness**—Adjust the darkness of the scanned image.
   - **Orientation**—Specify the orientation of text and graphics on the page.
   - **Original Size**—Set the paper size of the original document.
   - **Sides (Duplex)**—Specify the page orientation of text and graphics when scanning a two-sided document.
   - **JPEG Quality**—Set the quality of a JPEG-format scanned image.

- **Text Default**—Set the quality of text on a scanned image.
- **Text/Photo Default**—Set the quality of text or photo on a scanned image.
- **Photo Default**—Set the quality of a photo on a scanned image.
- **Use Multi-Page TIFF**—Choose between single- and multiple-page TIFF files.
- **TIFF Compression**—Set a compression option for TIFF files.
- **Transmission Log**—Print a log for successful e-mail transmission.
- **Log Paper Source**—Specify the paper source for printing logs.
- **FTP Bit Depth**—Specify the bit depth to use for images detected as mono when the Color setting is set to Auto.
- **File Name**—Specify the file name for the scanned image.
- **Custom Job scanning**—Turn on scanning of custom jobs by default.
- **Scan Preview**—Show the scan preview on the display.
- **Allow Save as Shortcut**—Save custom FTP settings as shortcuts.
- **Background Removal**—Adjust the amount of background visible on a scanned image.
- **Color Dropout**—Specify which color to drop during scanning, and adjust the dropout setting for that color.
- **Contrast**—Specify the contrast of the output.
- **Mirror Image**—Create a mirror image of the original document.
- **Negative Image**—Create a negative image of the original document.
- **Shadow Detail**—Adjust the amount of shadow detail visible on a scanned image.
- **Sharpness**—Adjust the sharpness of a scanned image.
- **Scan edge to edge**—Allow edge-to-edge scanning of the original document.
- **Color Balance**—Adjust the amount of toner being used in each color.

3 Click **Submit**.

Creating an FTP shortcut

Set up the SMTP server to send e-mail from the printer.

1 From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **Manage FTP Shortcuts**.

2 Configure the settings.

- **Name**—Type the shortcut name. This field contains a maximum of 128 characters.
- **Server**—Type the server address. For multiple servers, use a comma to separate addresses. This field contains a maximum of 128 characters.
- **Login**—Type the user name used to access the FTP server. This field contains a maximum of 64 characters.
- **Password**—Type the password used to access the FTP server. This field contains a maximum of 64 characters.
- **Path and filename**—Type the full file path and name. This field contains a maximum of 64 characters.
- **Format**—Specify the file format for the scanned document.
- **Content Type**—Specify the content type of the original document.
- **Content Source**—Specify how the original document was produced.
- **Color**—Specify whether the printer captures and transmits content in color.

- **Resolution**—Set the resolution of the scanned image.
- **Shortcut**—Assign the shortcut number.

3 Click **Add**.

Scan to e-mail

Configuring the e-mail settings

1 From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **E-mail Settings**.

2 Configure the settings.

E-mail Server Settings

- **Setup E-mail Server**—Specify e-mail server information.

  SMTP Setup
  - **Primary SMTP Gateway**—Type the IP address or host name of the primary SMTP server for sending e-mail.
  - **Primary SMTP Gateway Port**—Enter the port number of the primary SMTP server.
  - **Secondary SMTP Gateway**—Type the server IP address or host name of your secondary or backup SMTP server.
  - **Secondary SMTP Gateway Port**—Enter the server port number of your secondary or backup SMTP server.
  - **SMTP Timeout**—Set the time before the printer times out when the SMTP server does not respond.
  - **Reply Address**—Specify a reply address in the e-mail.
  - **Use SSL/TLS**—Specify whether to send e-mail using an encrypted link.
  - **Validate CA**—Validate the Certificate Authority certificate of the SMTP server when sending e-mail.

  Authentication
  - **SMTP Server Authentication**—Set the authentication type for the SMTP server.
  - **Device-Initiated E-mail**—Specify whether credentials are required for device-initiated e-mail.
  - **User-Initiated E-mail**—Specify whether credentials are required for user-initiated e-mail.

  Device Credentials
  - **Use Active Directory Device Credentials**—Enable user credentials and group designations to connect to the SMTP server.
  - **Device Userid**—Specify the user ID to connect to the SMTP server.
  - **Device Password**—Specify the password to connect to the SMTP server.
  - **Kerberos 5 REALM**—Specify the realm for the Kerberos 5 authentication protocol.
  - **NTLM Domain**—Specify the domain name for the NTLM security protocol.
- **Subject**—Specify the e-mail subject.
- **Message**—Specify the e-mail message.
- **File Name**—Specify the file name for the scanned image.
- **Send me a copy**—Send a copy of the e-mail to yourself.

- **Max E-mail Size**—Set the allowable file size for each e-mail.
- **Size Error Message**—Specify an error message that the printer sends when an e-mail exceeds its allowable file size.
- **Limit destinations**—Limit sending of e-mail only to the specified list of domain names.

Web Link Setup

- **Server**—Set the e-mail server to use for the web link.
- **Login**—Set the user name to use for the web link.
- **Password**—Set the password to use for the web link.
- **Path**—Set the printer network path to use for the web link.
- **File Name**—Set the file name to use for the web link.
- **Web Link**—Set the web link.

E-mail Settings

- **Format**—Specify the file format for the scanned image.
- **PDF Settings**—Set the PDF format of the scanned image.
  - **PDF Version**—Specify the PDF version of the scanned image.
  - **PDF Compression**—Specify whether to compress the scanned image.
  - **Secure**—Specify whether to enable security for the scanned image.
- **Content Type**—Specify the content type of the original document.
- **Content Source**—Specify the source of the original document.
- **Color**—Specify the color when scanning an image.
- **Resolution**—Set the resolution of the scanned image.
- **Temperature**—Specify whether to generate a cooler or warmer output.
- **Darkness**—Adjust the darkness of the scanned image.
- **Orientation**—Specify the orientation of text and graphics on the page.
- **Original Size**—Set the paper size of the original document.
- **Sides (Duplex)**—Specify the page orientation of text and graphics when scanning a two-sided document.
- **JPEG Quality**—Set the quality of a JPEG-format scanned image.
- **Text Default**—Set the quality of text on a scanned image.
- **Text/Photo Default**—Set the quality of text or photo on a scanned image.
- **Photo Default**—Set the quality of a photo on a scanned image.
- **E-mail images sent as**—Specify how to send the images in e-mail.
- **Use Multi-Page TIFF**—Choose between single- and multiple-page TIFF files.
- **TIFF Compression**—Set a compression option for TIFF files.
- **Transmission Log**—Print a log for successful e-mail transmission.
- **Log Paper Source**—Specify the paper source for printing logs.
- **E-mail Bit Depth**—Specify the bit depth to use for images detected as mono when the Color setting is set to Auto.
- **Custom Job scanning**—Turn on scanning of custom jobs by default.
- **Scan Preview**—Show the scan preview on the display.
- **Allow Save as Shortcut**—Save e-mail addresses as shortcuts.

- **Background Removal**—Adjust the amount of background visible on a scanned image.
- **Color Dropout**—Specify which color to drop during scanning, and adjust the dropout setting for that color.
- **Contrast**—Specify the contrast of the output.
- **Mirror Image**—Create a mirror image of the original document.
- **Negative Image**—Create a negative image of the original document.
- **Shadow Detail**—Adjust the amount of shadow detail visible on a scanned image.
- **Sharpness**—Adjust the sharpness of a scanned image.
- **Scan edge to edge**—Allow edge-to-edge scanning of the original document.
- **Use cc:/bcc:**—Enable carbon copy and blind carbon copy in e-mail.
- **Color Balance**—Adjust the amount of toner being used in each color.

3 Click **Submit**.

Setting up the SMTP server

Set up the SMTP server to send e-mail from the printer.

1 From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **SMTP Setup**.

2 From the SMTP Setup section, configure the settings.

- **Primary SMTP Gateway**—Type the IP address or host name of the primary SMTP server for sending e-mail. This field contains a maximum of 128 characters.
- **Primary SMTP Gateway Port**—Enter the port number of the primary SMTP server.
- **Secondary SMTP Gateway**—Type the server IP address or host name of your secondary or backup SMTP server. This field contains a maximum of 128 characters.
- **Secondary SMTP Gateway Port**—Enter the server port number of your secondary or backup SMTP server.
- **SMTP Timeout**—Set the time before the printer times out when the SMTP server does not respond.
- **Reply Address**—Specify a reply address in the e-mail. This field contains a maximum of 128 characters.
- **Use SSL/TLS**—Specify whether to send e-mail using an encrypted link.
- **Validate CA**—Validate the Certificate Authority certificate of the SMTP server when sending e-mail.

3 From the Authentication section, configure the settings.

- **SMTP Server Authentication**—Set the authentication type for the SMTP server.
- **Device-Initiated E-mail**—Specify whether credentials are required for device-initiated e-mail.
- **User-Initiated E-mail**—Specify whether credentials are required for user-initiated e-mail.

4 Click **Use Active Directory Device Credentials**, and then configure the settings.

- **Device Userid**—Specify the user ID to connect to the SMTP server. This field contains a maximum of 64 characters.
- **Device Password**—Specify the password to connect to the SMTP server. This field contains a maximum of 32 characters.

- **Kerberos 5 REALM**—Specify the realm for the Kerberos 5 authentication protocol. This field contains a maximum of 255 characters.
- **NTLM Domain**—Specify the domain name for the NTLM security protocol. This field contains a maximum of 255 characters.

5 Click **Submit**.

Configuring the weblink option for sending e-mails

Setting up the weblink

The weblink option for sending e-mails lets users send scanned documents to a storage area on an HTTP server. The created weblink is then sent to the e-mail recipient.

Consider this option if the e-mail server has storage or file-size restrictions or e-mail activity on the printer is excessive, which affects network bandwidth. It is also a more secure way of scanning to e-mail.

Note: Make sure that you have successfully configured the SMTP server before setting up the weblink. For more information, see "Setting up the SMTP server" on page 15.

1 From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **E-mail Settings**.

2 From the Web Link Setup section, configure the settings.
- **Server**—Type the IP address or domain name of the web server. This field contains a maximum of 128 characters.
- **Login**—Type the user name to use for the weblink. This field contains a maximum of 128 characters.
- **Password**—Type the password to use for the weblink. This field contains a maximum of 128 characters.
- **Path**—Type the network path to store the files. This field contains a maximum of 128 characters.
- **File Name**—Type the base file name.
- **Web Link**—Indicate the weblink information to send to the recipient. This field contains a maximum of 128 characters.

3 Click **Submit**.

Activating the weblink

1 From the Embedded Web Server, click **Settings** > **E-mail/FTP Settings** > **E-mail Settings**.

2 From the E-mail Settings section, locate the **E-mail images sent as** setting.

3 Select **Web Link**.

4 Click **Submit**.

Configuring the copy settings

1 From the Embedded Web Server, click **Settings** > **Copy Settings**.

2 Configure the settings.

Copy Settings

- **Content Type**—Specify the content type of the original document.
- **Content Source**—Specify the source of the original document.
- **Sides (Duplex)**—Specify the scanning behavior based on the original document.
- **Paper Saver**—Copy two or four sheets of a document on one page.
- **Print Page Borders**—Place a border around each image when printing multiple pages on a single page.
- **Collate**—Print multiple copies in sequence.
- **Original Size**—Set the paper size of the original document.
- **Copy To Source**—Specify the paper source for the copy job.
- **Transparency Separators**—Place a sheet of paper between transparencies.
- **Separator Sheets**—Specify whether to insert blank separator sheets when printing.
- **Separator Sheet Source**—Specify the paper source for the separator sheet.
- **Darkness**—Adjust the darkness of the scanned image.
- **Number of Copies**—Specify the number of copies.
- **Header/Footer**—Specify header and footer information and its location on the page.
- **Overlay**—Specify the overlay text printed on each page of the copy job.
- **Custom Overlay**—Type a custom overlay text.
- **Allow Priority Copies**—Allow interruption of a print job to copy a page or document.
- **Allow Save as Shortcut**—Save custom copy settings as shortcuts.
- **Custom Job scanning**—Turn on scanning of custom jobs by default.
- **Background Removal**—Adjust the amount of background visible on a scanned image.
- **Auto Center**—Align the content at the center of the page.
- **Color Dropout**—Specify which color to drop during scanning, and adjust the dropout setting for that color.
- **Contrast**—Specify the contrast of the output.
- **Mirror Image**—Create a mirror image of the original document.
- **Negative Image**—Create a negative image of the original document.
- **Shadow Detail**—Adjust the amount of shadow detail visible on a scanned image.
- **Sharpness**—Adjust the sharpness of a scanned image.
- **Scan edge to edge**—Allow edge-to-edge scanning of the original document.
- **Sample Copy**—Print a sample copy.

3 Click **Submit**.

Configuring the flash drive settings

1 From the Embedded Web Server, click **Settings** > **Print Settings** > **Flash Drive Menu**.

2 Configure the settings.

Scan Settings

- **Format**—Specify the file format for the scanned image.
- **PDF Settings**—Set the PDF format of the scanned image.
  - **PDF Version**—Specify the PDF version of the scanned image.
  - **PDF Compression**—Specify whether to compress the scanned image.
  - **Secure**—Specify whether to enable security for the scanned image.
- **Content Type**—Specify the content type of the original document.
- **Content Source**—Specify the source of the original document.
- **Color**—Specify the color when scanning an image.
- **Resolution**—Set the resolution of the scanned image.
- **Darkness**—Adjust the darkness of the scanned image.
- **Orientation**—Specify the orientation of text and graphics on the page.
- **Original Size**—Set the paper size of the original document.
- **Sides (Duplex)**—Specify the page orientation of text and graphics when scanning a two-sided document.
- **JPEG Quality**—Set the quality of a JPEG-format scanned image.
- **Text Default**—Set the quality of text on a scanned image.
- **Text/Photo Default**—Set the quality of text or photo on a scanned image.
- **Photo Default**—Set the quality of a photo on a scanned image.
- **Use Multi-Page TIFF**—Choose between single- and multiple-page TIFF files.
- **TIFF Compression**—Set a compression option for TIFF files.
- **Scan Bit Depth**—Specify the bit depth to use for images detected as mono when the Color setting is set to Auto.
- **File Name**—Specify the file name for the scanned image.
- **Custom Job scanning**—Turn on scanning of custom jobs by default.
- **Scan Preview**—Show the scan preview on the display.
- **Background Removal**—Adjust the amount of background visible on a scanned image.
- **Color Balance**—Adjust the amount of toner being used in each color.
- **Color Dropout**—Specify which color to drop during scanning, and adjust the dropout setting for that color.
- **Contrast**—Specify the contrast of the output.
- **Mirror Image**—Create a mirror image of the original document.
- **Negative Image**—Create a negative image of the original document.
- **Shadow Detail**—Adjust the amount of shadow detail visible on a scanned image.
- **Scan edge to edge**—Allow edge-to-edge scanning of the original document.
- **Sharpness**—Adjust the sharpness of a scanned image.
- **Temperature**—Specify whether to generate a cooler or warmer output.

Print Settings

- **Sides (Duplex)**—Specify the page orientation of text and graphics when scanning a two-sided document.
- **Duplex Binding**—Define binding for two-sided pages in relation to the page orientation of the printed document.
- **Copies +**—Set the number of copies.

- **Collate**—Print multiple copies in sequence.
- **Separator Sheets**—Specify whether to insert blank separator sheets when printing.
- **Separator Sheet Source**—Specify the paper source for the separator sheet.
- **Paper Source**—Set the paper source for the print job.
- **Paper Saver**—Copy two or four sheets of a document on one page.
- **Paper Saver Ordering**—Specify the positioning of multiple-page images.
- **Paper Saver Orientation**—Specify the orientation of a multiple-page document.
- **Paper Saver Border**—Print a border when using Paper Saver.
- **Blank Pages**—Specify whether to include blank pages.

3 Click **Submit**.

Faxing

Configure the settings through the Embedded Web Server to be able to send and receive fax messages through your printer, using an assigned telephone line or a fax server.

Note: Faxing is supported only in a multifunction product.

Setting the fax mode

1. From the Embedded Web Server, click **Settings** > **Fax Settings**.
2. From the Fax Mode field, select a fax mode.
   - **Analog Fax Setup**—Send fax jobs through a telephone line.
   - **Fax Server Setup**—Send fax jobs through a fax server.
3. Click **Submit**.

Analog fax setup

Configuring the analog fax settings

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Settings section, configure the settings.
   - **Restore Factory Defaults**—Restore the factory default fax settings.
   - **Optimize Fax Compatibility**—Configure the fax machine for optimal compatibility with other fax machines.
   - **Fax Name**—Identify your fax machine. This field contains a maximum of 20 characters.
   - **Fax Number**—Identify your fax number. This field contains a maximum of 20 characters.
   - **Fax ID**— Specify how the fax is identified.
   - **Enable Manual Fax**—Set the printer to fax manually.
   - **Memory Use**—Define the allocation of non-volatile memory between sending and receiving fax jobs.
   - **Cancel Faxes**—Specify whether to cancel outgoing faxes before they are transmitted, or cancel incoming faxes before they finish printing.
   - **Fax number masking**—Specify the format for masking an outgoing fax number.
   - **Digits to mask**—Specify the number of digits to mask in an outgoing fax number.
   - **Enable Line Connected Detection**—Determine whether a telephone line is connected to the printer.
   - **Enable Line In Wrong Jack Detection**—Determine whether a telephone line is connected to the correct port on the printer.
   - **Enable Extension in Use Support**—Determine whether a telephone line is used by another device such as another phone on the same line.
3. Click **Submit**.

