Embedded Web Server — Security

Administrator's Guide

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Security devices covered in this guide

There are two levels of security supported based on the product definition. For a complete list of available functionality, see “Authentication and Authorization” on page 6.

Simple security devices

CS310n/dn, CS410n/dn, CS410dtn, CX310n/dn, M1140, M1145, M3150dn, M5163dn, MS310d/dn, MS410d/dn, MS510dn, MS610dn, MS610dtn, MS810n/dn, MS810dtn, MS811n/dn, MS811dtn, MS812dn, MS812dtn, MX310dn

Advanced security devices

CS510de, CS510dte, CX410de, CX410e/dte, CX510de, CX510dhe/dthe, M3150, M5155, M5163, M5170, XM1140, XM1145, XM3150, XM5163, XM5170, XM7155, XM7163, XM7170, XC2132, MS610de, MS610dte, MS810de, MS812de, MX410de, MX510de, MX511de, MX511dhe, MX511dte, MX610de, MX611de, MX611dhe, MX611dte, MX710de, MX710dhe, MX711de, MX711dhe/dthe, 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

Using security features in the Embedded Web Server

Lexmark Embedded Web Server represents an evolution in keeping document outputs safe and confidential in today's busy environments. With traditional components such as authentication and group permissions, administrators can use Embedded Web Server Security Templates to control access to the devices that produce, store, and transmit sensitive documents. Security templates are an innovative tool developed by Lexmark that administrators can use to build secure and flexible profiles, restricting sensitive printer functions or outputs to only those users holding appropriate credentials. Utilizing soft configuration features alone or in conjunction with physical security such as Common Access Cards, the printer is no longer a weak link in the document security chain.

Understanding the basics

Securing a printer through the Embedded Web Server involves combining one or more components to define who is allowed to use the printer, and which functions those users are allowed to access. Available components include Authentication, Authorization, and Groups.

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

- The location of the printer and whether authorized persons have access to that area
- Sensitive documents that will be 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 who has been authenticated by the system. This set of authorized functions is also referred to as “permissions.”

There are two levels of security that are supported based on the product definition. The simplest level security only supports internal device authentication and authorization methods. The more advanced level security permits internal as well as external authentication and authorization as well as additional restriction capability for management, function, and solution access. Advanced security is supported for those devices that permit the installation of additional solutions to the device.

Simple security utilizes the “Panel PIN Protect” to restrict user access to the printer control panel and the “Web Page Password Protect” to restrict admin access to the device. For more information, see “Creating a PIN through Panel PIN Protect” on page 11 and “Creating a password through Web Page Password Protect” on page 10.

Advanced level security devices support PIN and password restrictions in addition to the other authentication and authorization specified. Most of this document will describe advanced security devices.

Security support summary

√ = Supported X = Not supported		
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	√
LDAP+GSSAPI	X	√
Kerberos 5	X	√
Active Directory	X	√
Limited access controls	√	X
Access controls (complete)	X	√
Security Templates	X	√
Basic Security Setup	X	√

The Embedded Web Server handles authentication and authorization using one or more of the following, also referred to as *building blocks*:

- PIN or Panel PIN Protect
- Password or Web Page Password Protect
- Internal accounts
- LDAP
- LDAP+GSSAPI
- Kerberos 5 (used only in conjunction with LDAP+GSSAPI)
- Active Directory

To provide low-level security, you can use either PIN and Password, or Panel PIN Protect and Web Page Password Protect for some printer models, by simply limiting access to a printer—or specific functions of a printer—to anyone who knows the correct code. This type of security might be appropriate if a printer is located in the lobby or other public area of a business, so that only employees who know the password or PIN are able to use the printer. Because anyone who enters the correct password or PIN receives the same privileges and users cannot be individually identified, passwords and PINs are considered less secure than other building blocks that require a user to be identified, or both identified and authorized.

Note: The default settings do not contain any authentication or authorization building blocks, which means that everyone has unrestricted access to the Embedded Web Server.

Groups

Administrators can designate up to 32 groups to be used in association with either the Internal accounts or LDAP/LDAP +GSSAPI building blocks. For the purposes of Embedded Web Server 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 those in sales and marketing use color every day. In this scenario, it makes sense to 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 44.

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.

Limiting access with Basic Security Setup

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

Notes:

- This feature is available only in select printer models.
- The default settings do not contain any authentication or authorization building blocks, which means that 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. From the Authentication Type drop-down list, select one of the following:
   - **PIN**—Enter a PIN number. Each PIN must be 4–16 digits in length.
   - **Password**—Type a name for the password. Each password must have a unique name containing up to 128 UTF-8 characters.
   - **User ID and Password**—Type a unique user ID, and then type a name for the password. Each password must have a unique name containing up to 128 UTF-8 characters.
3. Click **Apply Basic Security Setup**.

   Note: Applying this setup may overwrite a previous configuration.

The new settings will be submitted. The next time you access Security Setup, you will be required to enter the appropriate authentication information.

Modifying or removing Basic Security Setup

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Enter the appropriate authentication information to gain access to Security Setup.
3. Under Modify or Remove Basic Security Setup, enter your new authentication information.
4. Click **Modify Basic Security Setup** to enter your new authentication information to gain access to Security Setup, or click **Remove Basic Security Setup** to remove all authentication requirements.

Configuring building blocks

Creating a password for advanced security setup

Notes:

- This is available only in select printer models.
- The Embedded Web Server can store a combined total of 250 user-level and administrator-level passwords on each supported device.

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 Type a name for the password in the Setup Name box.

Note: Each password must have a unique name containing up to 128 UTF-8 characters (example: “Copy Lockout Password”).

5 Type a password in the appropriate box, and then retype the password to confirm it.

6 If the password will be used as the Administrator password, then select **Admin Password**.

Note: Administrator-level passwords override normal passwords. If a function or setting is protected by a normal password, then any administrator-level password will also grant access.

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**. Clicking **Delete List** will delete all passwords on the list, whether they are selected or not.

Creating a password through Web Page Password Protect

Notes:

- This is available only in low-level-security printers.
- The Embedded Web Server can store a combined total of 250 user-level and administrator-level passwords on each supported device.

1 From the Embedded Web Server, click **Settings** > **Security** > **Web Page Password Protect**.

2 Under “Basic Security Setup: Create User Password,” type a password in the appropriate box, and then retype the password to confirm it.