Setting up the fax cover page

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Cover Page section, configure the settings.
   - **Fax Cover Page**—Specify the frequency of using the fax cover page.
   - **Include To field**—Specify whether to include the recipient information.
   - **Include From field**—Specify whether to include the sender information.
   - **From**—Type in the sender information. This field contains a maximum of 255 characters.
   - **Include Message Field**—Specify whether to include the Message field.
   - **Message**—Type in a message to the recipient. This field contains a maximum of 512 characters.
   - **Include Logo**—Specify whether to include the sender logo.
   - **Import Fax Logo**—Set the logo.
   - **Include Footer [x]**—Specify whether to include the Footer [x] field.
   - **Footer [x]**—Set the Footer [x] field. This field contains a maximum of 1024 characters.
3. Click **Submit**.

Configuring the fax send settings

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, configure the settings.
   - **Resolution**—Set the resolution of the scanned image.
   - **Original Size**—Specify the size of the original document.
   - **Sides (Duplex)**—Specify the page orientation of text and graphics when scanning a two-sided document.
   - **Content Type**—Specify the content type of the original document.
   - **Content Source**—Specify the source of the original document.
   - **Temperature**—Specify whether to generate a cooler or warmer output.
   - **Darkness**—Adjust the darkness of the scanned image.
   - **Dial Prefix**—Enter a dialing prefix, such as 99. A numeric entry field is provided, which contains a maximum of 16 characters.
   - **Dialing Prefix Rules**—Establish a dialing prefix rule.
   - **Automatic Redial**—Adjust the number of redial attempts based on the activity levels of recipient fax machines.
   - **Redial Frequency**—Increase the time between redial attempts to increase the chance of sending fax successfully.
   - **Behind a PABX**—Set the printer to dial a fax number without waiting to recognize the dial tone.
   - **Enable ECM**—Activate Error Correction Mode (ECM) for fax jobs.
   - **Enable Fax Scans**—Fax documents that are scanned at the printer.
   - **Driver to fax**—Allow the print driver to send fax.
   - **Allow Save as Shortcut**—Save fax numbers as shortcuts in the printer.
   - **Max Speed**—Set the maximum speed for sending fax.
   - **Custom Job scanning**—Turn on scanning of custom jobs by default.
   - **Scan Preview**—Show a preview of the scan on the display.

- **Enable Color Fax Scans**—Enable color scans for fax.
- **Auto Convert Color Faxes to Mono Faxes**—Convert all outgoing color faxes to black and white.
- **Background Removal**—Adjust the amount of background visible on a scanned image.
- **Color Dropout**—Specify which color to drop during scanning, and adjust the dropout setting for that color.
- **Contrast**—Specify the contrast of the output.
- **Mirror Image**—Create a mirror image of the original document.
- **Negative Image**—Create a negative image of the original document.
- **Shadow Detail**—Adjust the amount of shadow detail visible on a scanned image.
- **Adjust ADF Skew**—Correct slight skews in the scanned image.
- **Sharpness**—Adjust the sharpness of a scanned image.
- **Scan edge to edge**—Allow edge-to-edge scanning of the original document.

3 Click **Submit**.

Configuring the fax receive settings

1 From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.

2 From the Fax Receive Settings section, configure the settings.

- **Enable Fax Receive**—Set the printer to receive fax.
- **Enable Caller ID**—Show the number that is sending the incoming fax.
- **Fax Job Waiting**—Remove fax jobs that request specific unavailable resources from the print.
- **Rings to Answer**—Set the number of rings for incoming fax.
- **Auto Answer**—Set the printer to receive fax automatically.
- **Manual Answer Code**—Manually enter a code on the telephone number pad to begin receiving fax. This field contains a maximum of 8 characters.
- **Auto Reduction**—Scale incoming fax to fit on the page.
- **Paper Source**—Set the paper source for printing incoming fax.
- **Fax Separator Sheets**—Specify whether to insert blank separator sheets when printing.
- **Fax Separator Source**—Specify the paper source for the separator sheet.
- **Sides (Duplex)**—Print on both sides of the paper.
- **Fax Footer**—Print the transmission information at the bottom of each page from a received fax.
- **Fax Footer Time Stamp**—Print the time stamp at the bottom of each page from a received fax.
- **Max Speed**—Set the maximum speed for receiving fax.
- **Fax Forwarding**—Specify how to forward received fax.
- **Forward to**—Specify where to forward received fax.
- **Forward to Shortcut**—Enter the shortcut number which matches the recipient type (Fax, E-mail, FTP, LDSS, or eSF).
- **Block No Name Fax**—Block incoming faxes sent from devices with no station ID or fax ID specified.
- **Banned Fax List**—Specify the phone numbers that you want to block. Use a comma to separate multiple phone numbers.

3 Click **Submit**.

Configuring the fax log settings

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Log Settings section, configure the settings.
   - **Transmission Log**—Determine whether to print logs for successful fax transmission or when transmission error occurs.
   - **Receive Error Log**—Determine whether to print a log for fax-receive failures.
   - **Auto Print Logs**—Print logs for all fax activity.
   - **Log Paper Source**—Specify the paper source for printing logs.
   - **Logs Display**—Identify the sender by remote fax name or fax number.
   - **Enable Job Log**—Store information of all fax jobs.
   - **Enable Call Log**—Store information of fax dialing history.
3. Click **Submit**.

Setting the distinctive ring pattern

Some telephone companies offer distinctive ring services to allow multiple telephone numbers in a single line. You can set a distinctive ring pattern for your printer to receive faxes using a specific telephone number.

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Distinctive Rings section, configure the Answer On setting.
3. Click **Submit**.

Blocking or banning fax numbers

Use this feature to avoid receiving spam or junk faxes. You can also check the list of banned fax numbers to determine the cause of not receiving fax from a specific sender.

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup** > **Fax Receive Settings**.
2. To avoid receiving fax without caller ID or station name, click **Block No Name Fax**.
3. In the Banned Fax List field, add the fax number that you want to ban.
4. Click **Submit**.

Holding faxes

Note: This feature is available only in some printer models.

Use the Held Fax Mode to receive faxes and temporarily store them in the printer hard disk. The held faxes are secured in the hard disk until the designated release time or when valid user credentials are provided.

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup** > **Holding Faxes**.
2. Select the appropriate held fax mode.
   - **Always On**—Always holds fax jobs.
   - **Manual**—Lets users select if they want to continue storing fax jobs or not.
   - **Scheduled**—Prints faxes depending on the set fax holding schedule.

3 Click **Submit**.

Setting the fax holding schedule

1 From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup** > **Holding Faxes** > **Fax Holding Schedule**.

2 Select a device action, and then set the time and day for the device to perform the action.

3 Add the entry.

Notes:

- Fax printing is enabled by default.
- For each Disable schedule entry, create an Enable schedule entry to reactive fax printing.

Fax server setup

Configuring the fax server e-mail settings

Using the fax server mode routes all outgoing faxes to the fax server through e-mail.

1 From the Embedded Web Server, click **Settings** > **Fax Settings** > **Fax Server Setup**.

2 From the Fax Server E-mail Setup section, configure the settings.
- **To Format**—Specify a fax recipient. This field contains a maximum of 128 characters.
- **Reply Address**—Specify a reply address for sending fax. This field contains a maximum of 128 characters.
- **Subject**—Specify the fax subject. This field contains a maximum of 64 characters.
- **Message**—Specify the fax message. This field contains a maximum of 512 characters.
- **Primary SMTP Gateway**—Type the IP address or host name of the primary SMTP server for sending e-mail.
- **Secondary SMTP Gateway**—Type the server IP address or host name of your secondary or backup SMTP server.

3 Click **Save**.

Configuring the default scan settings for sending fax though a server

1 From the Embedded Web Server, click **Settings** > **Fax** > **Fax Server Setup**.

2 From the Fax Server Default Scan Setup section, configure the settings.
- **Image Format**—Specify the file format for the scanned image.
- **Content Type**—Specify the content type of the original document.
- **Content Source**—Specify the source of the original document.
- **Fax Resolution**—Set the fax resolution.
- **Temperature**—Specify whether to generate a cooler or warmer output.
- **Darkness**—Adjust the darkness of the output.
- **Orientation**—Specify the orientation of text and graphics on the page.
- **Original Size**—Set the paper size of the original document.

- **Use Multi-Page TIFF**—Choose between single- and multiple-page TIFF files.
- **Enable analog receive**—Set the printer to receive analog faxes.
- **Color Balance**—Adjust the amount of toner being used in each color.
- **E-mail Server Setup**—Specify e-mail server information. For more information, see "Setting up the SMTP server" on page 15.

3 Click **Submit**.

Networking

Selecting the active network card

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **Select Active Network Card**.
2. Select the network card.
   - **Auto**—Switch automatically to an available network connection.

     Note: Ethernet connection takes precedence over wireless connection. Remove the Ethernet cable to allow the printer to detect the configured wireless network.
   - **Standard Network**—Disable the wireless network connection and set the printer to connect only through Ethernet connection.
   - **Network Card [X]**—Disable the Ethernet network connection and set the printer to connect only through wireless connection.

     Note: This setting appears only when a wireless network adapter is installed in the printer.
3. Click **Submit**.

Connecting to a wireless network

Before you begin, make sure that:

- Your printer is connected temporarily to an Ethernet network.
- A wireless network adapter is installed in your printer and working properly. For more information, see the instruction sheet that came with your wireless network adapter.

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **Wireless**.
2. Modify the settings to match the settings of your access point (wireless router).

   Note: Make sure to enter the correct SSID.
3. Click **Submit**.
4. Turn off the printer, and then disconnect the Ethernet cable. Wait for at least five seconds, and then turn the printer back on.
5. Check if your printer is connected to the network. Print a network setup page, and then in the Network Card [x] section, see if the status is “Connected.”

   For more information, see the “Verifying printer setup” section of the printer *User’s Guide*.

Setting up the Address Book

This section lets you configure the Address Book security settings for accessing and searching internal accounts.

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **Address Book Setup**.
2. Configure the settings.
   - **Server Address**—Type the server address. This field contains a maximum of 128 characters.
   - **Server Port**—Type the server port.
   - **Use SSL/TLS**—Determine the type of encryption used.
   - **LDAP Certificate Verification**—Determine if LDAP server certificate is requested. This menu setting is available only in some printer models.
   - **Use GSSAPI**—Enable strong encrypted authentication through Generic Security Service Application Program Interface (GSSAPI).
   - **Mail Attribute**—Specify the attribute used to identify e-mail addresses. This field contains a maximum of 127 characters.
   - **Fax Number Attribute**—Specify the attribute used to identify fax numbers. This field contains a maximum of 127 characters.
   - **Search Base**—Specify the starting point for address book searches. This field contains a maximum of 128 characters.
   - **Search Timeout**—Determine how long a search is processed before giving an error message.
   - **Displayed Name**—Specify how a name is shown.
   - **Max Search Results**—Determine the number of maximum search results sent by the server.
   - **Use user credentials**—Require the use of user credentials for accessing the server.
   - **Device Credentials**—Configure the device credentials used to search internal accounts.
   - **Search Attributes**—Specify the object classes for each address book search.
   - **Search specific object classes**—Determine the criteria for searching specific object classes.
   - **Manage LDAP Servers (Security)**—Add or modify an LDAP setup. For more information, see “Using LDAP” on page 37.
   - **Manage LDAP+GSSAPI Servers (Security)**—Add or modify an LDAP+GSSAPI setup. For more information, see “Using LDAP+GSSAPI” on page 39.
3. Click **Submit**.

Securing printers

Understanding the basics

Secure a printer through the Embedded Web Server by defining users who can use the printer and the functions that they can access. This process involves components called authentication, authorization, and groups.

Create a plan that identifies who the users are and what they need to do before configuring printer security. Items to consider might include the following:

- The location of the printer and whether authorized persons have access to that area
- Sensitive documents that are sent to or stored on the printer
- Information security policies of your organization

Authentication and authorization

Authentication is the method by which a system securely identifies a user.

Authorization specifies which functions are available to a user authenticated by the system. The set of authorized functions is also referred to as “permissions.”

Based on the product definition, there are two levels of security that are supported. Simple security only supports internal device authentication and authorization methods. More advanced security permits internal and external authentication and authorization, additional restriction capability for management, and access to solutions and functions. Advanced security is supported in those devices that permit the installation of additional solutions.

Advanced-security devices support the following:

- PIN and password restrictions in addition to the other authentication and authorization specified
- Multiple local authentication functions that support PIN, password, and user name–password combinations
- Standard network authentication through LDAP, LDAP+GSSAPI, Kerberos, and Active Directory™

Authorization can be specified individually or by groups (either local or network). Devices that support advanced-level security are capable of running installed solutions, which permit usage of card readers to provide advanced two-factor authentication.

Function	Simple-security devices	Advanced-security devices
Panel PIN Protect	✓	X
PIN Protection	X	✓
Web Page Password Protect	✓	X
Password Protection	X	✓
Internal Accounts (Username and Username/Password)	X	✓
Groups (internal)	X	✓
LDAP	X	✓

* Available only in some printer models

Function	Simple-security devices	Advanced-security devices
LDAP+GSSAPI	X	✓
Kerberos 5	X	✓
Active Directory*	X	✓
Limited access controls	✓	X
Access controls (complete)	X	✓
Security Templates	X	✓
Basic Security Setup	X	✓
* Available only in some printer models		

The device handles authentication and authorization using one or more of the following *building blocks*:

- PIN or Panel PIN Protect
- Password or Web Page Password Protect
- Internal Accounts
- LDAP
- LDAP+GSSAPI
- Kerberos 5 (used only with LDAP+GSSAPI and the Smart Card Authentication application)
- Active Directory (available only in some printer models)

To provide simple security, use either PIN and Password, or Panel PIN Protect and Web Page Password Protect. This type of security is appropriate if a printer is located in public areas of a business, where only employees who know the password and PIN are able to use the printer. Passwords and PINs are considered less secure than other building blocks because they do not require a user to be identified or authorized.

Note: The device factory default settings do not contain any authentication or authorization building blocks, so everyone has unrestricted access to the device.

Groups

Administrators can designate up to 32 groups to be used in association with either the Internal Accounts or LDAP and LDAP+GSSAPI building blocks. To ensure device security, groups are used to identify sets of users needing access to similar functions. For example, in Company A, employees in the warehouse do not need to print in color, but employees in sales and marketing use color every day. In this scenario, you can create a “Warehouse” group and a “Sales and Marketing” group.

Access Controls

By default, all device menus, settings, and functions come with no security enabled. Access controls (also referred to in some devices as “Function Access Controls”) are used to manage access to specific menus and functions or to disable them entirely. Access controls can be set using a password, PIN, or security template. The number of functions that can be controlled varies depending on the type of device, but in some multifunction printers, over 40 individual menus and functions can be protected.

Note: For a list of individual access controls and what they do, see "Appendix D: Access controls" on page 84.

Security Templates

Some scenarios call for only limited security, such as PIN-protected access to common device functions, while others require tighter security and role-based restrictions. Individually, building blocks, groups, and access controls may not meet the needs of a complex security environment. In order to accommodate users in different groups needing access to a common set of functions such as printing, copying, and faxing, administrators must be able to combine these components in ways that give all users the functions they need, while restricting other functions to only authorized users.

A *security template* is a profile constructed using a building block, or certain building blocks paired with one or more groups. How they are combined determines the type of security created:

Building block	Type of security
Internal Accounts	Authentication only
Internal Accounts with Groups	Authentication and authorization
Kerberos 5	Authentication only
LDAP	Authentication only
LDAP with Groups	Authentication and authorization
LDAP+GSSAPI	Authentication only
LDAP+GSSAPI with Groups	Authentication and authorization
Password	Authorization only
PIN	Authorization only

Each device can support up to 140 security templates, allowing administrators to create very specific profiles for each access control.

Simple-security device access controls

Creating a web page password and applying access control restrictions

Use Web Page Password Protect to limit access to the Embedded Web Server and secure printer functions.

1. From the Embedded Web Server, click **Settings** > **Security** > **Web Page Password Protect**.
2. Create user and administrator passwords. Click **Modify** to confirm.

   Notes:

   - Functions or settings protected by a user-level password can also be accessed using any administrator-level password.
   - To delete a password, click **Delete Entry**.
3. From the drop-down menu, select the security template settings for printer functions that require restrictions.
4. Click **Submit**.

Creating a PIN and applying access control restrictions

Use Panel Pin Protect to limit access to some configuration menus in the control panel. *Personal identification numbers* (PINs) can also be required when retrieving a held print, copy, or fax job.

1. From the Embedded Web Server, click **Settings** > **Security** > **Panel PIN Protect**.
2. Create user and administrator PINs. Click **Modify** to confirm.
3. From the drop-down menu, select security template settings for the menus or functions that require restrictions.
4. Click **Submit**.

Advanced-security device access controls

Limiting access using Basic Security Setup

Use Basic Security Setup to limit access to the Embedded Web Server settings and the configuration menus on the control panel. This selection allows the definition of simple internal device security authentication methods.

Notes:

- This feature is available only in advanced-security printer models as a simple-security access restriction method.
- The device factory default settings do not contain any authentication or authorization building blocks, so everyone has unrestricted access to the Embedded Web Server.

Applying Basic Security Setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Basic Security Setup, from the Authentication Type menu, select one of the following:
   - **PIN**—Enter a PIN number. Each PIN must be 4–16 digits in length.
   - **Password**—Type the password containing up to 128 UTF-8 characters.
   - **User ID and Password**—Type a unique user ID, and then type the password containing up to 128 UTF-8 characters.
3. Click **Apply Basic Security Setup**.

   Note: Applying this setup overwrites previous configurations.

The new settings are submitted. The next time you access Security Setup, you are required to enter your authentication credentials.

Modifying or removing Basic Security Setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Enter your authentication credentials to access Security Setup.

3 Under Modify or Remove Basic Security Setup, enter your new authentication credentials.

4 Click **Modify Basic Security Setup** to enter your new authentication credentials, or click **Remove Basic Security Setup** to remove all authentication requirements.

Advanced-security building blocks

To define the authentication required when accessing device functions and menus, create and configure a login method or building block.

Using a security template to control function access

Each access control can be set to require no security (default) or to use any of the building blocks in the drop-down menu for that function. Only one method of security can be assigned to each access control.

Step 1: Create a building block

A building block is required to specify authentication and authorization for device menus and functions. Use the building blocks to define security templates, and then select a template for each access control.

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click the appropriate building block, and then configure it.

Step 2: Create a security template

One or two building blocks can be combined with a unique name of up to 128 characters to create a security template. Each device can support up to 140 security templates. Though the names of security templates must be different from one another, building blocks and security templates can share a name.

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **Security Template**.

3 Under Manage Security Templates, click **Add a Security Template**.

4 In the Security Template Name field, type a unique name containing up to 128 characters. It can be helpful to use a descriptive name, such as "administrator_Only" or “Common_Functions_Template.”

5 From the Authentication Setup list, select a building block method for authenticating users.

Note: The Authentication Setup list is populated with the authentication building blocks that have been configured on the device. Certain building blocks, such as passwords and PINs, do not support separate authorization.

6 To use authorization, click **Add authorization**, and then from the Authorization Setup menu, select a building block.

Note: The Authorization Setup list is populated with the authorization building blocks available on the device.

7 To use group authorization, click **Modify Groups**, and then select one or more groups to include in the security template.

Note: Hold down the **Ctrl** key to select multiple groups.

8 Click **Save Template**.

Note: For simple authorization-level security, which uses no individual authentication, administrators can control access to functions by assigning only a password or PIN to a security template. Users are required to enter the correct code to access any function controlled by the password or PIN.

Step 3: Assign security templates to access controls

After assigning a security template, users are required to provide the appropriate credentials to access any functions assigned with a security template.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Access Controls**.

   Note: If necessary, click **Expand All** to view all access controls, or select a folder to view specific access controls for the selected access control group.

2. For each function you want to protect, select a security template from the drop-down menu next to the name of that function.

3. Click **Submit** to save the changes, or **Reset Form** to cancel all changes.

   Notes:

   - To help prevent unauthorized access, log out from the printer after each session.
   - For a list of individual access controls, see "Appendix D: Access controls" on page 84.

Editing or deleting a security template

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Security Template**.
3. Select a security template from the list.
4. Edit the fields if necessary.
5. Click **Modify** to save the changes.

Notes:

- To retain previously configured values, click **Cancel**.
- To delete the selected security template, click **Delete Entry**.
- To delete all security templates on the device, from Manage Security Templates screen, click **Delete List**.
- You can delete a security template only if it is not in use, but you can edit a security template that is in use.

Creating a PIN building block for advanced security setup

PINs are used to control access to specific device menus or to a device itself. PINs can also be required when retrieving a held print, copy, or fax job.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **PIN** > **Add a PIN**.
3. In the Setup Name field, type the name of the PIN configuration.

   Note: Each PIN must have a unique name containing up to 128 UTF-8 characters.

4. Type, and then confirm the PIN in the appropriate fields.

5 If the PIN is used as the Administrator PIN, then click **Admin PIN**.

6 Click **Submit**.

Changing the PIN length

1 Click **Settings** > **Security** > **Miscellaneous Security Settings**.

2 Enter a number in the Minimum PIN length field.

3 Click **Submit**.

Creating a password building block for advanced security setup

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **Password**.

3 Under Manage Passwords, select **Add a Password**.

4 In the Setup Name field, type a name for the password.

Note: Each password must have a unique name containing up to 128 UTF-8 characters.

5 Type, and then confirm the password in the appropriate fields.

6 If the password is used as the administrator password, then select **Admin Password**.

Note: Functions or settings protected by a user-level password can be accessed using any administrator-level password.

7 Click **Submit**.

Notes:

- To edit a password, select a password from the list, and then modify the settings.
- To delete a password, select a password from the list, and then click **Delete Entry**.
- To delete all passwords in the list, click **Delete List**.

Setting up internal accounts

Administrators can configure one internal account building block per supported device. Each internal account building block can include a maximum of 750 user accounts and 32 user groups.

You can use this building block by itself in a security template to provide authentication-level security, or with other groups to provide both authentication and authorization.

Defining user groups

Before you begin, do the following:

- Create a list of all the users in the group.
- Identify the device functions needed for all users and for specific users.

Note: When a security template is assigned to a group, a role is created. Users can be assigned to more than one group or role.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Internal Accounts** > **Setup groups for use with internal accounts**.
3. Type the group name.

   Note: Group names can contain up to 128 UTF-8 characters.
4. Click **Add**.

Creating user accounts

Note: We recommend creating groups before creating a user account.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Internal Accounts** > **Add an Internal Account**.
3. Provide the information needed for each account:
   - **Account Name**—Type the account name of the user using up to 164 UTF-8 characters.
   - **User ID**—Type an ID for the account using up to 128 UTF-8 characters.
   - **Password**—Type a password of between 8 and 128 characters.
   - **Re-enter Password**—Type the password entered in the preceding field.
   - **E-mail**—Type the e-mail address of the user.
   - **Groups**—Select the groups to which the account belongs. Hold down the **Ctrl** key to select multiple groups for the account.
4. Click **Submit**.

Specifying settings for internal accounts

Internal account settings determine the information an administrator submits when creating a new internal account and the information a user submits when authenticating.

- **Custom Building Block Name**—Type a unique name for this building block.
- **Require E-mail Address**—Select this box to make the e-mail address a required field when creating new internal accounts.
- **Required User Credentials**—Select either **User ID** or **User ID and password** to specify the information a user must submit when authenticating.

Connecting your printer to an Active Directory domain

Using Active Directory simplifies network authentication and authorization setup, automatically creating and configuring LDAP+GSSAPI and Kerberos authentication building blocks. It also simplifies certificate chain download.

Note: Use HTTPS to protect the credentials that are used to join the printer to the domain.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Active Directory** > **Join an Active Directory Domain**.
3. Provide the information needed for each account:
   - **Domain Name**—Use uppercase to type the name of the domain that you want to join.
   - **User ID**—Type the user name of the network administrator or any individual who has rights to add computers to a network.

- **Password**—Type the password of the network administrator or the individual who has rights to join the domain.

  Note: Passwords are case-sensitive and are not cached by the device.
- **Organizational Unit**—Type the name of your organizational unit, if necessary.

4 Select one or more of the following domain services:
- **LDAP Address Book**—Configure LDAP server address book information using Active Directory data.
- **Standard Admin Groups and Security Templates**—Create a group named “admin,” and a security template named “Active Directory.”
- **CA Certificate Monitoring**—Enable the CA certificate monitor feature with the following default settings:
  - “Enable CA Monitor” is selected.
  - Schedule run time” is set to **0:00** (midnight).
  - Monitoring is repeated every day.

5 Click **Submit**.

Note: The screen flashes, and you may hear a clicking noise.

6 Click **Manage Security Templates** to use the Active Directory information to complete your security setup.

If you want to review or make some small modifications to the LDAP+GSSAPI building block, then click **Return to Security Setup** and do the following:

a Under Advanced Security Setup, click **Kerberos 5**.

b Click **View File** to open the Kerberos Config file that was created using the Active Directory setup.

c Review the file, and then click the back button of the browser.

Note: To avoid issues with KDC Server Affinity Service, do not edit or copy the Kerberos Config file to use with older devices. Older devices do not recognize the special mappings associated with the KDC Server Affinity Service.

d Click **Return to Security Setup**, and then click **LDAP+GSSAPI**.

e Under LDAP+GSSAPI Setups, click the building block that was created by the Active Directory Setup process.

Note: By default, the building block name is the realm name, and the server address field is the domain controller name.

f If necessary, change some of the building block settings depending on your environment, including the following:
- **Server Port**—The standard port for LDAP is 389. Another common port is 3268, but this port is used only for Global Catalog servers in Active Directory. If applicable, change the port to 3268 to speed up the querying process.
- **Search Base**—This setting indicates the location in the directory tree where the device starts searching. At the most basic, we recommend specifying the root of the directory (such as “dc=company,dc=com”).
- **Use Kerberos Service Ticket**—This advanced setup, otherwise known as SPNEGO, is the session ticket that a user uses to log in to a computer. We recommend leaving this setting unchanged.
- **Use Active Directory Device Credentials**—This option lets you use the service account that is created in Active Directory. If you want to use an existing service account or user credentials (advanced setup), then clear this check box.

g If necessary, adjust the following settings:

- **Group Search Base**—This setting indicates the location in the directory tree where the device starts searching for a particular group. If the environment does not require user- or group-based authorization, then leave this field blank.
- **Short name for group**—This setting is a name that a user can use to associate to a group identifier.
- **Group Identifier**—This setting is a container or organizational unit that a device searches to validate whether an authenticated user is a member of an authorized group.

h Click **Modify**.

Using LDAP

Lightweight Directory Access Protocol (LDAP) is a standards-based, cross-platform, extensible protocol that runs directly on top of the TCP/IP layer. It is used to access information stored in a specially organized information directory. It can interact with many different kinds of databases without special integration, making it more flexible than other authentication methods.

Notes:

- Supported devices can store a maximum of five unique LDAP configurations. Each configuration must have a unique name.
- Administrators can create up to 32 user-defined groups that apply to each unique LDAP configuration.
- LDAP relies on an external server for authentication. If an outage prevents the printer from communicating with the server, then users are not able to access protected device functions.
- To help prevent unauthorized access, log out from the printer after each session.

Adding an LDAP setup

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **LDAP**.

3 Click **Add an LDAP Setup**.

The LDAP Server Setup dialog is divided into four parts:

- General Information
  - **Setup Name**—This name is used to identify each particular LDAP Server Setup when creating security templates.
  - **Server Address**—Type the IP address or the host name of the LDAP server where the authentication is performed.
  - **Server Port**—The Embedded Web Server communicates with the LDAP server using this port. The default LDAP port is 389.
  - **Use SSL/TLS**—From the drop-down menu, select **None**, **SSL/TLS**, or **TLS**.
  - **Userid Attribute**—Type either **`cn`**, **`uid`**, **`userid`**, or **`user-defined`**.
  - **Mail Attribute**—Type a maximum of 48 characters to identify e-mail addresses. The default value is “mail.”
  - **Full Name Attribute**—Type a maximum of 48 characters. The default value is “cn.”

  - **Search Base**—The node in the LDAP server where user accounts reside. You can enter multiple search bases, separated by commas.

    Note: A search base consists of multiple attributes separated by commas, such as cn (common name), ou (organizational unit), o (organization), c (country), and dc (domain).
  - **Search Timeout**—Enter a value from 5 to 30 seconds or 5 to 300 seconds, depending on your printer model.
  - **Required User Input**—Select either **User ID and password** or **User ID** to specify which credentials a user must provide when attempting to access a function protected by the LDAP building block. **User ID and password** is the default setting.
- Device Credentials
  - **Use Active Directory Device Credentials**—Allow user credentials and group designations to be pulled from the existing network comparable to other network services.
  - **Anonymous LDAP Bind**—Bind the Embedded Web Server with the LDAP server anonymously, and make the Distinguished Name and MFP Password fields unavailable.
  - **Distinguished Name**—Type the distinguished name of the print server.
  - **MFP's Password**—Type the password for the print server.
- Search specific object classes
  - **Person**—Allow the "person" object class to be searched.
  - **Custom Object Class**—Allow the custom search object class to be searched. You can define up to three custom search object classes.
- LDAP Group Names
  - Administrators can associate as many as 32 named groups stored on the LDAP server by entering identifiers for those groups under the Group Search Base list. Both the **Short name for group** and **Group Identifier** must be provided.
  - When creating security templates, you can pick groups from this setup for controlling access to device functions.

4. Click **Submit** to save the changes, or **Cancel** to return to previous values.

Editing an LDAP setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **LDAP**.
3. Click a setup from the list.
4. Make any needed changes in the LDAP Configuration dialog.
5. Click **Modify** to save the changes, or click **Cancel** to return to previous values.

Deleting an LDAP setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **LDAP**.
3. Select a setup from the list.
4. Click **Delete Entry** to remove the profile, or **Cancel** to return to previous values.

Notes:

- Click **Delete List** to delete all LDAP setups in the list.
- An LDAP building block cannot be deleted if it is being used as part of a security template.

Validating an LDAP setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **LDAP**.
3. Click **Test LDAP Authentication Setup** next to the setup you want to test.

Using LDAP+GSSAPI

Note: This feature is available only in advanced-security devices.

Some administrators prefer authenticating to an LDAP server using the more secure *Generic Security Services Application Programming Interface* (GSSAPI) instead of simple LDAP authentication. Instead of authenticating directly with the LDAP server, the user first authenticates with a Kerberos server to obtain a Kerberos "ticket." This ticket is then presented to the LDAP server using the GSSAPI protocol for access. LDAP+GSSAPI is typically used for networks running Active Directory.

Notes:

- LDAP+GSSAPI requires Kerberos 5 to be configured.
- Supported devices can store a maximum of five unique LDAP+GSSAPI configurations. Each configuration must have a unique name.
- LDAP relies on an external server for authentication. If an outage prevents the printer from communicating with the server, then users are not able to access protected device functions.
- To help prevent unauthorized access, log out from the printer after each session.

Adding an LDAP+GSSAPI setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **LDAP+GSSAPI**.
3. Click **Add an LDAP+GSSAPI Setup**. The setup dialog is divided into four parts:

   General Information

   - **Setup Name**—This name is used to identify each particular LDAP+GSSAPI Server Setup when creating security templates.
   - **Server Address**—Type the IP address or the host name of the LDAP server where the authentication is performed.
   - **Server Port**—The port used by the Embedded Web Server to communicate with the LDAP server. The default LDAP port is 389.
   - **Use SSL/TLS**—From the drop-down menu, select **None**, **SSL/TLS**, or **TLS**.
   - **Userid Attribute**—Type either **`cn`**, **`uid`**, **`userid`**, or **`user-defined`**.
   - **Mail Attribute**—Type a maximum of 48 characters to uniquely identify e-mail addresses. The default value is "mail."
   - **Full Name Attribute**—Type a maximum of 48 characters.

- **Search Base**—The node in the LDAP server where user accounts reside. You can enter multiple search bases, separated by commas.

  Note: A search base consists of multiple attributes separated by commas, such as cn (common name), ou (organizational unit), o (organization), c (country), and dc (domain).
- **Search Timeout**—Enter a value from 5 to 30 seconds or 5 to 300 seconds depending on your printer model.
- **Use Kerberos Service Ticket**—If selected, then a Kerberos ticket is presented to the LDAP server using the GSSAPI protocol to obtain access.

Device Credentials

- **Use Active Directory Device Credentials**—Allow user credentials and group designations to be pulled from the existing network comparable to other network services.
- **MFP Kerberos Username**—Type the distinguished name of the print server.
- **MFP's Password**—Type the Kerberos password for the print server.

Search specific object classes

- **Person**—Allow the "person" object class to be searched.
- **Custom Object Class**—Allow the custom search object class to be searched. You can define up to three custom search object classes.

LDAP Group Names

- You can associate up to 32 named groups stored on the LDAP server by entering identifiers for those groups under the Group Search Base list. Both the **Short name for group** and **Group Identifier** must be provided.
- When creating security templates, you can pick groups from this setup for controlling access to device functions.

4 Click **Submit** to save the changes, or **Cancel** to return to previous values.

Editing an LDAP+GSSAPI setup

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **LDAP+GSSAPI**.

3 Select a setup from the list.

4 Make any needed changes in the LDAP Configuration dialog.

5 Click **Modify** to save the changes, or **Cancel** to return to previous values.

Deleting an LDAP+GSSAPI setup

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **LDAP+GSSAPI**.

3 Select a setup from the list.

4 Click **Delete Entry** to remove the profile, or **Cancel** to return to previous values.

Notes:

- Click **Delete List** to delete all LDAP+GSSAPI setups in the list.

- An LDAP+GSSAPI building block cannot be deleted if it is being used as part of a security template.

Configuring Kerberos 5 for use with LDAP+GSSAPI

Note: This feature is available only in advanced-security devices.

Kerberos 5 can be used by itself for user authentication, but it is most often used with the LDAP+GSSAPI building block. While only one Kerberos configuration file (krb5.conf) can be stored on a supported device, that file can apply to multiple realms and Kerberos Domain Controllers (KDCs). An administrator must anticipate the different types of authentication requests that the Kerberos server might receive, and configure the krb5.conf file to handle these requests.

Notes:

- Because only one krb5.conf file is used, uploading or resubmitting a simple Kerberos file overwrites the configuration file.
- The krb5.conf file can specify a default realm. But if a realm is not specified in the configuration file, then the first realm specified is used as the default realm for authentication.
- Some types of authentication rely on an external server. If an outage prevents the printer from communicating with the server, then users are able to access protected device functions.
- To help prevent unauthorized access, log out from the printer after each session.

Creating a simple Kerberos configuration file

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Kerberos 5**.
3. Under Simple Kerberos Setup, type the KDC (Key Distribution Center) address or host name in the KDC Address field.
4. Enter the number of the port (between 1 and 65535) used by the Kerberos server in the KDC Port field.

   Note: The default port number is 88.
5. Type the realm (or domain) used by the Kerberos server in the Realm field.
6. Click **Submit** to save the information as a krb5.conf file on the selected device, or **Reset Form** to reset the fields and start again.

Uploading a Kerberos configuration file

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Kerberos 5**.
3. Click **Choose file**, and then select the krb5.conf file.
4. Click **Submit** to upload the krb5.conf file to the selected device.

   The Embedded Web Server automatically tests the krb5.conf file to verify that it is functional.

   Notes:

   - To reset the field and search for a new configuration file, click **Reset Form**.
   - To remove the Kerberos configuration file from the selected device, click **Delete File**.
   - To view the Kerberos configuration file for the selected device, click **View File**.
   - To verify that the Kerberos configuration file for the selected device is functional, click **Test Setup**.