3 Under “Basic Security Setup: Create Admin Password,” type a password in the appropriate box, and then retype the password to confirm it.

Note: Administrator-level passwords override normal passwords. If a function or setting is protected by a normal password, then any administrator-level password will also grant access.

4 Click **Modify**.

Note: To edit a password, change the password, and then click **Modify**. To delete the password, click **Delete Entry**.

Creating a PIN for advanced security setup

Note: This is available only in select printer models.

Typically, *personal identification numbers* (PINs) are used to control access to specific device menus or to a device itself. PINs can also be used to control access to document outputs, by requiring a user to type a correct PIN to retrieve a held print, copy, or fax job. The Embedded Web Server can store a combined total of 250 user-level and administrator-level PINs.

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

2 Under Advanced Security Setup, click **PIN** > **Add a PIN**.

3 Type the name of the PIN configuration in the Setup Name box.

Note: Each PIN must have a unique name containing up to 128 UTF-8 characters (example: “Copy Lockout PIN”).

4 Enter a PIN in the appropriate box, and then reenter the PIN to confirm it.

To change the default PIN length:

a Click **Settings** > **Security** > **Miscellaneous Security Settings**.

b Enter a number in the Minimum PIN Length field, and then click **Submit**.

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

Note: If an activity is secured by a specific Administrator PIN, then only that PIN will grant access to it.

6 Click **Submit**.

Creating a PIN through Panel PIN Protect

Note: This is available only in select printer models with low level security.

Typically, personal identification numbers (PINs) are used to control access to specific device menus or to a device itself. PINs can also be used to control access to document outputs, by requiring a user to enter a correct PIN to retrieve a held print, copy, or fax job. The Embedded Web Server can store a combined total of 250 user-level and administrator-level PINs.

1 From the Embedded Web Server, click **Settings** > **Security** > **Panel PIN Protect**.

2 Under “Basic Security Setup: Create User PIN,” enter a PIN in the appropriate box, and then reenter the PIN to confirm it.

3 Under “Basic Security Setup: Create Admin PIN,” enter a PIN in the appropriate box, and then reenter the PIN to confirm it.

Note: Each PIN must have a unique name containing up to 128 UTF-8 characters (example: “Copy Lockout PIN”).

4 Click **Modify**.

Notes:

- When an access control is set to User PIN, then any Admin PIN for your printer is valid for that access control.
- You can assign a user or administrator PIN to any printer function only after you complete this procedure.

Setting up internal accounts

Note: This is available only in select printer models.

Embedded Web Server administrators can configure one internal account building block per supported device. Each internal account building block can include a maximum of 250 user accounts and 32 user groups.

The internal accounts building block can be used by itself in a security template to provide authentication-level security, or in conjunction with one or more groups to provide both authentication and authorization.

Defining user groups

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**.

5 Repeat steps 3 through 4 to add more user groups.

Note: When creating groups, make a list of all users first, and then determine which device functions are needed by all users and which functions are needed only by certain users. Each group fulfills a *role* once combined into a security template, and users can be assigned to more than one group (or role) in order to grant them access to all needed functions.

Creating user accounts

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 user's account name (example: “Jack Smith”). You can use up to 164 UTF-8 characters.
- **User ID**—Type an ID for the account (example: “jsmith”). You can use 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 user's e-mail address (example: “jsmith@company.com”).
- **Groups**—Select the groups to which the account belongs. Hold down the **Ctrl** key to select multiple groups for the account.

4 Click **Submit** to save the new account, or **Cancel** to return to the Manage Internal Accounts menu without storing the new account.

Specifying settings for internal accounts

Internal accounts 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

Notes:

- This is available only in select printer models.
- Make sure to use HTTPS to protect the credentials that are used to join the printer to the domain.

- If you do not select HTTPS, then you will not be able to set up Active Directory.

1 Open a Web browser, and then type the IP address or host name of the printer.

Note: A warning with a message associated to your printer IP address or host name will appear. Click **Continue to this website (not recommended)** to continue and open the printer Web page.

2 From your printer Web page, navigate to:

Settings > **Security** > **Security Setup** > **Active Directory** > **Join an Active Directory Domain**

3 Provide the information needed for each account:

- **Domain Name**--Type the name of the domain that you are trying to join. It is recommended that the domain name be typed in capital letters.
- **User ID**--Type the user name of the network administrator or any individual that has rights to add computers to a network.
- **Password**--Type the password of the network administrator or the individual that has rights to join the domain.

  Note: Passwords are case-sensitive, but these passwords are not cached by the device.
- **Organizational Unit**--Type the name of your organizational unit, but only when necessary.

  Note: You can skip this since this is not a required field.

4 Click **Submit**.

Notes:

- After clicking the **Submit** button, the screen flashes and you may hear a clicking noise.
- A big red **X** mark will appear if the configuration is unsuccessful. A message will also appear telling you what may have gone wrong with joining the domain.

5 If there are no errors, then the setup is complete. You may click **Manage Security Templates** to use the Active Directory information to complete your security setup.

Note: If you wish to review or make some small modifications to the LDAP+GSSAPI building block, click **Return to Security Setup** and follow the process identified below.

To start reviewing and modifying the process:

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 browser's back button to continue the review process.

Note: Do not edit or copy the Kerberos Config file to use with older devices. This can cause issues with KDC Server Affinity Service. Older devices will 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, look for the building block that was created by the Active Directory Setup process, and then click it.

Note: By default, the building block name will be the realm name. In addition, the Server Address field was filled out using the Domain Controller name.

f 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 is used only for Global Catalog servers in Active Directory. When applicable, change the port to 3268 to speed up the querying process.
- **Search Base**--This tells the device where, in the directory “tree”, to start searching. Specified as a Distinguished Name, it is recommended that you at least specify the root of the directory (e.g. “dc=company,dc=com”).
- **Use Kerberos Service Ticket**--This setting is an advanced setup otherwise known as SPNEGO. This uses the session ticket that a user has when they are logged into their computer. It is recommended that you leave this setting unchecked.
- **Use Active Directory Device Credentials**--This box should normally be checked because you want to use the Service Account that was created in Active Directory. If you do not want to use this setting, because you want to utilize an existing Service Account or you want to use user credentials (advanced setup), then simply uncheck this box.

g Using the scroll bar on the right side of the page, scroll down to the following fields when necessary:

- **Group Search Base**--This field tells the device where in the directory tree to start searching for a particular group. This field does not need to be filled out if user- or group-based authorization is not required by the environment.
- **Short name for group**--This is a user-defined field that allows the user to create a name for a group and associate that name with a group identifier.
- **Group Identifier**--This field tells the device what container or organizational unit it needs to search and to validate whether an authenticated user is a member of an authorized group.

h If you have made any changes, using the scroll bar on the right side of the page, scroll down to the bottom of the page, and then click **Modify**.

Using LDAP

Note: This is available only in select printer models.

Lightweight Directory Access Protocol (LDAP) is a standards-based, cross-platform, extensible protocol that runs directly on top of the TCP/IP layer and is used to access information stored in a specially organized information directory. One of the strengths of LDAP is that 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.
- As with any form of authentication that relies on an external server, users will not be able to access protected device functions if an outage prevents the printer from communicating with the authenticating server.
- To help prevent unauthorized access, users are encouraged to securely end each session by selecting **Log out** on the printer control panel.

To add a new 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 will be 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** (Secure Sockets Layer/Transport Layer Security), or **TLS**.
- **Userid Attribute**—Type either `cn` (common name), `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. The default value is "cn."
- **Search Base**—This is the node in the LDAP server where user accounts reside. Multiple search bases may be entered, 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**—If selected, then user credentials and group designations can be pulled from the existing network comparable to other network services.
- **Anonymous LDAP Bind**—If selected, then the Embedded Web Server binds with the LDAP server anonymously, and the Distinguished Name and MFP Password fields are unavailable.
- **Distinguished Name**—Type the distinguished name of the print server or servers.
- **MFP's Password**—Type the password for the print servers.

Search specific object classes

- **Person**—If selected, then the "person" object class will also be searched.
- **Custom Object Class**—If selected, then this custom search object class will also be searched. The administrator can define up to three custom search object classes (optional).

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, the administrator 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.

To edit an existing 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.

To delete an existing 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.

To validate an existing 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 is available only in select printer models.

Some administrators prefer authenticating to an LDAP server using *Generic Security Services Application Programming Interface* (GSSAPI) instead of simple LDAP authentication because the transmission is always secure. Instead of authenticating directly with the LDAP server, the user will first authenticate 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 that Kerberos 5 also be configured.
- Supported devices can store a maximum of five unique LDAP+GSSAPI configurations. Each configuration must have a unique name.
- As with any form of authentication that relies on an external server, users will not be able to access protected device functions if an outage prevents the printer from communicating with the authenticating server.
- To help prevent unauthorized access, users are encouraged to securely end each session by selecting **Log out** on the printer control panel.

To add a new 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 will be 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 will be performed.
- **Server Port**—This is 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** (Secure Sockets Layer/Transport Layer Security), or **TLS**.
- **Userid Attribute**—Type either `cn` (common name), `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**—This is the node in the LDAP server where user accounts reside. Multiple search bases may be entered, 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**—If selected, then user credentials and group designations can be pulled from the existing network comparable to other network services.
- **MFP Kerberos Username**—Type the distinguished name of the print server or servers.
- **MFP's Password**—Type the Kerberos password for the print server or servers.

Search specific object classes

- **person**—If selected, then the "person" object class will also be searched.
- **Custom Object Class**—If selected, then this custom search object class will also be searched. The administrator can define up to three custom search object classes (optional).

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, the administrator 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.

To edit an existing 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.

To delete an existing 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 is available only in select printer models.

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

Notes:

- Because only one krb5.conf file is used, uploading or resubmitting a simple Kerberos file will overwrite the configuration file.
- The krb5.conf file can specify a default realm. However, if a realm is not specified in the configuration file, then the first realm specified will be used as the default realm for authentication.
- As with any form of authentication that relies on an external server, users will not be able to access protected device functions if an outage prevents the printer from communicating with the authenticating server.
- To help prevent unauthorized access, users are encouraged to securely end each session by selecting **Log out** on the printer control panel.

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. 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 88) used by the Kerberos server in the KDC Port field.

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 **Browse**, 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:

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

Setting date and time

Because Kerberos servers require that key requests bear a recent time stamp (usually within 300 seconds), the printer clock must be in sync or closely aligned with the KDC system clock. Printer clock settings can be updated manually, or set to use *Network Time Protocol* (NTP), to automatically sync with a trusted clock—typically the same one used by the Kerberos server.

1 From the Embedded Web Server, click **Settings** > **Security** > **Set Date and Time**.

2 To manage the settings manually, type 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 will need to configure additional settings under Custom Time Zone Setup.

3 If *daylight saving time* (DST) is observed in your area, then select the **Automatically Observe DST** check box.

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 if necessary.

5 To sync to an NTP server rather than manage date and time settings manually, select the **Enable NTP** check box, and 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, and then click the **Install MD5 key** link or the **Install Autokey IFF params** link 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.

Setting up a CA certificate monitor

Note: This is available only in select printer models.

When joined to an Active Directory environment, automatic updates of CA (Certificate Authority) certificates is necessary. The certificate monitor, when enabled, performs this function.

1. From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **CA Cert Monitor Setup**.
2. Click the “Enable CA Monitor” check box.
3. Select a scheduled time for the device to check for new CA certificates, and then select the repetition interval.
4. Click **Submit** to save the changes.

Downloading the CA certificates immediately

Note: This is available only in select printer models.

Part of the Active Directory enrollment process is to automatically download the Domain Controller’s Certificate Authority (CA) certificate chain. However, this is not done immediately. The default setting for the automatic download of the CA certificates is 12:00 AM in the device-designated time zone.

Downloading the CA certificates immediately:

1. From the Embedded Web Server, click **Settings** > **Security** > **Certificate Management** > **CA Cert Monitor Setup**.
2. Click the “Enable CA Monitor” check box.
3. Click the “Fetch immediately” check box to allow the device administrator to over-ride the scheduled time frame and immediately install the CA certificate chain.
4. Click **Submit**.

   Note: The Web page will refresh and bring you back to the Certificate Management page.
5. Click **Certificate Authority Management** to validate that the CA certificate chain was properly downloaded.

   Note: if you would like to do a more extensive review of the CA certificates, simply click on the CA certificate name you see under the ”Certificate Authority Common Name” section.

Securing access

Setting a backup password

Note: This is available only in select printer models.