Setting date and time

Kerberos servers require key requests to have a recent time stamp (usually within 300 seconds). Therefore, the printer clock must be in sync or closely aligned with the KDC system clock. You can update the printer clock settings manually. You can also set it to use Network Time Protocol (NTP) to sync automatically with a clock that is also used by the Kerberos server.

Note: We recommend using an NTP server.

1. Access the date and time settings.

   Do either of the following:

   - From the Embedded Web Server, click **Settings** > **Security** > **Set Date and Time**.
   - From the home screen, navigate to the menu screen, and then click **Security** > **Set Date and Time**.

     Note: When accessing the menu screen, log in as an administrator.

2. To manage the settings manually, enter the correct date and time in **`YYYY-MM-DD HH:MM`** format, and then select a time zone from the drop-down menu.

   Notes:

   - Entering manual settings automatically disables the use of NTP.
   - If you select **(UTC+user) Custom** from the Time Zone list, then you must configure more settings under Custom Time Zone Setup.

3. If daylight saving time (DST) is observed in your area, then select **Automatically Observe DST**.
4. If you are located in a nonstandard time zone or an area that observes an alternate DST calendar, then adjust the Custom Time Zone Setup settings.
5. If you want to sync to an NTP server rather than update the clock settings manually, then select **Enable NTP**. Then type the IP address or host name of the NTP server.
6. If the NTP server requires authentication, then select the preferred method from the Authentication menu. Then click **Install MD5 key** or **Install Autokey IFF params** to browse to the file containing the matching NTP authentication.
7. Click **Submit** to save the changes, or click **Reset Form** to restore the default settings.

Managing certificates and other settings

The Certificate Management menu is used for configuring printers to utilize certificates for establishing SSL, IPSec, and 802.1x connections. Additionally, devices utilize certificates for LDAP over SSL authentication and address book look ups.

Certificates are used by network devices to securely identify other devices. Certificate Authorities (CA) are trusted locations established on the network that are required in secure environments. Otherwise, the default device certificate is used to identify devices on the network.

The process for creating a CA-signed certificate on a device consists of the following activities:

1. Loading of the CA certificate for a certificate authority into the device
2. Creating a Certificate Signing Request (CSR) to obtain a CA-signed device certificate
3. Generating a CA-signed certificate using the CSR by the CA administrator
4. Loading of the CA-signed certificate into the device

Note: You can simplify the process by using the Automatic Certificate Enrollment Application, which is available when an Active Directory environment is used. For more information, see "Appendix C: Automatic Certificate Enrollment application" on page 82.

Installing a Certificate Authority certificate on the device

Note: This feature is available only in network printers or in printers connected to print servers.

The Certificate Authority (CA) certificate is needed so that the printer can trust and validate the credentials of another system on the network. Without a CA certificate, the printer cannot determine whether to trust the certificate that is presented by the system trying to create the secure connection.

Start with the certificate file (.pem format) for the CA that you want to utilize. An example of how to create this file is provided in "Appendix A: CA file creation" on page 82.

1. Open a Web browser, and then type the IP address or host name of the printer.
2. From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **Certificate Authority Management**.

   Notes:

   - This window lets the device administrator load a new CA certificate, delete all CA certificates, and view previously installed CA certificates. To view more details of an installed CA certificate or delete a certificate, click common name link under Certificate Authority Common Name.
   - There are no installed CA certificates to view on this page in new devices.
3. Click **New** to display the Certificate Authority Installation screen.
4. Click **Browse** to select the .pem format certificate authority file.
5. Click **Submit**.

Configuring the device for certificate information

The printer has a self-generated certificate. For some operations (such as 802.1X and IPSec), the printer certificate must be upgraded to a certificate that has been signed by a certificate authority.

The printer includes a process of generating a certificate signing request that can be viewed or downloaded. This facilitates the process of obtaining the signed certificate for the printer.

1. From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **Set Certificate Defaults**.
2. Update the information on the device to fit your organization, and then click **Submit**. For more information, see "Setting certificate defaults" on page 45.
3. From the Certificate Management page, click **Device Certificate Management**.

   Notes:

   - This window lets the device administrator load a new device certificate, delete all device certificates, and view previously installed device certificates. To view more details of an installed device certificate or delete a device certificate, click the certificate common name link under Friendly Name.
   - If you are configuring a new device, then a default self-signed certificate can be viewed on this page.
4. Select the link for the preferred device certificate to obtain the certificate signing request information.

Notes:

- You may use the link to the default certificate created in step 2 or another named certificate. The certificate information is displayed.
- To create other certificates, select **New** to open a Certificate Generation Parameters page. For more information, see "Creating a new device certificate" on page 44.

5 Click **Download Signing Request**, and then save and open the .csr file with a text editor.

Note: The file data is displayed in a standard format that includes the base-64 representation in the application window. Copy and save that information for later use.

Sample certificate request data

```
-----BEGIN CERTIFICATE REQUEST-----
MIIC+TCCAeECAQAwaDEQMA4GA1UEChMHTGV4bWFyazEOMAwGA1UECxQFUFMmU0Qx
EjAQBgNVBAcTCUxleGluZ3RvbjELMAkGA1UECBMCS1kxCzAJBgNVBAYTAlVTMRYw
FAYDVQQDEw1MZXhtYXJrIE1YODEyMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIB
CgKCAQEAtqZYnFpgp9CfvK9cp4WY+jcerPHZkqTdCmyo8TcVArItFXPZk0XwzirZ
UvdA6lgnEc2lA9QG4M9ldm2Kg48qnUvTq8qGbs09FtoS3ayYfY6HxF5NXiQdkJTh
8coS3E3k8ZdM5kP4UFBL3dTf1POTbn1FEQf5YwVCmjxFjDv48xXobzSfu/cqC42e
KZsH4EK6thVOy0KoScPbO5DfI5m0xm6ZRlPjaA6NXu/4pZQYtcuur2hhI/7mrkTb
flX6P9aa2rYL+WDypaNyKJxfygfk090bI+L1rRWHKEKu+GOGfO1+NjFvlm6Kr82C
nOIpV/x8fU6WRFbG7z2gVHisTW1tCwIDAQABoEwwSgYJKoZIhvcNAQkOMT0wOzAP
BgNVHREECDAGhwT/////MAkGA1UdEwQCMAAwHQYDVR0OBBYEFLOZMlQBnxiCfLx3
6VDLpC88HgSzMA0GCSqGSIb3DQEBBQUAA4IBAQBwTHx62ROkOh8IbUv5tTWyYeUc
ayiPW+8ekGyHXajFybXTzKxu2KMUCeQen6CIeGq6MJWiQ1BvpVrIlPsCH8H2mbxD
1dWutSMtDJR6W9Cgk/TLXzKbdhVwd7yY8XhGkigj6c4k2C6dxRNaxvNWU06JCrVp
nfFQvyQq88M7tZuhHbvD8+AkCOsub1hceGSQPhtdo8Ctlu1uDKe99u5uCFabiHs0
sbQJFUkEkA9AJBGLEUjRWl8B+bauYn2eSCgF8+tppgMSKFRays5M3Kt7UPiT5WiE
afQqHR4K/E0mzx+++1S+4yriryt7gNw6ofoJwV4i7YVBOJWHDN5S9e/TIxdX
-----END CERTIFICATE REQUEST-----
```

6 Open another web browser, and go to the CA website.

7 Follow the CA certificate request process as defined for the CA. A sample request is shown in "Appendix B: CA-Signed Device Certificate creation" on page 82.

Note: The result is a CA-signed device certificate file (in .pem format). Save this file on your computer for use in the next steps.

8 From the Embedded Web Server, return to the Device Certificate Management page, and then click **default** > **Install Signed Certificate**.

9 Click **Choose File**, and then select the CA-signed device certificate file that was created in step 8.

10 Click **Submit**.

Note: The printer can now present a valid CA-signed certificate to systems to which it attempts to negotiate an SSL or IPSec connection.

Creating a new device certificate

1 From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management**.

2 Click **Device Certificate Management** > **New**.

3 Enter values in the appropriate fields:

- **Friendly Name**—Type a name for the certificate (64-character maximum).
- **Common Name**—Type a name for the device (128-character maximum).

  Note: Leave this field blank if you want to use the host name for the device.

- **Organization Name**—Type the name of the company or organization issuing the certificate (128-character maximum).
- **Unit Name**—Type the name of the unit within the company or organization issuing the certificate (128-character maximum).
- **Country/Region**—Type the country or region where the company or organization issuing the certificate is located (2-character maximum).
- **Province Name**—Type the name of the province or state where the company or organization issuing the certificate is located (128-character maximum).
- **City Name**—Type the name of the city where the company or organization issuing the certificate is located (128-character maximum).
- **Subject Alternate Name**—Type the alternate name and prefix that conforms to RFC 2459. For example, type an IP address using the format **`IP:1.2.3.4`**, or a DNS address using the format **`DNS:ldap.company.com`**. Leave this field blank if you want to use the IPv4 address (128-character maximum).

4 Click **Generate New Certificate**.

Viewing, downloading, and deleting a certificate

1 From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **Device Certificate Management**.

2 Select a certificate from the list.

The details of the certificate appear in the Device Certificate Management window.

3 Click any of the following:

- **Delete**—Remove a previously stored certificate.
- **Download To File**—Download or save the certificate as a .pem file.
- **Download Signing Request**—Download or save the signing request as a .csr file.
- **Install Signed Certificate**—Upload a previously signed certificate.

Setting certificate defaults

Administrators can set default values for certificates generated for a supported device. The values entered here will be present in all new certificates generated in the Certificate Management task, even though those fields will remain blank on the screen.

1 From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **Set Certificate Defaults**.

2 Enter values in the appropriate fields:

- **Common Name**—Type a name for the device (128-character maximum).

  Note: Leave this field blank to use the domain name for the device.
- **Organization Name**—Type the name of the company or organization issuing the certificate.
- **Unit Name**—Type the name of the unit within the company or organization issuing the certificate.
- **Country/Region**—Type the country or region where the company or organization issuing the certificate is located (2-character maximum).
- **Province Name**—Type the name of the province or state where the company or organization issuing the certificate is located.

- **City Name**—Type the name of the city where the company or organization issuing the certificate is located.
- **Subject Alternate Name**—Type the alternate name and prefix that conforms to RFC 2459. For example, type an IP address using the format **`IP:1.2.3.4`**, or a DNS address using the format **`DNS:ldap.company.com`**. Leave this field blank to use the IPv4 address.

  Note: All fields accept a maximum of 128 characters, except where noted.

3 Click **Submit**.

Setting up a Certificate Authority certificate monitor

Note: This setting is available only in printer models that support Active Directory.

When the device is joined to an Active Directory environment, automatic updates of CA certificates are necessary. The certificate monitor performs this function.

1 From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **CA Cert Monitor Setup**.

2 Enable the CA monitor.

3 Select when and how often the device checks for new CA certificates.

4 Click **Submit**.

Downloading the Certificate Authority certificates

Note: This setting is available only in some printer models.

We recommend retrieving the certificate immediately. The default setting for the automatic download of the CA certificates is 12:00 AM in the device-designated time zone.

1 From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **CA Cert Monitor Setup**.

2 Select **Enable CA Monitor** > **Fetch immediately**.

3 Click **Submit**.

4 Click **Certificate Authority Management**, then review the downloaded CA certificate chain by selecting on the name from the CA Common Name section.

Managing devices remotely

Using HTTPS for device management

Restrict access of the device Embedded Web Server to HTTPS only by turning off the HTTP port, leaving the HTTPS port (443) active. This action ensures that all communication with the device using Embedded Web Server is encrypted.

1 From the Embedded Web Server, click **Settings** > **Security** > **TCP/IP Port Access**.

2 Clear **TCP 8000 (HTTP)** and **TCP 80 (HTTP)**.

3 Click **Submit**.

Setting a backup password

Note: This setting is available only in advanced-security devices.

A backup password lets the Embedded Web Server administrator access security menus regardless of the type of security assigned. It can also be helpful if other security measures become unavailable, such as when there is a network communication problem or an authentication server fails.

Notes:

- In some organizations, security policies prohibit the use of a backup password. Consult your organizational security policies before deploying any security method that might compromise those policies.
- The backup password is not associated with any accounts in the corporate directory. It is a password stored only on the device. Share only with users who are authorized to modify the device security settings.
- The backup password should contain a minimum of eight alphanumeric characters. It must not be a variation of the user ID or a dictionary word.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under the Additional Security Setup Options, click **Backup Password**.
3. Select **Use Backup Password**, and then type and retype the password to confirm it.
4. Click **Submit**.

Setting up SNMP

Simple Network Management Protocol (SNMP) is used in network management systems to monitor network-connected devices for conditions that warrant administrative attention. The Embedded Web Server allows administrators to configure settings for SNMP versions 1 through 3.

Note: We recommend selecting only SNMPv3, setting Minimum Authentication Level to **Authentication, Privacy**, and setting the strongest privacy algorithm.

SNMP Version 1,2c

1. From the Embedded Web Server, click **Settings** > **Security** > **SNMP**.
2. Under SNMP Version 1,2c, select **Enabled**.
3. Select **Allow SNMP Set** to allow administrators to set SNMP variables.
4. Type a name to be used for the SNMP Community identifier. The default community name is “public.”
5. Select **Enable PPM Mib** (Printer Port Monitor MIB) to facilitate the automatic installation of device drivers and other printing applications.
6. Click **Submit** to save the changes, or **Reset Form** to restore the default values.

SNMP Version 3

1. From the Embedded Web Server, click **Settings** > **Security** > **SNMP**.
2. Under SNMP Version 3, select **Enabled**.

   Note: Under SNMP Version 1,2c, clear **Enabled**.

3 Type login information in the SNMPv3 Read/Write User and SNMPv3 Read/Write Password fields to allow remote installation, configuration changes, and device monitoring.

Note: To allow device monitoring only, type login information in the SNMPv3 Read Only User and SNMPv3 Read Only Password fields.

4 From the SNMPv3 Minimum Authentication Level list, select **Authentication, Privacy**.

5 From the SNMPv3 Authentication Hash list, select **MD5** or **SHA1**.

6 From the SNMPv3 Privacy Algorithm list, select the strongest setting supported by your network environment.

7 Click **Submit** to save the changes, or **Reset Form** to restore the default values.

Setting SNMP Traps

After configuring SNMP Version 1,2c or SNMP Version 3, you can further customize which alerts are sent to the network management system by designating SNMP “traps,” or events that trigger an alert message.

1 From the Embedded Web Server, click **Settings** > **Security** > **SNMP**.

2 Click **Set SNMP Traps**.

3 From the IP Address list, click one of the blank IP address entries (shown as **0.0.0.0**).

4 Under Trap Destination, enter the IP address of the network management server or monitoring station, and then select the conditions for which you want to generate an alert.

5 Click **Submit** to save the changes, or **Reset Form** to clear all fields.

Configuring security audit log settings

Note: This setting is available only in advanced-security devices and in simple-security devices with color LCD control panels.

The security audit log lets administrators monitor security-related events on a device, including failed user authorization, successful administrator authentication, and Kerberos file uploads to a device. By default, security logs are stored on the device, but may also be transmitted to a network syslog server for further processing or storage.

We recommend enabling audit in secure environments.

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Audit Log**.

2 Select **Enable Audit** to activate security audit logging.

3 To use both remote syslog server and internal logging, type the IP address or host name of the Remote Syslog Server.

4 Select **Enable Remote Syslog** to transmit log events to a network syslog server.

Note: Enable Remote Syslog is available only after an IP address or host name is entered.

5 Enter the Remote Syslog Port number used on the destination server.

Note: The default value is 514.

6 From the Remote Syslog Method menu, select one of the following:

- **Normal UDP**—Send log messages and events using a lower-priority transmission protocol.
- **Stunnel**—If implemented on the destination server.

7 From the Remote Syslog Facility menu, select a facility code for events to be logged to on the destination server. All events sent from the device are tagged with the same facility code to aid in sorting and filtering by network monitoring or intrusion detection software.

Note: Steps 3 through 7 and 9 are valid only if Remote Syslog is enabled.

8 From the Severity of events to log menu, select the priority level cutoff (0–7) for logging messages and events.

Note: The highest severity is 0, and the lowest is 7. The selected severity level and anything higher are logged. For example, if you select **4 - Warning**, then severity levels 0–4 are logged.

9 Select **Remote Syslog non-logged events** to send all events regardless of severity to the remote server.

10 In the Admin's e-mail address field, type one or more e-mail addresses (separated by commas) to notify administrators of certain log events. Then select from the following options:

- **E-mail log cleared alert**—Indicates when the Delete Log button is clicked.
- **E-mail log wrapped alert**—Indicates when the log becomes full and begins to overwrite the oldest entries.
- **Log full behavior**—Provides a drop-down list with two options:
  - Wrap over oldest entries.
  - E-mail log then delete all entries.
- **E-mail % full alert**—Indicates when log storage space reaches a certain percentage of capacity.
- **% full alert level (1–99%)**—Sets how full the log must be before an alert is triggered.
- **E-mail log exported alert**—Indicates when the log file is exported.
- **E-mail log settings changed alert**—Indicates when the log settings are changed.
- **Log line endings**—Sets how the log file terminates the end of each line. Select a line ending option from the drop-down menu.
- **Digitally sign exports**—Adds a digital signature to each exported log file.

Note: To use e-mail alerts, click **Submit** to save the changes, and then click **Setup E-mail Server** to configure SMTP settings.

11 Click **Submit** to save the changes, or **Reset Form** to restore the default settings.

E-mail server setup

To use the e-mail notification of logged events, set up the e-mail server.

1 From the Security Audit Log main screen, click **Setup E-mail Server**.

2 Under SMTP Setup, type the IP address or host name of the Primary SMTP Gateway the device uses for sending e-mail.

3 Enter the Primary SMTP Gateway Port number of the destination server. The default value is 25.

4 If you are using a secondary or backup SMTP server, then type the IP address/host name and SMTP port for that server.

5 For SMTP Timeout, enter the number of seconds (5–30) the device waits for a response from the SMTP server before timing out. The default value is 30 seconds.