A backup password allows the Embedded Web Server administrator to 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.

Note: In some organizations, security policies prohibit the use of “back door” measures such as a backup password. Consult your organization's policies before deploying any security method that might compromise those policies.

1. From the Embedded Web Server, click **Settings** > **Security** > **Security Setup**.
2. Under Additional Security Setup Options, click **Backup Password**.

3 Select the **Use Backup Password** check box, and then type and retype the password.

4 Click **Submit**.

Setting login restrictions

Note: This is available only in select printer models.

Many organizations establish login restrictions for information assets such as workstations and servers. Embedded Web Server administrators should verify that printer 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 the amount of time before lockout takes place.
   - **Lockout time**—Specify the duration of lockout.
   - **Panel Login Timeout**—Specify how long a user may be logged in before being automatically logged off.
   - **Remote Login Timeout**—Specify how long a user may be logged in remotely before being automatically logged off.

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

Using a security template to control function access

Note: This is available only in select printer models.

Each access control, or function access control, can be set to require no security (the default) or to use any of the building block selections available 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

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

2 From Step 1 under Advanced Security Setup, click the building block (or blocks) appropriate for your environment, and then configure it.

   For more information on configuring a specific type of building block, see the relevant section or sections under “Configuring building blocks” on page 9.

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 From Step 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 method for authenticating users.

Note: The Authentication Setup list is populated with the authentication building blocks that have been configured on the device.

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

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

7 To use groups, 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**.

Notes:

- Certain building blocks (such as passwords and PINs) do not support separate authorization.
- For simple authorization-level security, in which individual users are not authenticated, administrators can control access to specific device functions by assigning only a password or PIN to a security template. Users are required to enter the correct code in order to gain access to any function controlled by the password or PIN.

Step 3: Assign security templates to access controls

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

2 From Step 3 under Advanced Security Setup, click **Access Controls**.

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

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

Users will now be required to enter the appropriate credentials in order to gain access to any function controlled by the security template.

Notes:

- To help prevent unauthorized access, users are encouraged to securely end each session by selecting **Log out** on the printer control panel.
- For a list of individual access controls and what they do, see “Appendix D: Access controls” on page 44.

Editing or deleting an existing security template

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

2 From Step 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:

- Click **Cancel** to retain previously configured values.
- Click **Delete Entry** to delete the selected security template.
- Click **Delete List** in the Manage Security Templates screen to delete all security templates on the device.

- You can delete a security template only if it is not in use; however, security templates currently in use can be edited.

Managing certificates and other settings

Note: This is available only in select printer models.

The Certificate Management menu is used for configuring printers to utilize certificates for establishing SSL, PSec, and 802.1x connections. Additionally, MFPs utilize certificates for LDA over SSL authentication and address book look-ups.

The process for configuring devices consists of the following activities:

- Loading of the CA (Certificate Authority) certificate for a certificate authority into the device
- Creating a device certificate or using of the device default certificate
- Creating a CA-signed certificate using the device certificate data
- Loading of the CA-signed certificate into the device

Note: This process can be greatly simplified by using a new Automatic Certificate Enrollment Application, which is available when an Active Directory environment is being utilized. For details on the usage of this application, see “Appendix C: Automatic Certificate Enrollment Application” on page 42.

Installing a Certificate Authority certificate on the device

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

The Certificate Authority (CA) is needed so that the printer can trust and validate the credentials of another system on the network. Without a CA certificate, the printer has no other means to determine whether to trust the certificate that has been presented by the system that would like to create the secure connection.

Start with the certificate file (.pem format) for the CA that is to be utilized. An example of how to create this file is provided in “Appendix A: CA file creation” on page 42.

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

   Notes:

   - This window allows the device administrator the ability to initiate a request for 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 particular CA certificate, simply click on the certificate common name link listed under the Certificate Authority Common Name heading.
   - There is no installed CA certificates to view on this page if this a new, out-of-the-box device.
3. Click **New** to display the Certificate Authority Installation screen.
4. Click **Browse** to select the .pem format certificate authority file, and then select **Submit**. This completed the process of installing a CA certificate.

Configuring the device for certificate information

Note: This is available only in select printer models.

The printer has a self-generated certificate. For some operations (e.g. 802.1x, IPSec, etc.), the printer certificate needs to be upgraded to a certificate that has been signed by a certificate authority.

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

1. Open a Web browser, and then type the IP address or host name of the printer.
2. From your printer Web page, click **Settings** > **Security** > **Certificate Management** > **Set Certificate Defaults**.

   Note: The Set Certificates Defaults menu allows you to update the out-of-the-box information on the device with information including those that fit your organization's certificate requirements.
3. After updating all the fields that fit your organization, click **Submit**. For more information, see "Setting certificate defaults" on page 26.

   Note: The Web page refreshes and returns to the Certificate Management page.
4. Click the **Device Certificate Management** link.

   Notes:

   - This window allows the device administrator the ability to initiate a request for 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 particular device certificate, simply click on the certificate common name link listed under the Friendly Name heading.
   - If this is for a new, out-of-the-box device, then there will be a default self-signed certificate to view on this page.
5. Select the link for the preferred device certificate to obtain the certificate signing request information.

   Notes:

   - You may use the default certificate link to use the default certificate created in step 2 or another named certificate. The certificate information is displayed.
   - Other certificates are created by selecting **New**, which will open a Certificate Generation Parameters page. For more information, see "Creating a new certificate" on page 25.
6. Click **Download Signing Request**, and then save and open the .csr file with a notepad or any other text editor.

   Note: The file data is displayed in a standard format that includes the base-64 representation in the application window. Highlight and copy that information for later usage by a paste operation.
7. Leave your current printer Web page open while you open a new Web browser to the Certificate Authority Web site.
8. Follow the CA certificate request process as defined for the Certificate Authority. A sample request is shown in "Appendix B: CA-Signed Device Certificate creation" on page 42.

   Note: The result of this process will be a new CA Signed Device Certificate file (in .pem format). Save this file on your computer since it will be required for the next steps.
9. In your printer Web page, return to the "default" Device Certificate Management page, and then click **Install Signed Certificate**.

10 Click **Browse**, and then select the CA Signed Device Certificate file that was created in step 8.

11 Click **Submit**.

Note: This completes the process of creating and installing a signed printer certificate. The printer can now present a valid certificate to systems to which it attempts to negotiate an SSL or IPSec connection.

Creating a new 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 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 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**.

Configuring confidential printing

Users printing confidential or sensitive information may opt to use the confidential print option, which allows print jobs to be PIN-protected so that they 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 a limit on the number of times an invalid PIN can be entered. **Notes:** • This menu item appears only when a formatted, working printer hard disk is installed. • Enter `0` to allow users to enter an incorrect PIN as many times as they choose. • Enter a value between 2 and 10 to specify the number of times users can enter an incorrect PIN before being locked out. • When the limit is reached, the print jobs for that user name and PIN is deleted.
Note: Off is the factory default setting.	

Use	To
Confidential Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set a limit on how long the printer stores confidential print jobs. **Notes:** • If the "Confidential Job Expiration" setting is changed while confidential print jobs reside in the printer memory or printer 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 a limit on how long the printer stores print jobs.
Verify Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set a limit on how long the printer stores print jobs needing verification.
Reserve Job Expiration Off 1 hour 4 hours 24 hours 1 week	Set a limit on how long the printer stores print jobs for printing at a later time.
Note: Off is the factory default setting.	

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

Enabling and disabling USB devices

Note: This is available only in select printer models.

1 From the Embedded Web Server, click **Settings** > **Security** > **Schedule USB Devices**.

2 From the Disable Devices menu, select to disable printing from any USB device or from flash drives only.

Note: All scheduled "Disable" actions will be 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 From the Action menu, select **Enable** or **Disable** to specify which action should occur at the specified time.

b From the Time menu, select the hour at which the selected action should begin (example: "06:00," to start at 6:00 AM).

c From the Day(s) menu, select which day or days the schedule should run (example: “Weekdays (Mon-Fri)”).

d Click **Add** to save the action to the schedule.

Notes:

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

Erasing temporary data files from the hard disk

On certain devices, administrators can use “Erase Temporary Data Files” to remove residual confidential material from the device and free up memory space. This setting uses random data patterns to securely 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. Multiple pass wiping is compliant with the DoD 5220.22-M standard for securely erasing data from a hard disk.

Note: Not all printers have a hard disk installed. If you do not see “Erase Temporary Data Files” in the main Security menu, then it is not supported on your device.

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

   Note: Wiping Mode can only be set to **Auto**.

2 Modify the following settings:
   - **Single Pass**—To overwrite the printer hard disk in a single pass with a repeating bit pattern. This is the factory default setting.
   - **Multi–Pass**—To 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. Highly confidential information should be wiped using this method.

3 Click **Submit** to save the changes.

Configuring security audit log settings

Note: This is available only in select printer models.

The security audit log allows administrators to monitor security-related events on a device including, among others, user authorization failures, successful administrator authentication, or Kerberos files being uploaded 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.

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

2 Select **Enable Audit** to activate security audit logging (syslog).

3 Type the IP address or host name of the Remote Syslog Server, and then select the **Enable Remote Syslog** check box to transmit log events to a network syslog server.

   Note: The Enable Remote Syslog check box is unavailable until an IP address or host name is entered.

4 Enter the Remote Syslog Port number used on the destination server. The default value is 514.

5 From the Remote Syslog Method menu, select one of the following:
- Normal UDP—To send log messages and events using a lower-priority transmission protocol.
- Stunnel—If implemented on the destination server.

6 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 will be tagged with the same facility code to aid in sorting and filtering by network monitoring or intrusion detection software.

Note: Steps 4 through 6 are valid only if Remote Syslog is enabled.

7 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 will be logged. For example, if level **4 - Warning** is selected, then severity levels 0–4 will be logged.

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

9 In the "Admin's e-mail address" field, type one or more e-mail addresses (separated by commas) to automatically notify administrators of certain log events, and then select from the following options:
- **E-mail log cleared alert**—This indicates when the **Delete Log** button is clicked.
- **E-mail log wrapped alert**—This indicates when the log becomes full and begins to overwrite the oldest entries.
- **Log full behavior**—This provides a drop list with two options:
  - "Wrap over oldest entries"
  - "E-mail log then delete all entries"
- **E-mail % full alert**—This indicates when log storage space reaches a certain percentage of capacity.
- **% full alert level (1-99%)**—This sets how full the log must be before an alert is triggered.
- **E-mail log exported alert**—This indicates when the log file is exported.
- **E-mail log settings changed alert**—This indicates when the log settings are changed.
- **Log line endings**—This sets how the log file terminates the end of each line. Select a line ending option from the drop-down menu.
- **Digitally sign exports**—This adds a digital signature to each exported log file.

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

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

E-mail server setup

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 will use 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 will wait 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 will 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 in order 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.

Viewing or deleting 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**.

Connecting the printer to a wireless network using the Embedded Web Server

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 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 **Settings** > **Network/Ports** > **Wireless**.

3 Modify the settings to match the settings of your access point (wireless router).

Note: Make sure to enter the correct SSID.

4 Click **Submit**.

5 Turn off the printer, and then disconnect the Ethernet cable. Then wait for at least five seconds, and then turn the printer back on.

6 To verify if your printer is connected to the network, print a network setup page. Then in the Network Card [x] section, see if the status is “Connected”.

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

Configuring 802.1x authentication

Note: This is available only in select printer models.

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

EAP Type	Needs on MFP or Printer
EAP-MD5	Device login name and password
EAP-TLS	Device login name and password, CA certificate, signed device certificate
EAP-TTLS	Device login name and password, CA certificate
PEAP (TLS)	Device login name and password, CA certificate, signed device certificate
LEAP	Device login name and password

Note: It is important to 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 the **Active** check box to enable 802.1x authentication.
   b. Type the login name and password the printer will use 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 you are using digital certificates to establish a secure connection to the authentication server, then you must configure them on the printer before changing 802.1x authentication settings. For more information on configuring digital certificates, see “Managing certificates and other settings” on page 23.
      - Server certificate validation is integral to TLS (Transport Layer Security), PEAP (Protected Extensible Authentication Protocol), and TTLS (Tunneled Transport Security Layer).

   d. Select the **Enable Event Logging** check box to log 802.1x authentication-related activity.

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

   e. From the 802.1x Device Certificate list, select the digital certificate you want to use. If only one certificate has been installed, then **default** will be the only choice listed.

3 Under Allowable Authentication Mechanisms, select the authentication protocols the printer will recognize 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 Click **Submit** to save the changes, or **Reset Form** to restore the default settings.