6 To receive responses to messages sent from the printer (in case of failed or bounced messages), type the reply address.

7 From the Use SSL/TLS list, select **Disabled**, **Negotiate**, or **Required** to specify whether e-mail is to be sent using an encrypted link.

8 If your SMTP server requires user credentials, then select an authentication method from the SMTP Server Authentication list. The default setting is “No authentication required.”

9 From the Device-Initiated E-mail list, select **None** for no authentication, or **Use Device SMTP Credentials** if authentication is required.

10 From the User-Initiated E-mail list, select **None** for no authentication, or **Use Device SMTP Credentials** if authentication is required.

11 If the device must provide credentials to send e-mail, then enter the information appropriate for your network under Device Credentials.

12 Click **Submit** to save the changes, or **Reset Form** to restore the default settings.

Managing the security audit log

- To view or save a text file of the current syslog, click **Export Log**.
- To delete the current syslog, click **Delete Log**.

Updating firmware

Devices inspect all downloaded firmware packages for a number of required attributes before adopting and executing the packages. The firmware must be packaged in a proprietary format and encrypted with a symmetric encryption algorithm through an embedded key that is known only to Lexmark. However, the strongest security measure comes from requiring all firmware packages to include multiple digital 2048-bit RSA signatures from Lexmark. If these signatures are not valid, or if the message logs indicate a change in firmware after the signatures were applied, then the firmware is discarded.

1 From the Embedded Web Server, click **Settings** > **Update Firmware**.

2 Browse to the flash file.

3 Click **Submit**.

Managing other access functions

Configuring confidential printing

Note: This feature is available only in printer models that allow PIN selection from the control panel.

Users printing confidential or sensitive information may use the confidential print option. This option allows print jobs to remain in the print queue until the user enters a PIN on the printer control panel.

1 From the Embedded Web Server, click **Settings** > **Security** > **Confidential Print Setup**.

2 Enter an option for the following:

Use	To
Max Invalid PIN Off 2–10	Set the number of times an invalid PIN can be entered. **Notes:** • A value of zero turns off this setting. • When the limit is reached, the print jobs for that user name and PIN are deleted. • This menu item appears only when a hard disk is installed.
Confidential Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set the expiration time for confidential print jobs. **Notes:** • If this menu item is changed while confidential print jobs reside in the printer memory or hard disk, then the expiration time for those print jobs does not change to the new default value. • If the printer is turned off, then all confidential jobs held in the printer memory are deleted.
Repeat Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set the expiration time for a print job that you want to repeat.
Verify Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set the expiration time that the printer prints a copy for the user to examine its quality, before printing the remaining copies.
Reserve Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set the expiration time that the printer stores print jobs for printing later.
Note: Off is the factory default setting.	

3 Click **Submit**.

Setting login restrictions

Note: This setting is available only in advanced-security devices.

To prevent malicious access to a device, restrict the number of invalid login attempts and require a lockout time before letting users retry logging in.

Many organizations establish login restrictions for information assets such as workstations and servers. Make sure that device login restrictions also comply with organizational security policies.

1. From the Embedded Web Server, click **Settings** > **Security** > **Miscellaneous Security Settings** > **Login Restrictions**.
2. Enter the appropriate login restrictions:
   - **Login failures**—Specify the number of times a user can attempt login before being locked out.
   - **Failure time frame**—Specify how long before lockout takes place.
   - **Lockout time**—Specify how long the lockout lasts.
   - **Panel Login Timeout**—Specify how long a user may be logged in before being automatically logged out.
   - **Remote Login Timeout**—Specify how long a user may be logged in remotely before being automatically logged out.
3. Click **Submit**.

Enabling and disabling USB host ports

Note: This setting is available only in some printer models.

USB host ports on devices do the following:

- Detect and display the files that are stored in the inserted USB mass storage devices, such as a flash drive.
- Print a supported file from the flash drive or initiate a firmware update.
- Scan data directly into the flash drive.
- Access can be restricted or permitted depending on the schedule.

In secure environments, devices can be configured to limit these operations, or not to allow them at all.

Device administrators can disable the front USB port during setup using access control restrictions. Devices have a rear USB host port designed for card readers and HID devices, such as a keyboard.

To restrict access to the front USB port, apply a security template to the appropriate access control. For more information, see “Using a security template to control function access” on page 32.

To set the schedule that restricts access at a specified time, do the following:

1. From the Embedded Web Server, click **Settings** > **Security** > **Schedule USB Devices**.
2. From the Disable Devices menu, select **Printing from any USB device** or **Printing from flash drives only**.

   Note: All scheduled Disable actions are affected by this setting.
3. Click **Submit**.
4. Enable or disable the use of USB devices on certain days or during certain hours. To create a schedule:
   a. Select a device action, and then set the time and day for the device to perform the action.
   b. Add the entry.

   Notes:

   - Use of USB devices is enabled by default.
   - For each Disable schedule entry, create an Enable schedule entry to reactivate use of the USB devices.

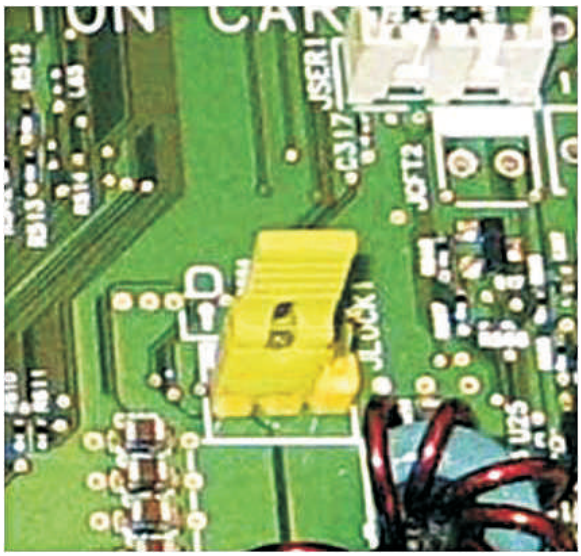
Enabling the security reset jumper

Note: This feature is available only in some printer models.

If the device is locked down due to a forgotten administrator password or lost network connectivity, then you can recover the device by resetting it. Access the controller board and move the reset jumper to cover the middle and unexposed prongs.

Using a cable lock to secure access to the controller board ensures that the device is not maliciously reset.

Warning—Potential Damage: Resetting the device deletes all customer data.



The secure reset feature requires specifying in the Embedded Web Server the effect of using the *security reset jumper*, which is located on the controller board.

1. From the Embedded Web Server, click **Settings** > **Security** > **Miscellaneous Security Settings**.
2. From the Security Reset Jumper list, select one of the following:
   - **No Effect**—Remove access to *all* security menus. This option should be used with caution.
   - **Access controls = "No security"**—Remove security only from the function access controls.
   - **Reset factory security defaults**—Restore all security settings to the default values.
3. Click **Submit** to save the changes, or **Reset Form** to restore the default settings.

Warning—Potential Damage: If you selected **No Effect** and the device is locked down, then you cannot access the security menus. To replace the device controller board and regain access to the security menus, a service call is required.

Enabling Operator Panel Lock

Use the Operator Panel Lock feature to lock a device so that the control panel cannot be used for any user operations or configurations. If the device has a hard disk, then incoming print and fax jobs are temporarily stored instead of being printed. The device can be unlocked by entering a valid user credential.

Configure this feature by creating an authentication building block, then applying it against the control panel lock function access control using the Embedded Web Server. To access the device control panel, provide your credentials.

Notes:

- This feature requires a hard disk.
- When the device is locked, incoming print and fax jobs are stored in the printer hard disk. If the hard disk is encrypted, then the jobs stored are encrypted.
- When the device is unlocked, jobs received during the locked period are printed. Confidential print jobs received during the lock state are not printed, but are available through the confidential print job menu on the control panel.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Advanced Security Setup, click **Access Controls** > **Management**.
3. Set the Operator Panel Lock to **Enable**.
4. Click **Submit**.

Securing network connections

Configuring 802.1X authentication

Though normally associated with wireless devices and connectivity, 802.1X authentication supports both wired and wireless environments. 802.1X is located within the wireless menu when wireless is enabled on the device.

The following network authentication mechanisms can be included in the 802.1X protocol negotiation:

- EAP-MD5
- EAP-TLS
- EAP-TTLS with the following methods:
  - CHAP
  - MSCHAP
  - MSCHAPv2
  - PAP
- EAP_MSCHAPV2
- PEAP
- LEAP

Use	To
EAP-MD5	Require a device login name and password.
EAP-TLS	Require a device login name, CA certificate, and signed device certificate.
EAP-TTLS	Require a device login name and password, and CA certificate.
EAP_MSCHAPV2	Require a device login name and password.
PEAP	Require a device login name and password, and CA certificate.
LEAP	Require a device login name and password.

Note: Make sure that all of the devices participating in the 802.1X process support the same EAP authentication type.

1 From the Embedded Web Server, click **Settings** > **Security** > **802.1x**.

2 Under 802.1x Authentication, do the following:

   a Select **Active** to enable 802.1X authentication.

   b Type the login name and password the printer uses to log in to the authentication server.

   c Select the **Validate Server Certificate** check box to require verification of the security certificate on the authenticating server.

   Notes:

   - If using digital certificates to establish a secure connection to the authentication server, configure the certificates on the printer before changing 802.1X authentication settings. For more information, see "Managing certificates and other settings" on page 42.
   - Server certificate validation is integral to TLS (Transport Layer Security), PEAP (Protected Extensible Authentication Protocol), and TTLS (Tunneled Transport Security Layer).

   d Select **Enable Event Logging** to log activities related to 802.1X authentication.

   Warning—Potential Damage: To reduce flash part wear, use this feature only when necessary.

   e From the 802.1x Device Certificate list, select the digital certificate that you want to use. If only one certificate is installed, then **default** is the only option that appears.

3 Under Allowable Authentication Mechanisms, select the authentication protocols that the printer recognizes by clicking the check box next to each applicable protocol.

4 From the TTLS Authentication Method list, select the authentication method to accept through the secure tunnel created between the authentication server and the printer.

5 Apply the changes.

   Note: The print server resets when changes are made to settings marked with an asterisk (*) on the Embedded Web Server.

Configuring IP security settings

Apply IPSec between the device and the workstation or server to secure traffic between the systems with a strong encryption. The devices support IPSec with preshared keys and certificates. Both modes can be used simultaneously.

In preshared key mode, devices are configured to establish a secure IPSec connection with up to five other systems. Devices and the systems are configured with a pass phrase that is used to authenticate the systems and to encrypt the data.

In certificate mode, devices are configured to establish a secure IPSec connection with up to five systems or subnets. Devices exchange data securely with a large number of systems, and the process is integrated with a PKI or CA infrastructure. Certificates provide a robust and scalable solution, without configuring or managing keys and pass phrases.

1 From the Embedded Web Server, click **Settings** > **Network/Ports** > **IPSec**.

2 Configure the settings.

   - **IPSec Enable**—Enable or disable the IP security settings of your printer.
   - **Connections**—Configure the authenticated connections of your printer.
   - **Settings**—Specify the encryption and authentication methods of your printer.

3 Click **Submit**.

Configuring the TCP/IP port access setting

You can control your network device activities by configuring your device to filter out traffic on specific network ports. Protocols (such as FTP, HTTP, and Telnet) can be disabled.

Port filtering on devices disables network ports individually. When a port is closed, a device does not respond to traffic on the specified port whether or not the corresponding network application is enabled. We recommend closing any ports that you do not plan to use under standard operation by clearing them.

This feature lets you set access settings on the different TCP/IP ports of the device.

1. From the Embedded Web Server, click **Settings** > **Security** > **TCP/IP Port Access**.
2. Click the check box of the TCP/IP port to change its access setting.
3. Click **Submit**.

Setting the restricted server list

Devices can be configured to allow connection only from a list of specified TCP/IP addresses. This action blocks all TCP connections from other addresses, protecting the device against unauthorized printing and configuring.

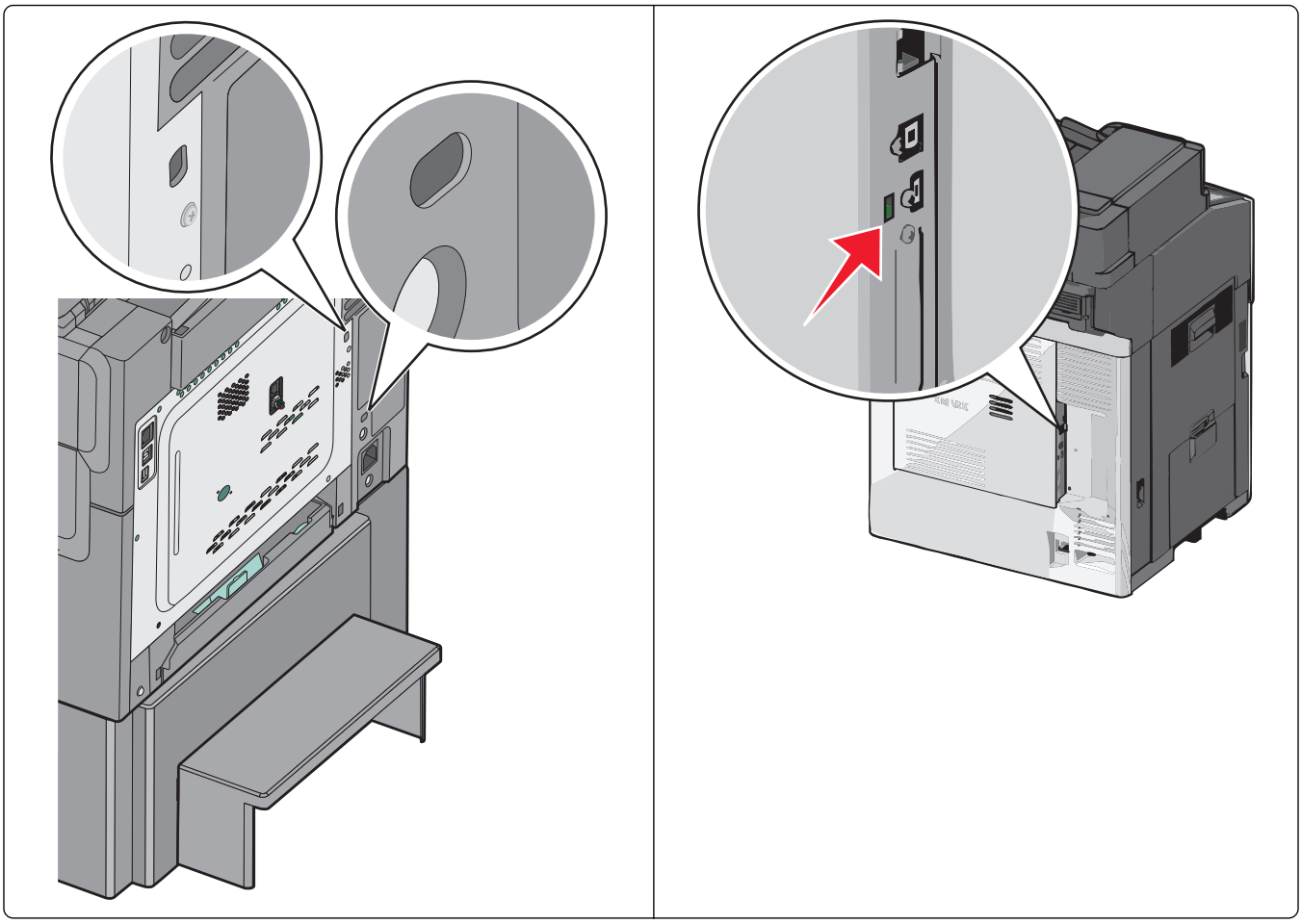
1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **TCP/IP**.
2. In the Restricted Server List field, type up to 50 IP addresses, separated by commas, that are allowed to make TCP connections.
3. From the Restricted Server List Options menu, set the blocking option.
4. Click **Submit**.

Securing data

Physical lock

Most Lexmark printers support cabled computer locks used to secure the critical and sensitive components of the device, such as the controller board and hard disk. These locks let you identify whether the physical components containing sensitive data on the devices have been tampered with.

The following shows the most common security slot locations:



Statement of Volatility

Type of memory	Description
Volatile memory	The printer uses standard random access memory (RAM) to buffer temporarily user data during simple print and copy jobs.
Non-volatile memory	The printer may use two forms of non-volatile memory: EEPROM and NAND (flash memory). Both types are used to store the operating system, printer settings, network information, scanner and bookmark settings, and embedded solutions.
Hard disk memory	Some printers may have a hard disk drive installed. The printer hard disk is designed for printer-specific functionality. The hard disk lets the printer retain buffered user data from complex print jobs, form data, and font data.

Erase the content of any installed printer memory in the following circumstances:

- The printer is decommissioned.
- The printer hard disk is replaced.
- The printer is moved to a different department or location.

- The printer is serviced by someone from outside your organization.
- The printer is removed from your premises for service.
- The printer is sold to another organization.

Disposing of a printer hard disk

- **Degaussing**—Flushes the hard disk with a magnetic field that erases stored data
- **Crushing**—Physically compresses the hard disk to break component parts and render them unreadable
- **Milling**—Physically shreds the hard disk into small metal bits

Note: To guarantee that all data are completely erased, destroy physically each hard disk where data is stored.

Erasing volatile memory

The volatile memory (RAM) installed on your printer requires a power source to retain information. To erase the buffered data, simply turn off the device.

Erasing non-volatile memory

There are several methods for erasing data stored in non-volatile memory, depending on the type of memory device installed and the type of data stored.