Note: Changes made to settings marked with an asterisk (*) will cause the print server to reset.

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.

SNMP Version 1, 2c

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

2 Under SNMP Version 1, 2c, select **Enabled**.

3 To allow SNMP variables to be set, select **Allow SNMP Set**.

4 Type a name to be used for the SNMP Community identifier. The default community name is “public.”

5 To facilitate the automatic installation of device drivers and other printing applications, select **Enable PPM Mib** (Printer Port Monitor MIB).

6 Click **Submit** to save the changes, or click **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**.

3 To allow remote installation and configuration changes as well as device monitoring, type a user name in the SNMPPv3 Read/Write User field and a password in the SNMPPv3 Read/Write Password field.

4 To allow device monitoring only, type a user name in the SNMPPv3 Read Only User field and a password in the SNMPPv3 Read Only Password field.

5 From the SNMPv3 Minimum Authentication Level list, select “**No Authentication, No Privacy**,” “**Authentication, No Privacy**,” or “**Authentication, Privacy**.”

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

7 From the SNMPv3 Privacy Algorithm list, select **DES**, **AES-128**, **AES-192**, or **AES-256**.

8 Click **Submit** to save the changes or click **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 click the check box next to each condition that should generate an alert.

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

Configuring the TCP/IP port access setting

Note: This is available only in select printer models.

This feature allows you to 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**.

Note: The page displays a list of TCP/IP ports. All ports, except TCP 10000 (Telnet), are enabled by default.

2 Click the check box of the TCP/IP port to change its access setting.

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

Configuring IPsec settings

Note: This is available only in select printer models.

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

2 From the IPSec menu page, configure the following settings:

Setting	Description
IPSec Enable On Off	To enable or disable the printer's IP security settings. **Note:** On is the factory default setting.
* This is the factory default setting.	

Setting	Description
Connections Pre-Shared Key Authenticated Connections Host 1 Host 2 Host 3 Host 4 Host 5 Host 6 Host 7 Host 8 Host 9 Host 10 Certificate Authenticated Connections Host 1 Host 2 Host 3 Host 4 Host 5	To configure the printer's authenticated connections. • For Hosts 1–10, the following settings can be configured: – **Address**—You can type a maximum of 45 bytes of characters. – **Key**—You can type a maximum of 256 bytes of characters. • For Hosts 1–5, the following setting can be configured: – **Address[/subnet]**—You can type a maximum of 59 bytes of characters.
Settings DH Group Encryption Authentication Certificate Validation Validate Peer Certificate On* Off Select Device Certificate	To specify your printer's encryption and authentication methods, select an option for each setting.
* This is the factory default setting.	

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

Enabling the security reset jumper

Note: This is available only in select printer models.

The *security reset jumper* is a hardware jumper located on the motherboard. Administrators can use the Embedded Web Server to specify the effect of using this jumper.

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**—This removes access to *all* security menus and should be used with caution.
- **Access controls = "No security"**—This removes security only from the function access controls.
- **Reset factory security defaults**—This restores 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 **No Effect** is selected and the password (or other applicable credential) is lost, then you will not be able to access the security menus. To replace the device RIP card (motherboard) and regain access to the security menus, a service call will be required.

Securing the hard disk and other installed memory

Statement of Volatility

Your printer contains various types of memory that are capable of storing device and network settings, information from embedded solutions, and user data. The types of memory—along with the types of data stored by each—are described as follows:

- **Volatile memory**—Your device utilizes standard random access memory (RAM) to temporarily buffer user data during simple print and copy jobs.
- **Non-volatile memory**—Your device may utilize two forms of non-volatile memory: EEPROM and NAND (flash memory). Both types are used to store the operating system, device settings, network information, scanner and bookmark settings, and embedded solutions.
- **Hard disk memory**—Some devices have a hard disk drive installed. The printer hard disk is designed for device-specific functionality and cannot be used for long term storage for data that is not print-related. The hard disk does not provide the capability for users to extract information, create folders, create disk or network file shares, or FTP information directly from a client device. The hard disk can retain buffered user data from complex scan, print, copy, and fax jobs, as well as form data, and font data.

You may want to erase the contents of the memory devices installed in your printer when:

- The printer is being decommissioned.
- The printer hard drive is being replaced.
- The printer is being moved to a different department or location.
- The printer is being serviced by someone from outside your organization.
- The printer is being removed from your premises for service.

Disposing of a hard drive

Note: Not all printers have a hard disk installed.

In high-security environments, it may be necessary to take additional steps to ensure that confidential data stored on the printer hard disk cannot be accessed once the printer or its hard disk is removed from your premises. While most data can be erased electronically, you may want to consider one or more of the following actions before disposing of a printer or hard disk:

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

Note: While most data can be erased electronically, the only way to guarantee that all data is completely erased is to physically destroy each memory device on which data could have been 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 available for erasing data stored in non-volatile memory, depending on the type of memory device installed and the type of data stored by that device.

- **Individual settings**—You can erase individual printer settings using the printer control panel or the printer Embedded Web Server. For more information, see the *User's Guide*.
- **Device and network settings**—You can erase device and network settings and restore factory defaults by resetting the NVRAM using the printer Config menu.
- **Security settings**—You can restore factory defaults or erase security settings by selecting a behavior for the Security Reset Jumper in the Embedded Web Server, and then moving a hardware jumper located on the motherboard.
- **Fax data**—If your printer does not contain a hard disk, or if you have chosen NAND for fax storage, then you can erase fax settings and data by resetting the NVRAM using the printer Config menu.

  Note: If your printer has a hard disk that has been partitioned for fax storage, then you must reformat that partition to erase fax data and settings.
- **Embedded solutions**—You can erase information and settings associated with embedded solutions by uninstalling the solutions, or by restoring factory defaults using the printer Config menu.

Configuring Out of Service Erase

Notes:

- This menu appears only when basic or advanced security is enabled on the device and the "Security Menu Remotely" access control is activated.
- This menu allows you to selectively clear all settings, apps, and pending job or fax data stored in the device, erase all contents on the hard disk, or both. Selecting both will restore the device to the original factory default settings, which includes network settings.

1. From the Embedded Web Server, click **Settings** > **Security** > **Restore Factory Defaults** > **Out of Service Erase**.

   Warning—Potential Damage: Do not turn off the printer.
2. Click the **Erase Printer Memory** check box if you wish to clear all settings, apps, and job data.
3. Click the **Erase Hard Disk** check box if you wish to erase all the contents of the hard disk, and then select either of the following:
   - **Single Pass Erase**—This lets you erase the content on the printer hard disk in a single pass with a repeating bit pattern.
   - **Multiple Pass Erase**—This lets you 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.

   Notes:

   - You must satisfy the security FAC (Function Access Control) applied in the security template first in order to access this setting.

- Single Pass Erase is the factory default setting.

4 Click the confirmation check box in order for the Erase button to become available.

5 Click **Erase**.

Completely erasing printer hard disk memory

Notes:

- Some printer models may not have a printer hard disk installed.
- Access to the configuration menu might be restricted or disabled by the **Configuration Menu** function access control. For more information, see “Appendix D: Access controls” on page 44.

Configuring Disk Wiping in the printer menus enables you to remove confidential material left by scan, print, copy, and fax jobs, by securely overwriting files that have been marked for deletion.

For information on erasing the remaining job information stored on the hard disk memory using the Embedded Web Server, see “Erasing temporary data files from the hard disk” on page 28.

Using the printer control panel

1 Turn off the printer using the power switch.

2 Simultaneously press and hold the **2** and **6** keys on the numeric keypad while turning the device back on. It takes approximately a minute to boot into the Configuration menu.

   Once the MFP is ready, the touch screen shows a list of functions instead of standard home screen icons such as Copy and Fax.

3 Release the buttons when the screen with the progress bar appears. The printer undergoes a power-on reset, and then the Configuration menu appears.

4 Touch **Wipe Disk**, and then touch either of the following:
   - **Wipe disk (fast)**—This lets you overwrite the disk with all zeroes in a single pass.
   - **Wipe disk (secure)**—This lets you overwrite the 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. Highly confidential information should be wiped using this method.

5 Touch **Yes** to proceed with disk wiping.

   Notes:

   - A status bar will indicate the progress of the disk wiping task.
   - Disk wiping can take from several minutes to more than an hour, during which the printer will be unavailable for other user tasks.

6 Touch **Back** > **Exit Config Menu**.

The printer undergoes a power-on reset and then returns to normal operating mode.

Configuring printer hard disk encryption

Enable hard disk encryption to prevent loss of sensitive data in the event the printer or its hard disk is stolen.

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

Using the Embedded Web Server

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

   Notes:

   - View the printer IP address on the printer home screen. 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 **Settings** > **Security** > **Disk Encryption**.

   Note: Disk Encryption appears in the Security Menu only when a formatted, non-defective printer hard disk is installed.

3. From the Disk Encryption menu, select either of the following:
   - **Disable**—Use this to disable disk encryption.
   - **Enable**—Use this to enable disk encryption.

     Notes:

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

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

4. Click **Submit** to proceed with disk wiping and encryption.

   Note: Encryption takes approximately two minutes.

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

5. Click **Refresh** to return to the Embedded Web Server.

Using the printer control panel

1. Turn off the printer.
2. Hold down **2** and **6** while turning the printer on. Release the buttons only when the screen with the progress bar appears.

   The printer performs a power-on sequence, and then the Configuration menu appears. When the printer is fully turned on, a list of functions appears on the printer display.

3. Touch **Disk Encryption** > **Enable**.
4. Touch **Yes** to proceed with disk encryption.

   Notes:

   - Do not turn off the printer during the encryption process. Doing so may result in loss of data.
   - Encryption takes approximately two minutes.

- A status bar will indicate the progress of the disk wiping task. After the disk has been encrypted, the printer will return to the Enable/Disable screen.

5 Touch **Back** > **Exit Config Menu**.

The printer will perform a power-on reset, and then return to normal operating mode.

Scenarios

Scenario: Printer in a public place

If your printer is located in a public space such as a lobby, and you want to prevent the general public from using it, then a password or PIN can provide simple protection right at the device. Administrators can assign a single password or PIN for all authorized users of the device, or separate codes to protect individual functions. The key to remember is that anyone who knows a password or PIN can access any functions protected by that code.

Step 1: Create a password or PIN

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

2 Under Advanced Security Setup, click either **PIN** or **Password**, and then configure it.

For some printer models, you can set your PIN and password through Panel PIN Protect and Web page Password Protect. For more information, see “Creating a PIN through Panel PIN Protect” on page 11 and “Creating a password through Web Page Password Protect” on page 10.

3 Click **Submit** to save the changes.

For more information on configuring a PIN or password, see the relevant section or sections under “Configuring building blocks” on page 9.

Step 2: Create a security template

Note: This is available only in select printer models.

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 menu list, select the PIN or password created in Step 1.

6 Click **Save Template**.

Step 3: Assign security templates to access controls

Note: This is available only in select printer models.

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

2 Under Advanced Security Setup, click **Access Controls**.

3 If necessary, click **Expand All** or click a specific folder to view a list of available functions.

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

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

In order to gain access to any function controlled by this security template, users will now be required to enter the appropriate PIN or password.

Scenario: Standalone or small office

Note: This is available only in select printer models.

If your printer is not connected to a network, or you do not use an authentication server to grant users access to devices, then internal accounts can be created and stored within the Embedded Web Server for authentication, authorization, or both.

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 11.

Step 2: Create a security template

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 Templates 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 menu, select a method for authenticating users. This list will be populated with the authentication building blocks which have been configured on the device.

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

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

7 To use groups, click **Modify Groups**, and then select one or more groups to include in the security template. Hold down the **Ctrl** key to select multiple groups.

8 Click **Save Template**.

Step 3: Assign security templates to access controls

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

2 Under Advanced Security Setup, click **Access Controls**.

3 If necessary, click **Expand All** or click a specific folder to view a list of available functions.

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

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

Users will now be required to enter the appropriate credentials in order to gain access to any function controlled by a security template.

Scenario: Network running Active Directory

Note: This is available only in select printer models.

On networks running Active Directory, administrators can use the LDAP+GSSAPI capabilities of the Embedded Web Server to take advantage of authentication and authorization services already 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.

Before configuring the Embedded Web Server to integrate with Active Directory, you need to know 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 12.

Create a security template

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 the name given to your Authentication client application or building block setup.

6 Click **Add authorization**, and then select the name given to your Authentication client application or building block setup.