- **Individual settings**—Erase individual printer settings using the control panel or the Embedded Web Server. For more information, see the printer *User's Guide*.
- **Device and network settings**—Erase device and network settings, and restore factory defaults by resetting the NVRAM from the configuration menu. You can also use the Restore Factory Defaults setting from the Embedded Web Server.
- **Security settings**—Restore factory defaults or erase security settings by selecting an action for the Security Reset Jumper setting in the Embedded Web Server. Then move the hardware jumper on the controller board.
- **Fax data**—If no hard disk is installed, or fax storage uses NAND, then erase fax settings and data by resetting the NVRAM from the configuration menu. You can also use the Restore Factory Defaults setting from the Embedded Web Server.

  Note: If your printer has a hard disk that has been partitioned for fax storage, then reformat that partition to erase fax data and settings.
- **Embedded solutions**—Erase information and settings associated with embedded solutions by uninstalling the solution, or by restoring factory defaults from the configuration menu. You can also use the Restore Factory Defaults setting from the Embedded Web Server.

Disk encryption

Enable hard disk encryption to prevent loss of sensitive data if the printer or its hard disk is stolen. When hard disk encryption is activated, the encryption key to be used (256-bit AES symmetric encryption) is pseudo-randomly generated. This encryption key is stored in a proprietary way in the NV memory of the device. The hard disk is then reformatted with the encryption key. Any data on the disk is lost. The key, which is unique to the device, is not stored on the hard disk itself. So if the hard disk is removed from the device, then the contents of the hard disk are indecipherable.

When an encrypted hard disk is moved to another supported device, the hard disk attempts to verify its encryption key with the device encryption key. Because the encryption key on the hard disk is different than the device encryption key, the verification fails. The device prompts to reformat the hard disk with a new encryption key, replacing the existing encrypted data on the hard disk.

Note: Some printer models may not have a printer hard disk installed.

1. From the Embedded Web Server, click **Settings** > **Security** > **Disk Encryption**.

   Note: Disk Encryption appears in the Security menu only when a formatted, working hard disk is installed.

2. From the Disk Encryption menu, select **Enable**.

   Notes:

   - **Disable** is the factory default setting.
   - Changing this setting causes the printer to undergo a power-on reset.

   Warning—Potential Damage: Changing the setting for disk encryption erases the contents of the hard disk.

3. Click **Submit** to proceed with disk encryption.

   Note: Encryption takes approximately two minutes to complete. A status bar appears on the control panel indicating the progress of the disk encryption task.

   Warning—Potential Damage: Do not turn off the printer during the encryption process.

4. Refresh the web page to return to the Embedded Web Server.

Checking disk encryption status

1. From the Embedded Web Server, click **Select Reports** > **Select Device Settings**.
2. In the Other Settings section, check the value for Disk Encryption.

Note: You can also check the disk encryption status using Markvision™ Enterprise. Markvision provides an advanced search feature to view the disk encryption status on a fleet of devices.

Erasing printer settings

Most devices use two forms of non-volatile memory—EEPROM and NAND. These components store the device settings, network information, embedded solution applications, various scanner settings, and bookmark settings. No user-related print, copy, or scan data is stored in non-volatile memory.

The user may erase selected groups of data or all data. There is one “restore defaults” setting defined in the standard administrator menu to restore the basic operator settings. This setting is easily accessible but only restores basic settings. From the configuration menu or the device Embedded Web Server, you can add more options for erasing groups of settings (printer, settings, or application settings).

The Erase Printer Memory option (also called Wipe All Settings on some devices) erases all contents stored on non-volatile memory. Using Wipe All Settings completely clears all device settings, including network and security settings. Installed applications and their settings are also removed.

Clearing selected settings

Note: This menu is available only in some printer models.

1. From the Embedded Web Server, click **Settings** > **Security** > **Restore Factory Defaults** > **Restore Settings**.
2. Select one of the following settings:
   - **Printer Settings**—Restore all non-critical base device settings to the factory default. It does not affect network settings or connections, and display language.
   - **Network Settings**—Reset all network and port settings.
   - **Apps**—Restore the factory default configuration of applications. All non-factory installed applications are removed, all application settings are reset, and SE logs are cleared.
3. Click **Restore**.

Clearing all settings

Note: After all settings are cleared or reset, network connectivity cannot be retained because the device is in the out-of-box shipping state. You are prompted to restart the device for transport. There is no network connectivity until the device is restarted to ensure that the original ship configuration is maintained.

Note: This menu is available only in some printer models.

1. From the Embedded Web Server, click **Settings** > **Security** > **Restore Factory Defaults** > **Erase Printer Memory**.
2. Select the check box to confirm, and then click **Erase**.

While clearing the settings, the "Restoring Factory Defaults" message appears on the display, and then the device reboots to the initial setup wizard screen. Turn off the device to restore factory settings completely.

This feature erases all device settings stored in NVRAM, including network, security, and application settings, and all pending jobs. Installed applications and settings are also removed. If there is no hard disk installed, then pending fax data are also removed.

Disk file wiping

The file-based disk wipe sanitizes the portion of the hard disk where data was stored after a job has been processed to remove any residual data.

Some devices use hard disks to temporarily buffer scan, fax, print, and copy data that exceed the amount of RAM installed on the device. Buffered data can be deleted from the hard disk immediately after an original scan, fax, print or copy job is complete. Additionally, devices can temporarily hold print jobs on a hard disk using the Confidential Print and Print and Hold features or when held fax jobs are received and sent. This data remains on the hard disk until you print or delete the job, or until the document expires through the job expiration feature.

When a data file is deleted from a hard disk, the data that is associated with that file is not actually deleted. This data remains on the hard disk and can be recovered with substantial effort. All printer models with a hard disk support an additional mechanism for protecting residual data, which is hard disk file wiping.

Hard disk file wiping actively overwrites any job data files that are deleted. You have a choice of single or multiple passes to overwrite data, which removes all data residue from the deleted file.

All permanent data on the hard disk is preserved, such as downloaded fonts, macros and held jobs. The multiple pass wiping process adheres to NIST and DoD (DoD 5220.22-M) guidelines for overwriting confidential data.

Erasing temporary data files from the hard disk

On devices that contain a hard disk, use the Erase Temporary Data Files option to remove residual confidential material and free up memory space. This setting securely uses random data patterns to overwrite files stored on the hard drive that have been marked for deletion. Overwriting can be accomplished with a single pass for a quick wipe, or with multiple passes for greater security.

Note: If there is no hard disk installed on your device, then Erase Temporary Data Files is not available in the main Security menu.

1. From the Embedded Web Server, click **Settings** > **Security** > **Erase Temporary Data Files**.

   Note: Wiping Mode can only be set to **Auto**. This setting automatically wipes the files that are no longer required for printing.

2. Select the Automatic Method setting:
   - **Single Pass**—Overwrite the printer hard disk in a single pass with a repeating bit pattern. This setting is the factory default.
   - **Multi-pass**—Overwrite the printer hard disk with random bit patterns several times, followed by a verification pass. A secure overwrite is compliant with the DoD 5220.22M standard for securely erasing data from a hard disk. Use this method to wipe highly confidential information.
3. Click **Submit**.

Erasing hard disk data

Completely erase the hard disk data to wipe it clean when doing any of the following:

- Decommissioning the device
- Replacing the hard disk
- Moving the device to a different department or location
- Preparing the device to be serviced by someone outside the organization
- Removing the device from the premises of service

Warning—Potential Damage: This action deletes all the contents of a hard disk, including font data, forms data, macros, and any buffered fax, Confidential Print, or Print and Hold data.

1. From the Embedded Web Server, click **Settings** > **Security** > **Restore Factory Defaults** > **Erase Hard Disk**.
2. Select either of the following:
   - **Single Pass Erase**—Overwrite the hard disk in a single pass.
   - **Multiple Pass Erase**—Overwrite the hard disk with random bit patterns several times, followed by a verification pass. A secure overwrite is compliant with the DoD 5220.22-M standard for securely erasing data from a hard disk. Use this method when wiping highly confidential information.
3. Select the check box to confirm.
4. Click **Submit**.

Note: Do not turn off the printer while erasing hard disk data. This process may take several hours to complete.

Out-of-service wiping

This menu lets you clear all settings, applications, and pending job or fax data stored in the device, erase all contents on the hard disk, or both. Doing both restores the device to the original factory default settings, which includes network settings.

Out-of-service wiping allows users to erase the printer memory and completely wipe the hard disk in one process. When removing a device from a secure environment, we recommend performing this procedure to make sure that no customer data remains.

1. From the Embedded Web Server, click **Settings** > **Security** > **Restore Factory Defaults**.
2. Depending on your printer firmware version, click **Out of Service Erase** or **Out of Service Wiping**, and then select one or more of the following:
   - **Erase Printer Memory**—Erase all settings, applications, and job data.
   - **Erase Hard Disk**—Erase all the contents of the hard disk.
   - **Perform Disk Wipe**—Clear all job data.
   - **Clear Settings and Solutions**—Clear all settings and applications.

   Note: In some printer models, the Out of Service Wiping setting is visible only if security is enabled. Make sure that the access control for the security menus is set to use any security template other than No Security.
3. If you selected either Erase Hard Disk or Perform Disk Wipe, select either of the following:
   - **Single Pass Erase**—Erase the content on the printer hard disk in a single pass with a repeating bit pattern.
   - **Multiple Pass Erase**—Erase the content on the printer hard disk with random bit patterns several times, followed by a verification pass. A secure erase is compliant with the DoD 5220.22-M standard for securely erasing data from a hard disk. Highly confidential information should be erased using this method.
4. Confirm your selection.
5. Apply the changes.

   Warning—Potential Damage: Do not turn off the printer while erasing data. This process may take several hours to complete.

Security solutions

Lexmark products support installable solutions that are developed to utilize the Embedded Solutions Framework (eSF) and Cloud Solutions Framework (cSF) platforms in the device. These solutions extend the basic capabilities of the device, often enhancing the security of the device or the customer environment. Some device models come with selected solutions pre-installed such as Common Criteria configured models.

Print Release

This solution consists of an externally hosted document management application and a device-resident application providing the local user interface for selecting and releasing print jobs. All documents are held in a print queue until their owners release them. The queue can be hosted on-premise or in the cloud, which offers more features and benefits. To release your documents, enter your credentials at the device, and then select the documents you want to print.

For more information on how to configure and use the application, see the documentation that came with the Lexmark™ Print Management application.

Secure Held Print Jobs

This application prevents accidental exposure of sensitive or confidential business information by holding jobs at the printer until an authorized user releases the job for printing. You can send and store jobs on printers with hard disks and release them using a card or a PIN.

To clear all DRAM used to store job data after a job is completed, from Advanced Settings, enable **Clear Print Data**.

For more information on configuring and using the application, see *Secure Held Print Jobs Administrator's Guide*.

Card Authentication

Lexmark devices support a number of different contactless card solutions (applications) for basic badge authentication where your identity is linked to your ID badge. The application verifies the badge ID and retrieves your user information so that it can be used for accessing held print jobs. It can also be used for identifying the source of scanned documents or identifying you for other identification purposes.

The application is designed to work with a card reader driver application. The card reader driver provides card ID data to other solutions that manage workflows, or access to device functions. The background and idle screen control application is also included to restrict control of the operator panel primary menus.

For more information on how to configure and use the application, see *Card Authentication Administrator's Guide*.

Smart Card authentication

The Common Access Card (CAC) and Personal Identity Verification (PIV) authentication solution extends the card authentication applications to provide safe workflow processes throughout federal government operations. The solution provides more control over the security of networked Lexmark MFPs. The same solution also supports SIPR token cards (using a different card interface application) to provide access over the Secret Internet Protocol Router Network.

For more information on how to configure and use this application, see *Smart Card Authentication Administrator's Guide*.

Security scenarios

Scenario: Printer in a public place

To provide simple protection for a printer located in a public space, such as a lobby, use a password and PIN. Administrators can assign a single password or PIN for all authorized users of the device, or separate codes to protect individual functions. Anyone who knows a password or PIN can access any functions protected by that code.

Setting up simple-security devices

1. From the Embedded Web Server, click **Settings** > **Security** > **Panel PIN Protect**.
2. Enter a user PIN, and then reenter the PIN to confirm it.
3. Enter an administrator PIN, and then reenter the PIN to confirm it.
4. Click **Modify**.
5. Select the appropriate security template setting for each function you want to protect.
6. Click **Submit**.

Notes:

- When an access control is set to user PIN, any administrator PIN set for your printer is valid for that access control. For more information, see "Simple-security device access controls" on page 30.
- You can also create a Web Page password for the administrator to restrict access to the security settings. For more information, see "Creating a web page password and applying access control restrictions" on page 30.

Setting up advanced-security devices

1. Create a building block password or PIN.
   a. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
   b. Under Advanced Security Setup, click either **PIN** or **Password**, and then configure it.
   c. Click **Submit**.

   Note: For more information, see "Creating a password building block for advanced security setup" on page 34 and "Creating a PIN building block for advanced security setup" on page 33.
2. Create a security template.
   a. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Security Template** > **Add a Security Template**.
   b. Type a security template name containing up to 128 characters. It can be helpful to use a descriptive name, such as "Administrator_Only" or "Common_Functions_Template."
   c. From the Authentication Setup menu list, select the PIN or password created in step 1.
   d. Save the template.

3 Assign security templates to access controls.

   a From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Access Controls**.

   b If necessary, expand or click a specific folder to view a list of available functions.

   c From the drop-down menu next to the name of each function you want to protect, select the security template created in step 2.

   d Click **Submit**.

   Note: To gain access to any function controlled by this security template, users are required to enter the appropriate PIN or password.

Scenario: Standalone or small office

Note: This feature is available only in advanced-security devices.

Create and store internal accounts within the Embedded Web Server for authentication or authorization in the following conditions

- Your printer is not connected to a network.
- You do not use an authentication server to grant users access to devices.

For small office usage, an internal account building block should be defined. Each user is added as an entry in the internal account. You can set up multiple groups (for example, admin, managers, function1, function2) with each user associated with one or more groups. You can define one or more templates. Within a template definition, specify the authorization as the internal account building block name and then the groups that have that authorization. Then specify the access controls for each template.

Step 1: Set up individual user accounts

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.

2 Under Advanced Security Setup, click **Internal Accounts**, and then configure it.

   For more information on configuring individual user accounts, see “Setting up internal accounts” on page 34.

Step 2: Create a security template

1 From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Security Template** > **Add a Security Template**.

2 Type a security template name containing up to 128 characters. It can be helpful to use a descriptive name, such as ”Administrator_Only” or “Common_Functions_Template.”

3 From the Authentication Setup menu, select a building block method for authenticating users. This list is populated with the authentication building blocks that have been configured on the device.

   Note: Certain building blocks (such as PINs and passwords) do not support separate authorization.

4 To use authorization, click **Add authorization**, and then select a building block from the Authorization Setup menu. This list is populated with the authorization building blocks available on the device.

   Note: Certain building blocks (such as PINs and passwords) do not support separate authorization.

5 To use authorization groups, click **Modify Groups**, and then select one or more groups to include in the security template.

6 Save the template.

Step 3: Assign security templates to access controls

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Access Controls**.
2. If necessary, click **Expand All** or click a specific folder to view a list of available functions.
3. Select a security template for each function you want to protect.
4. Click **Submit**.

   Note: Users are now required to enter the appropriate credentials to access any function controlled by a security template.

Scenario: Network running Active Directory

Note: This feature is available only in advanced-security devices.

On networks running Active Directory, administrators can use the LDAP+GSSAPI capabilities of the device to use the authentication and authorization services deployed on the network. User credentials and group designations can be pulled from the existing network, making access to the printer as seamless as other network services. The device automatically downloads the domain controller CA certificate chain.

Before configuring the Embedded Web Server to integrate with Active Directory, check the following:

- Domain name
- User ID (for the domain)
- Password (for the User ID)

For more information, see “Connecting your printer to an Active Directory domain” on page 35.

Create a security template

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Security Template** > **Add a Security Template**.
2. Type a security template name containing up to 128 characters. It can be helpful to use a descriptive name, such as ”Administrator_Only” or “Common_Functions_Template.”
3. From the Authentication Setup list, select the name given to your authentication client application or building block setup.
4. Click **Add authorization**, and then select the name given to your authentication client application or building block setup.
5. To use groups, click **Modify Groups**, and then select one or more of the groups listed in your Active Directory Group Names list.
6. Save the template.

Assign security templates to access controls

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Access Controls**.
2. Select the newly created security template for each function you want to protect.
3. Click **Submit**.

   Note: Users are required to enter the appropriate credentials in order to gain access to any function controlled by the security template.

Scenario: More security-aware environment (802.1X) and SNMPv3

In this scenario, the network uses 802.1X communication to restrict network access, and secure LDAP to enforce authentication and authorization for access of device functions. Also, device access is logged and the device is remotely managed using SNMPv3.

1. Load a CA certificate for the authority you want into the device. For more information, see "Installing a Certificate Authority certificate on the device" on page 43.
2. Create the CA-signed device certificate and load it into the device. For more information, see "Configuring the device for certificate information" on page 43.
3. Set up a secure a connection using the 802.1X authentication. Make sure that the usage of 802.1X is specified in the CA-signed certificate. For more information, see "Configuring 802.1X authentication" on page 54.
4. To allow remote management of SNMPv3, enable SNMPv3, and then disable SNMPv1,2. For more information, see "Setting up SNMP" on page 47.

   Note: Specify the user credentials for Read/Write and optionally Read/Only users. We recommend setting the authentication level to **Authentication, Privacy**.
5. Configure audit logging. For more information, see "Configuring security audit log settings" on page 48. Remote system log for events can be specified by identifying the syslog server and selecting the appropriate settings. We recommend specifying an e-mail address for the administrator and selectingn the events to be e-mailed.
6. Set up secure LDAP authentication and authorization. For more information, see "Using LDAP" on page 37.

   Note: Specify the LDAP setup name, server address, port, and other appropriate settings. To enhance security, use a TLS or SSL/TLS connection.
7. Create one or more security templates using the LDAP building block, and then assign them to the appropriate access controls. For more information, see "Using a security template to control function access" on page 32.