7 To use groups, click **Modify Groups**, and then select one or more of the groups listed in your Active Directory Group Names list. Hold down the **Ctrl** key to select multiple groups.

8 Click **Save Template**.

Assign security templates to access controls

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

2 Under Advanced Security Setup, click **Access Controls**.

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

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

Users will now be required to enter the appropriate credentials in order to gain access to any function controlled by the security template.

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. It will then retrieve the CA signed device certificate, and then install the certificate. The previous manual process is replaced by a simple process with only limited initial setup required.

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

Note: The example usage instructions given below assume 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 your printer Web page, 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. At 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. From the "Device Certificate Management > Advanced > Templates" page, 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 wish to install a device certificate that is used for 802.1x negotiations.
5. Click **Request Certificate**. From this screen, you will customize the certificate for this device.

   Note: If you want to view the template details first, then click **View** instead of **Request Certificate**.
6. Modify the settings from the Request Certificate Web page, but only when necessary.

   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 and changing some settings may cause the request to be denied.
   - The "Collapse/Expand Subject Name" fields 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.
7. Click Submit to send the Certificate Signing Request (CSR) to the CA.

   Note: The screen may refresh for 10 to 15 seconds. At this time, the device is contacting the Certificate Enrollment Web Service requesting the CA signed certificate be generated.
8. If successful, you will return to the "Device Certificate Management > Advanced" Web page and the new CA-signed device certificate with the specified name will be 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 and a message indicating that a request is pending admin approval will be 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 will disappear and the certificate(s) will be displayed in the installed certificates table.

The link with the certificate name can be selected if you would like to see the information associated with the new certificate. The "Renew" link is used to renew the certificate when the current CA certificate is about to expire (default of 2 years).

To specify that certificates that are about to expire are automatically renewed, in the Configure tab on the “Settings > Apps > App Management” Web page for the Automatic Enrollment application, select the check box for Automatically Update Certificates, specify the number of days before expiration for the Auto Renewal Threshold setting, and then click **Apply**.

Appendix D: Access controls

Note: Depending on the device type and installed options, some access controls (referred to on some devices as Function Access Controls) may not be available for your printer.

Administrative Menus

Function access control	What it does
Configuration Menu	This protects access to the Configuration Menu.
Manage Shortcuts at the Device	This protects access to the Manage Shortcuts section of the Settings menu from the printer control panel.
Manage Shortcuts Remotely	This protects access to the Manage Shortcuts section of the Settings menu from the Embedded Web Server.
Network/Ports Menu at the Device	This protects access to the Network/Ports section of the Settings menu from the printer control panel.
Network/Ports Menu Remotely	This protects access to the Network/Ports section of the Settings menu from the Embedded Web Server.
Option Card Configuration at the Device	This controls access to the Option Card Configuration section of the Settings menu from the printer control panel. This applies only when an Option Card with configuration options is installed on the device.
Option Card Configuration Remotely	This controls access to the Option Card Configuration section of the Settings menu from the Embedded Web Server. This applies only when an Option Card with configuration options is installed on the device.
Paper Menu at the Device	This protects access to the Paper menu from the printer control panel.
Paper Menu Remotely	This protects access to the Paper menu from the Embedded Web Server.
Reports Menu at the Device	This protects access to the Reports menu from the printer control panel.
Reports Menu Remotely	This protects access to the Reports menu from the Embedded Web Server.
Security Menu at the Device	This protects access to the Security menu from the printer control panel.
Security Menu Remotely	This protects access to the Security menu from the Embedded Web Server.
Service Engineer Menus at the Device	This protects access to the Service Engineer menu from the printer control panel.
Service Engineer Menus Remotely	This protects access to the Service Engineer menu from the Embedded Web Server.
Settings Menu at the Device	This protects access to the General and Print Settings sections of the Settings menu from the printer control panel.
Settings Menu Remotely	This 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	This 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, etc., will be ignored (flushed) when this function is protected.
Operator Panel Lock	This protects access to the locking function of the printer control panel. If this 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 will remain 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 settings changes requested by incoming print jobs are ignored.
Remote Management	This 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	This controls access to the configuration of any installed applications.
Web Import/Export Settings	This controls the ability to import and export printer settings files (UCF files) from the Embedded Web Server.
Configuration Files Import/Export	This controls the ability to import and export settings and security configuration files.
Internet Printing Protocol (IPP)	This controls the ability to use the IPP.

Function Access

Function access control	What it does
Address Book	This controls the ability to perform address book searches in the Scan to Fax and Scan to E-mail functions.
Cancel Jobs at the Device	This controls the ability to cancel jobs from the printer control panel.
Change Language from Home Screen	This controls access to the Change Language feature from the printer control panel.
Color Dropout	This controls the ability to use the Color Dropout feature for scan and copy functions.
Copy Color Printing	This controls the ability to perform color copy functions. Users who are denied will have their copy jobs printed in black and white.
Copy Function	This controls the ability to use the Copy function.
Create Bookmarks at the Device	This controls the ability to create new bookmarks from the printer control panel.
Create Bookmarks Remotely	This controls the ability to create new bookmarks from the Bookmark Setup section of the Settings menu on the Embedded Web Server.
Create Profiles	This controls the ability to create new profiles.
E-mail Function	This controls access to the Scan to E-mail function.
Fax Function	This controls access to the Scan to Fax function.
Flash Drive Color Printing	This controls the ability to print color from a flash drive. Users who are denied will have their print jobs printed in black and white.

Function access control	What it does
Allow Flash Drive Access	This controls the ability to access the flash drive.
Flash Drive Print	This controls the ability to print from a flash drive.
Flash Drive Scan	This controls the ability to scan documents to a flash drive.
FTP Function	This controls access to the Scan to FTP function.
Held Jobs Access	This protects access to the Held Jobs function.
PictBridge Printing	This controls the ability for some devices to print from an attached PictBridge-enabled digital camera. **Note:** Selected devices only.
Release Held Faxes	This controls the ability to release (print) held faxes.
Use Profiles	This controls access to profiles, such as scanning shortcuts, workflows, and eSF applications.

Device Applications

Function access control	What it does
New Apps	This 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 below apps 1–10. 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.

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ZXing 1.7

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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 ientifying a user.
Authorization	A method for specifying which functions are available to a user, i.e. what the user is allowed to do.
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 in conjunction with Access Controls to manage device functions.

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