Scenario: Network-based usage restrictions using access card

Note: Before you begin, make sure that the Smart Card Authentication bundle is installed.

In this scenario, the network uses an Active Directory environment. A SIPR access card and a password are used for device authentication and authorization. Device access is audited and the device is remotely managed using SNMPv3. All ports except the HTTPS (443) port and the SNMPv3 port are blocked.

1. Configure the Active Directory domain. For more information, see "Connecting your printer to an Active Directory domain" on page 35.

   Make sure to specify the following:

   - Domain name
   - User ID
   - Password

   Note: Make sure to enable **CA Certificate Monitoring**.
2. Specify an LDAP building block and security template, and then configure CA certificate monitoring. For more information, see "Setting up a Certificate Authority certificate monitor" on page 46.

3. Configure the Smart Card Authentication bundle. For more information, see *Smart Card Authentication Administrator's Guide*.

   Note: To secure access to all applications and printer functions on the home screen, configure Background and Idle Screen. For more information, see *Background and Idle Screen Administrator's Guide*.

4. To secure a network, restrict all network connections that are not used. For more information, see "Configuring the TCP/IP port access setting" on page 56.

5. To allow remote management of SNMPv3, enable SNMPv3, and then disable SNMPv1,2. For more information, see "Setting up SNMP" on page 47.

   Note: Specify the user credentials for Read/Write and optionally Read/Only users. It is recommended that authentication level is set to **Authentication, Privacy**.

6. Configure the audit logging. For more information, see "Configuring security audit log settings" on page 48. You can specify a remote system log for events by identifying the syslog server and selecting the appropriate settings. We recommend specifying an e-mail address for the administrator and selecting the events to be e-mailed.

7. Create one or more security templates using the LDAP building block, and then assign them to the appropriate access controls. For more information, see "Using a security template to control function access" on page 32.

Troubleshooting

Embedded Web Server does not open

Try one or more of the following:

Make sure that the printer IP address is correct

View the printer IP address:

- From the printer home screen
- From the TCP/IP section in the Network/Ports menu
- By printing a network setup page or menu settings page, and then finding the TCP/IP section

Check if the printer is turned on

Check if the network connection is working

Temporarily disable the web proxy servers

Note: Proxy servers may block or restrict you from accessing certain web sites including the Embedded Web Server.

Contact your system administrator

Login troubleshooting

USB device is not supported

Make sure that a supported smart card reader is attached

Remove the unsupported reader and attach a valid reader. For information on the supported readers, contact your Lexmark representative.

Printer home screen fails to return to a locked state when not in use

Try one or more of the following:

Make sure that the authentication token is installed and running

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management**.
2. Make sure that the authentication token appears in the list of installed solutions and that it is in a “Running” state.
   - If the authentication token is installed but is not running, then select the check box next to the application name, and then click **Start**.
   - If the authentication token does not appear in the list of installed solutions, then contact the Solutions Help Desk for assistance.

Make sure that Smart Card Authentication is installed and running

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management**.
2. Make sure that the Smart Card Authentication solution appears in the list of installed solutions and that it is in a "Running" state.
   - If Smart Card Authentication is installed but is not running, then select the application name, and then click **Start**.
   - If the authentication token does not appear in the list of installed solutions, then contact the Solutions Help Desk for assistance.

Login screen does not appear when a smart card is inserted

Make sure that the smart card is recognized by the reader

Contact the Solutions Help Desk for assistance.

KDC and MFP clocks are out of sync

This error indicates that the printer clock is more than five minutes out of sync with the domain controller clock.

Make sure that the date and time settings on the printer are correct

1. From the Embedded Web Server, click **Settings** > **Security** > **Set Date and Time**.
2. If you have manually configured date and time settings, then adjust the settings if necessary. Make sure that the time zone and daylight saving time settings are correct.

   Note: If your network uses DHCP, then make sure that NTP settings are not automatically provided by the DHCP server before manually configuring NTP settings.
3. If the printer uses an NTP server, then make sure that those settings are correct and that the NTP server is functioning correctly.
4. Apply the changes.

Kerberos configuration file is not uploaded

This error occurs when Smart Card Authentication is configured to use the Device Kerberos Setup, but no Kerberos file has been uploaded.

Make sure that the Kerberos file has been uploaded

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. If you are using Simple Kerberos Setup, then clear the **Use Device Kerberos Setup** check box, and then apply the changes.
3. If you are using a Kerberos configuration file, then do the following:
   a. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup** > **Kerberos 5**.
   b. Under Import Kerberos File, browse to the krb5.conf file, and then click **Submit**.

Unable to authenticate users

Make sure that the Realm specified in the Kerberos settings is in uppercase

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. For Simple Kerberos Setup, make sure that the Realm is correct and typed in uppercase.
3. If you are using krb5.conf file, then make sure that the Realm entries in the configuration file are in uppercase.

Domain controller certificate is not installed

Make sure that the correct certificate is installed on the printer

For more information, see “Managing certificates and other settings” on page 42.

KDC did not respond within the required time

Try one or more of the following:

Make sure that the IP address or host name of the KDC is correct

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. For Simple Kerberos Setup, make sure that the IP address or host name specified for the Domain Controller is correct, and then apply the changes.
3. If you are using a krb5.conf file, then make sure that the IP address or host name specified for the Domain Controller is correct.

Make sure that the KDC is available

You can specify multiple KDCs in the Smart Card Authentication settings or in the krb5.conf file.

Make sure that Port 88 is not blocked by a firewall

Port 88 must be opened between the printer and the KDC for authentication to work.

User realm not found in the Kerberos configuration file

Make sure that the Windows Domain is specified in the Kerberos settings

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. Under Simple Kerberos Setup, add the Windows™ domain in lowercase to the Domain setting.

   For example, if the Domain setting is **`mil,.mil`** and the Windows domain is **`x.y.z`**, then change the Domain setting to **`mil,.mil,x.y.z`**.
3. If you are using a krb5.conf file, then add an entry to the domain_realm section. Map the lowercase Windows Domain to the uppercase realm (similar to the existing mapping for the “mil” domain).

Cannot find realm on card in the Kerberos configuration file

This error occurs during smart card login.

Upload a Kerberos configuration file and make sure that the realm has been added to the file

The Smart Card Authentication settings do not support multiple Kerberos Realm entries. If multiple realms are needed, then create and upload a krbf5.conf file containing the needed realms. If you are already using a Kerberos configuration file, then make sure that the missing realm is added to the file correctly.

Client is unknown

This error indicates that the KDC being used to authenticate the user does not recognize the User Principal Name specified in the error message.

Make sure that the Domain Controller information is correct

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. For Simple Kerberos Setup, make sure that the IP address or host name of the Domain Controller is correct.
3. If you are using a Kerberos configuration file, then make sure that the Domain Controller entry is correct.

Login does not respond at “Getting User Info”

For information on LDAP-related issues, see“LDAP troubleshooting” on page 73.

User is logged out automatically

Increase the Panel Login Timeout interval

1. From the Embedded Web Server, click **Settings** > **Security** > **Miscellaneous Security Settings** > **Login Restrictions**.
2. Increase the time (in seconds) of the Panel Login Timeout setting.
3. Apply the changes.

LDAP troubleshooting

LDAP lookups take a long time and then fail

This issue can occur during login (at “Getting User Info”) or during address book searches. Try one or more of the following:

Make sure that Port 389 (non-SSL) and Port 636 (SSL) are not blocked by a firewall

The printer uses these ports to communicate with the LDAP server. The ports must be open for LDAP lookups to work.

Make sure that the LDAP search base is not too broad in scope

Narrow the LDAP search base to the lowest possible scope that includes all necessary users.

LDAP lookups fail almost immediately

Try one or more of the following:

Make sure that the Address Book Setup contains the host name for the LDAP server

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **Address Book Setup**.
2. Make sure that the host name (not the IP address) of the LDAP server specified in the Server Address field is correct.
3. Apply the changes.

Make sure that the Address Book Setup settings are correct

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **Address Book Setup**.
2. If necessary, modify the following settings:
   - **Server Port**—Set this port to 636.
   - **Use SSL/TLS**—Select **SSL/TLS**.
   - **LDAP Certificate Verification**—Select **Never**.
3. Apply the changes.

Narrow the LDAP search base to the lowest possible scope that includes all necessary users

Make sure that the LDAP attributes for the user e-mail address and home directory are correct

Held Jobs / Print Release Lite troubleshooting

Cannot use the Held Jobs / Print Release feature

Add the user to the appropriate Active Directory group

If user authorization is enabled for Held Jobs, then add the user to an Active Directory group that is included in the authorization list for the Secure Held Print Jobs function.

Cannot determine Windows user ID

Make sure that Smart Card Authentication sets the user ID for the session

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. From the User Session and Access Control section, for the Session Userid setting, specify how to obtain the Windows user ID when logging in:
   - **None**—The user ID is not set. Select this option if the user ID is not needed by other applications.
   - **User Principal Name**—The smart card principal name or the credential provided by manual login is used to set the user ID (userid@domain).
   - **EDI-PI**—The user ID portion of the smart card principal name or the credential provided by manual login is used to set the user ID.
   - **LDAP Lookup**—The user ID is retrieved from Active Directory.
3. Apply the changes.

No jobs available for user

Try one or more of the following:

Make sure that the Smart Card Authentication sets the correct user ID

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Smart Card Authentication** > **Configure**.
2. From the User Session and Access Control section, select **LDAP Lookup** for the Session UserID setting.
3. Apply the changes.

Make sure that the jobs were sent to the correct printer and were printed

The jobs may have been sent to a different printer, or automatically deleted because they were not printed quickly enough.

Jobs are printing immediately

Try one or more of the following:

Make sure that Secure Held Print Jobs is installed and running

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management**.
2. Verify that the Secure Held Print Jobs solution appears in the list of installed solutions and that it is in a “Running” state.
   - If Secure Held Print Jobs is installed but is not running, then select the check box next to the application name, and then click **Start**.
   - If Secure Held Print Jobs does not appear in the list of installed solutions, then contact the Solutions Help Desk for assistance.

Make sure that all jobs are required to be held

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management** > **Secure Held Print Jobs** > **Configure**.
2. From the Advanced Settings section, enable **Require All Jobs to be Held** and **Clear Print Data** .
3. Apply the changes.

Scanning problems

A network destination stopped working or is invalid

Try one or more of the following:

Make sure that the destination is shared and has a valid network address

From the Embedded Web Server, access the configuration page for the application, and then confirm the destination network address.

Make sure that the printer is connected to the network

Make sure that the user name and password are correct

Make sure to specify the domain information of the source file

To obtain the network address of the computer that contains the source file, contact your administrator.

1. From the Embedded Web Server, access the configuration page for the application.
2. Edit the network settings.

   Note: Some applications require changing the settings from the profile page.
3. Apply the changes.

Check the system log

1. From the Embedded Web Server, click **Settings** or **Configuration**.
2. Depending on your printer model, do one of the following:
   - Click **Apps** > **Apps Management**.
   - Click **Device Solutions** > **Solutions (eSF)**.
   - Click **Embedded Solutions**.
3. Click **System** > **Log**.
4. Select and submit the appropriate filters to view the log entries.

Contact your system administrator

Cannot scan to the selected destination

Make sure that the destination is valid

From the Embedded Web Server, access the configuration page for the application, and then confirm the destination network address.

If the printer and destination are in different domains, then make sure that the domain information is specified

From the Embedded Web Server, access the configuration page for the application, and then enter the appropriate domain information.

Make sure that the printer is connected to the network

Make sure that the user name and password are correct

Make sure that the user has permission to save scans to the destination

1. From the Embedded Web Server, access the configuration page for the application.
2. From the Scan Destination section, select the destination to configure.
3. From the Authentication Options section, select the correct authentication type, and if necessary, type the correct authentication credentials.
4. Apply the changes.

Make sure that a file with the default file name does not exist in the destination

Remove the old file from the destination, or configure the application to:

- Allow users to type a file name.
- Append the time stamp.
- Overwrite the existing file.

Configure the firewall to allow communication with the subnet in which the printer is located

For more information, contact your system administrator.

Make sure that the printer and destination have the same subnet

For more information, contact your system administrator.

Make sure that the LDAP settings are configured properly in your printer setup and in the setup dialog

For more information, contact your system administrator.

Contact your system administrator

License error

Try one or more of the following:

Make sure that the application is licensed

For more information on purchasing a license, contact your Lexmark representative.

Make sure that the license is up-to-date

1. From the Embedded Web Server, click **Settings** or **Configuration**.
2. Depending on your printer model, do one of the following:
   - Click **Apps** > **Apps Management**.
   - Click **Device Solutions** > **Solutions (eSF)**.
   - Click **Embedded Solutions**.
3. Click the license status of the application from the list.
4. Update the license.

An error occurs when opening a secure PDF file

Make sure that the PDF version for the device is not set to A-1a

1. From the Embedded Web Server, click **Settings** or **Configuration**.
2. Click **E-mail/FTP Settings** > **E-mail Settings**.
3. From the E-mail Settings menu, click **PDF Settings**.
4. Select a PDF version except **A-1a**.

Faxing problems

Failure to receive fax from one sender

Try one or more of the following:

Make sure that the sender used the correct fax number

Check if the fax has no caller ID and station name

Make sure that that sender is not using a private caller ID and has configured the fax station name.

Check if the sender fax number is not blocked

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Receive Settings section, check the Banned Fax List. If the fax sender number is listed, then remove the number.
3. Click **Submit**.

Generate fax logs and identify the status message

From the Embedded Web Server, click **Reports** > **Fax Job Log**.

Failure to receive fax from all senders

Try one or more of the following:

Make sure that the printer is configured to receive faxes

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Receive Settings section, click **Enable Fax Receive**.
3. Click **Submit**.

If using a distinctive ring service, then confirm that the printer is configured properly to pick up the correct ring pattern

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Distinctive Rings section, select the Answer On setting that matches the phone number intended for faxes.
3. Click **Submit**.

Reduce the Max Receive speed

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Receive Settings section, reduce the Max Speed.
3. Click **Submit**.

Check the fax forwarding setting

Note: This feature is available only in some printer models.

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Receive Settings section, select any setting except Forwarding.
3. Click **Submit**.

Make sure that no other phone number is competing with the printer

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Receive Settings section, change the “Rings to Answer” value.
3. Click **Submit**.

Generate fax logs and identify the status message

From the Embedded Web Server, click **Reports** > **Fax Job Log**.

Failure to send fax to one destination

Try one or more of the following:

Make sure that you entered the correct fax number

Reduce the maximum send speed

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, reduce the Max Speed.
3. Click **Submit**.

Generate fax logs and identify the status message

From the Embedded Web Server, click **Reports** > **Fax Job Log**.

Failure to send to all fax destinations

Try one or more of the following:

Make sure that the printer is not configured for Fax Server mode

1. From the Embedded Web Server, click **Settings** > **Fax Settings**.
2. Make sure that Analog is selected.

Make sure that the printer is configured to send faxes

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, click **Enable Fax Scans**.
3. Click **Submit**.

Check if you are using a PABX telephone system

Private Automated Branch Exchange (PABX) is a telephone network that allows a single access number to offer multiple lines to outside callers. It also provides a range of external lines to internal callers or personnel. If you are using a PABX, then do the following:

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, click **Behind a PABX**.
3. Click **Submit**.

Confirm that you have entered the proper dialing prefix

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, confirm the value entered in the Dial Prefix field.
3. If necessary, add the dialing prefix that you want to use, and then click **Submit**.

Reduce the Max Send speed

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. From the Fax Send Settings section, reduce the Max Speed.
3. Click **Submit**.

Confirm that you have entered a station ID and station number

1. From the Embedded Web Server, click **Settings** > **Fax Settings** > **Analog Fax Setup**.
2. Make sure that the Fax Name and Fax Number fields are not blank.
3. Click **Submit**.

Generate fax logs and identify the status message

From the Embedded Web Server, click **Reports** > **Fax Job Log**.

Networking problems

Printer is not communicating on the network

Try one or more of the following:

Check the network status

1. From the Embedded Web Server, click **Reports** > **Device Settings**.
2. From the Network/Ports section, check the View Card Status.
3. If the printer is disconnected, then do one of the following:
   - For wired connection, make sure that the Ethernet cable is properly connected.
   - For wireless connection, check the printer wireless connection. For more information, see “Connecting to a wireless network” on page 26.

Check the printer port access

1. From the Embedded Web Server, click **Settings** > **Security** > **TCP/IP Port Access**.
2. If necessary, enable ports. For more information, see “Configuring the TCP/IP port access setting” on page 56.
3. Click **Submit**.

Check the Restricted Server List

1. From the Embedded Web Server, click **Settings** > **Network/Ports** > **TCP/IP**.
2. Locate the Restricted Server List, and then check for the printer IP address.
3. If the printer IP address is listed, then remove it.
4. Click **Submit**.

Make sure that communication is not blocked by a firewall or workplace VPN

Appendix

Appendix A: CA file creation

Note: This example of generation of a CA file for the Certificate Authority assumes usage of a Windows Certificate Authority server.

1. Point the browser window to the CA. Make sure to use the URL, http//<CA's address>/CertSrv, where **CA's address** is the IP address or host name of the CA server.

   Note: Before the CA Web page opens, a Windows login window may pop up and request user credentials to verify that you have access to the CA Web page.

2. Click **Download a CA certificate, certificate chain, or CRL**.
3. Click **Base 64 encoded**, and then click **Download CA Certificate**.

   Note: DER encoding is not supported.

4. Save the certificate that is offered in a file. The file name is arbitrary, but the extension should be ".pem".

Appendix B: CA-Signed Device Certificate creation

Note: This example of generation of a CA file for the Certificate Authority assumes usage of a Windows Certificate Authority server.

1. Point the browser window to the CA. Make sure to use the URL, http//<CA's address>/CertSrv, where **CA's address** is the IP address or host name of the CA server.
2. Click **Request a certificate**.
3. Click **advanced certificate request**.
4. Click **Submit a certificate request by using a base-64-encoded**.
5. Paste the (.csr prompted) information copied from the device into the Saved Request field, and then select a Web Server-type certificate template.
6. Click **Submit**.

   Note: The server takes a moment or two to process the request, and then presents a dialog window.

7. Select **Base 64 encoded**, and then click **Download Certificate**.

   Note: DER encoding is not supported.

8. Save the certificate that is offered in a file. The file name is arbitrary, but the extension should be ".pem".

Appendix C: Automatic Certificate Enrollment application

This application, after installation, will automatically create a device certificate signing request and pass the signing request on to the Certificate Authority (CA) for approval. The CA signed device certificate is then retrieved and installed on the printer. This quick and simple process replaces the previous manual process.

For this application to function, the device must be joined to an Active Directory environment. A Certificate Enrollment Web Services (Server Role) application also needs to be installed on the customer network.

Note: The following example usage instructions assume that the Certificate Enrollment Web Services is installed on a Windows 2008 R2 server.

1. Open a web browser, and then type the IP address or host name of the printer in the address field.
2. From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **Device Certificate Management**.
3. Click **Advanced Management** to use the Automatic Certificate Enrollment application, and then click **Request new Certificate**.

   Note: The screen may refresh for 10 to 15 seconds. During this time, the device is contacting the Certificate Enrollment Web Service on the server and capturing the certificate templates that are available to the device.
4. Return to the Device Certificate Management page, and then click **Advanced** > **Templates**.
5. Select any of the following displayed template options to use when requesting a certificate:
   - **IPSec**—If you want to install a device certificate that is used for IPSec negotiations.
   - **Web Server**—If you want to secure any SSL/TLS connections such as the EWS or LDAP over SSL.
   - **RAS and IAS Server**—If you want to install a device certificate that is used for 802.1X negotiations.
6. Click **Request Certificate**. From this screen, you can customize the certificate for this device.

   Note: If you want to view the template details first, then click **View** instead of **Request Certificate**.
7. If necessary, modify the settings from the Request Certificate page.

   Notes:

   - The fields that are filled in with the data and the selected check boxes are the template defaults that were pulled from the CA. You can change them if you choose, but remember that the default templates are generally configured with the appropriate settings by the CA administrator. Changing some settings may cause the request to be denied.
   - The Collapse/Expand Subject Name link is used to change any of the device information that is used to create or generate a certificate. This includes the same information as the Set Certificate Defaults link under Certificate Management.
8. Click **Submit** to send the Certificate Signing Request (CSR) to the CA.

   Note: The screen may refresh for 10 to 15 seconds. During this time, the device is contacting the Certificate Enrollment Web Service requesting the CA signed certificate be generated.
9. If successful, you will return to the Advanced page. The new CA-signed device certificate with the specified name is included in the list of certificates. If not, an error message is displayed.

   Note: If a template is specified at the server to require CA administrator approval, then a separate table of pending certificates is displayed. A message indicating that a request is pending admin approval is displayed on the Device Certificate Management screen where the certificate is listed. The certificate is not valid until approved. Once approval is granted, the message disappears and the certificate(s) is displayed in the installed certificates table.

If you would like to see the information associated with the new certificate, click the link with the certificate name. The Renew link is used to renew the certificate when the current CA certificate is about to expire (default of 2 years).

Configuring automatic renewal of certificates

1. From the Embedded Web Server, click **Settings** > **Apps** > **Apps Management**.
2. From the Configure tab, select the check box for Automatically Update Certificates.
3. Specify the number of days before expiration for the Auto Renewal Threshold setting.
4. Click **Apply**.

Appendix D: Access controls

Note: Some access controls are supported only in some printer models.

Administrative Menus

Function access control	Description
Configuration Menu	Protects access to the Configuration Menu.
Manage Shortcuts at the Device	Protects access to the Manage Shortcuts section of the Settings menu from the printer control panel.
Manage Shortcuts Remotely	Protects access to the Manage Shortcuts section of the Settings menu from the Embedded Web Server.
Network/Ports Menu at the Device	Protects access to the Network/Ports section of the Settings menu from the printer control panel.
Network/Ports Menu Remotely	Protects access to the Network/Ports section of the Settings menu from the Embedded Web Server.
Option Card Configuration at the Device	Controls access to the Option Card Configuration section of the Settings menu from the printer control panel. **Note:** This function applies only when an Option Card with configuration options is installed on the device.
Option Card Configuration Remotely	Controls access to the Option Card Configuration section of the Settings menu from the Embedded Web Server. **Note:** This function applies only when an Option Card with configuration options is installed on the device.
Paper Menu at the Device	Protects access to the Paper menu from the printer control panel.
Paper Menu Remotely	Protects access to the Paper menu from the Embedded Web Server.
Reports Menu at the Device	Protects access to the Reports menu from the printer control panel.
Reports Menu Remotely	Protects access to the Reports menu from the Embedded Web Server.
Security Menu at the Device	Protects access to the Security menu from the printer control panel.
Security Menu Remotely	Protects access to the Security menu from the Embedded Web Server.
Service Engineer Menus at the Device	Protects access to the Service Engineer menu from the printer control panel.
Service Engineer Menus Remotely	Protects access to the Service Engineer menu from the Embedded Web Server.
Settings Menu at the Device	Protects access to the General and Print Settings sections of the Settings menu from the printer control panel.

Function access control	Description
Settings Menu Remotely	Protects access to the General and Print Settings sections of the Settings menu from the Embedded Web Server.

Management

Function access control	What it does
Firmware Updates	Controls the ability to update firmware from any source other than a flash drive. Firmware files that are received through FTP, the Embedded Web Server, and other sources, are ignored (flushed) when this function is protected.
Operator Panel Lock	Protects access to the locking function of the printer control panel. If this function is enabled, then users with appropriate credentials can lock and unlock the printer touch screen. In a locked state, the touch screen displays only the "Unlock Device" icon, and no further operations can be performed at the device until appropriate credentials are entered. Once unlocked, the touch screen remains in an unlocked state even if the user logs out of the device. To enable the control panel lock, the user must select the "Lock Device" icon, and then enter the appropriate credentials.
PJL Device Setting Changes	When disabled, all device setting changes requested by incoming print jobs are ignored.
Remote Management	Controls access to printer settings and functions by remote management tools such as Markvision. When protected, no printer configuration settings can be altered except through a secured communication channel (such as that provided by a properly configured installation of Markvision).
Apps Configuration	Controls access to the configuration of any installed applications.
Web Import/Export Settings	Controls the ability to import and export printer settings files (UCF files) from the Embedded Web Server.
Configuration Files Import/Export	Controls the ability to import and export settings and security configuration files.
Internet Printing Protocol (IPP)	Controls the ability to use the IPP.

Function Access

Function access control	What it does
Address Book	Controls the ability to perform address book searches in the Scan to Fax and Scan to E-mail functions.
Cancel Jobs at the Device	Controls the ability to cancel jobs from the printer control panel.
Change Language from Home Screen	Controls access to the Change Language feature from the printer control panel.
Color Dropout	Controls the ability to use the Color Dropout feature for scan and copy functions.
Copy Color Printing	Controls the ability to perform color copy functions. Users who are denied will have their copy jobs printed in black and white.
Copy Function	Controls the ability to use the Copy function.
Create Bookmarks at the Device	Controls the ability to create bookmarks from the printer control panel.

Function access control	What it does
Create Bookmarks Remotely	Controls the ability to create bookmarks from the Bookmark Setup section of the Settings menu on the Embedded Web Server.
Create Profiles	Controls the ability to create profiles.
E-mail Function	Controls access to the Scan to E-mail function.
Fax Function	Controls access to the Scan to Fax function.
Flash Drive Color Printing	Controls the ability to print color from a flash drive. Users who are denied will have their print jobs printed in black and white.
Allow Flash Drive Access	Controls the ability to access the flash drive.
Flash Drive Print	Controls the ability to print from a flash drive.
Flash Drive Scan	Controls the ability to scan documents to a flash drive.
FTP Function	Controls access to the Scan to FTP function.
Held Jobs Access	Protects access to the Held Jobs function.
PictBridge Printing	Controls the ability for some devices to print from an attached PictBridge-enabled digital camera. **Note:** Supported only in some printer models.
Release Held Faxes	Controls the ability to release (print) held faxes.
Use Profiles	Controls access to profiles, such as scanning shortcuts, workflows, and eSF applications.

Device Applications

Function access control	What it does
New Apps	Controls the initial security profile of each application-specific access control installed on the printer.
App 1–10	The App 1 through App 10 access controls can be assigned to installed eSF applications and profiles created by LDSS. The access control for each application is assigned in the creation or configuration of the application or profile.

Notes:

- Depending on the applications you have installed, additional application-specific access controls may be listed. Use these additional access controls if they are available for your installed applications. If no additional solution-specific access controls are available, then assign one of the ten numbered access controls to each application you want to protect.
- Some applications may be included with printers as default configurations and appear as function access control selections.

Appendix E: Common Criteria configuration

Configuring user access for Common Criteria

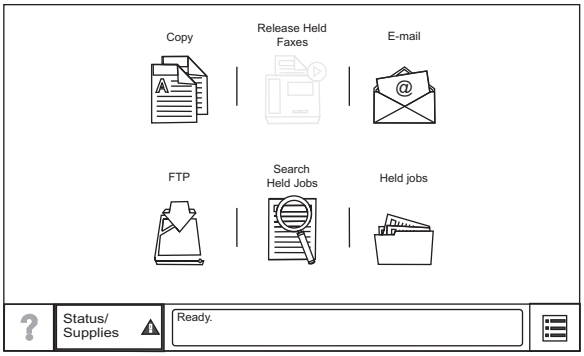
Administrators and users are required to log in to the printer using a method that provides both authentication and authorization. Under the evaluated configuration, access to network-connected devices can be granted through internal accounts, LDAP+GSSAPI (which is used in Active Directory), or Smart Card Authentication.

Creating internal accounts for use with the evaluated configuration involves assigning a user ID and password to each user and then segmenting users into groups. When configuring security templates, select one or more of these groups, and then apply a security template to each device function to control access to that function.

For more information about configuring user access, see the *Common Criteria Installation Supplement and Administrator Guide*.

Understanding the home screen

The screen located on the front of the printer is touch-sensitive and can be used to access device functions and navigate settings and configuration menus. The home screen looks similar to this (yours may contain additional icons):

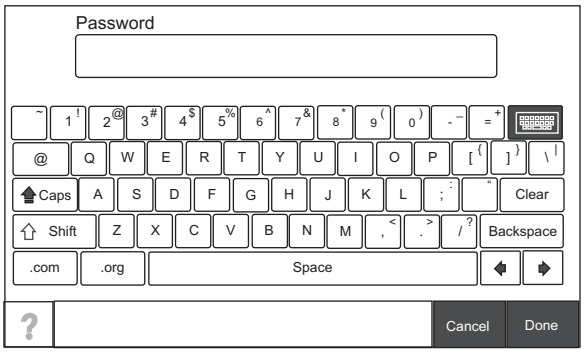


Touch  on the lower right to access settings and configuration menus for the device.

Note: Access to device menus may be restricted to administrators only.

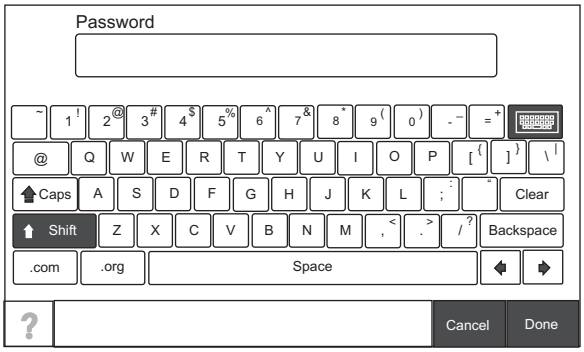
Using the on-screen keyboard

Some device settings require one or more alphanumeric entries, such as server addresses, user names, and passwords. When an alphanumeric entry is needed, a keyboard appears:



As you touch the letters and numbers, your selections appear in a corresponding field at the top of the screen. The keyboard display may also contain other icons, such as Next, Submit, Cancel, and the home icon.

To type a single uppercase or shift character, touch **Shift**, and then touch the letter or number you need to uppercase. To turn on Caps Lock, touch **Caps**, and then continue typing. Caps Lock will remain engaged until you touch **Caps** again.



Touch **Backspace** to delete a single character or **Clear** to delete everything you have typed.

Notices

Edition notice

October 2018

The following paragraph does not apply to any country where such provisions are inconsistent with local law: LEXMARK INTERNATIONAL, INC., PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in later editions. Improvements or changes in the products or the programs described may be made at any time.

References in this publication to products, programs, or services do not imply that the manufacturer intends to make these available in all countries in which it operates. Any reference to a product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any existing intellectual property right may be used instead. Evaluation and verification of operation in conjunction with other products, programs, or services, except those expressly designated by the manufacturer, are the user’s responsibility.

For Lexmark technical support, visit **http://support.lexmark.com**.

For information on supplies and downloads, visit **www.lexmark.com**.

GOVERNMENT END USERS

The Software Program and any related documentation are "Commercial Items," as that term is defined in 48 C.F.R. 2.101, "Computer Software" and "Commercial Computer Software Documentation," as such terms are used in 48 C.F.R. 12.212 or 48 C.F.R. 227.7202, as applicable. Consistent with 48 C.F.R. 12.212 or 48 C.F.R. 227.7202-1 through 227.7207-4, as applicable, the Commercial Computer Software and Commercial Software Documentation are licensed to the U.S. Government end users (a) only as Commercial Items and (b) with only those rights as are granted to all other end users pursuant to the terms and conditions herein.

Trademarks

Lexmark, the Lexmark logo, and Markvision are trademarks or registered trademarks of Lexmark International, Inc. in the United States and/or other countries.

Active Directory and Windows are either registered trademarks or trademarks of the Microsoft group of companies in the United States and other countries.

All other trademarks are the property of their respective owners.

GifEncoder

GifEncoder - writes out an image as a GIF. Transparency handling and variable bit size courtesy of Jack Palevich. Copyright (C) 1996 by Jef Poskanzer * <jef@acme.com>. All rights reserved. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: 1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Visit the ACME Labs Java page for up-to-date versions of this and other fine Java utilities: http://www.acme.com/java/

ZXing 1.7

This project consists of contributions from several people, recognized here for convenience, in alphabetical order.

Agustín Delgado (Servinform S.A.), Aitor Almeida (University of Deusto), Alasdair Mackintosh (Google), Alexander Martin (Haase & Martin GmbH), Andreas Pillath, Andrew Walbran (Google), Andrey Sitnik, Androida.hu / http://www.androida.hu/, Antonio Manuel Benjumea (Servinform S.A.), Brian Brown (Google), Chang Hyun Park, Christian Brunschen (Google), crowdin.net, Daniel Switkin (Google), Dave MacLachlan (Google), David Phillip Oster (Google), David Albert (Bug Labs), David Olivier, Diego Pierotto, drejc83, Eduardo Castillejo (University of Deusto), Emanuele Aina, Eric Kobrin (Velocitude), Erik Barbara, Fred Lin (Anobiit), gcstang, Hannes Erven, hypest (Barcorama project), Isaac Potoczny-Jones, Jeff Breidenbach (Google), John Connolly (Bug Labs), Jonas Petersson (Prisjakt), Joseph Wain (Google), Juho Mikkonen, jwicks, Kevin O'Sullivan (SITA), Kevin Xue (NetDragon Websoft Inc., China), Lachezar Dobrev, Luiz Silva, Luka Finžgar, Marcelo, Mateusz Jędrasik, Matrix44, Matthew Schulkind (Google), Matt York (LifeMarks), Mohamad Fairol, Morgan Courbet, Nikolaos Ftylitakis, Pablo Orduña (University of Deusto), Paul Hackenberger, Ralf Kistner, Randy Shen (Acer), Rasmus Schrøder Sørensen, Richard Hřivňák, Romain Pechayre, Roman Nurik (Google), Ryan Alford, Sanford Squires, Sean Owen (Google), Shiyuan Guo / 郭世元, Simon Flannery (Ericsson), Steven Parkes, Suraj Supekar, Sven Klinkhamer, Thomas Gerbet, Vince Francis (LifeMarks), Wolfgang Jung, Yakov Okshtein (Google)

Apache License Version 2.0, January 2004

http://www.apache.org/licenses/

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1 Definitions.

"License" shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

"Licensor" shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

"Legal Entity" shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, "control" means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

"You" (or "Your") shall mean an individual or Legal Entity exercising permissions granted by this License.

"Source" form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

"Object" form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

"Work" shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

"Derivative Works" shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

"Contribution" shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, "submitted" means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as "Not a Contribution."

"Contributor" shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2 Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3 Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, offer to sell, sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4 Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

- **a** (a) You must give any other recipients of the Work or Derivative Works a copy of this License; and
- **b** (b) You must cause any modified files to carry prominent notices stating that You changed the files; and

c (c) You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

d (d) If the Work includes a "NOTICE" text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5 Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6 Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7 Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8 Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9 Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work.

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets "[]" replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same "printed page" as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at

http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Glossary of Security Terms

Access Controls	Settings that control whether individual device menus, functions, and settings are available, and to whom. Also referred to as Function Access Controls on some devices.
Authentication	A method for securely identifying a user.
Authorization	A method for specifying which functions are available to a user.
Building Block	Authentication and Authorization tools used in the Embedded Web Server. They include: password, PIN, Internal accounts, LDAP, LDAP+GSSAPI, Kerberos 5.
Group	A collection of users sharing common characteristics.
Security Template	A profile created and stored in the Embedded Web Server, used with Access Controls to manage device functions.

Index

Numerics

A

B

C

D

E

F

G

H

I

K

L

T

U

V

W