LEXMARK™

PKI-Enabled MFP

Installation and Configuration Guide

Version 2.0.0

www.lexmark.com

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This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolit. See http://www.openssl.org/ for more information.

Table of Contents

1 Background Information

This document assumes you have read and completed the Pre-Installation Guide for the Lexmark PKI-Enabled MFP. If not, please consult that guide before continuing with the installation. Numerous mentions will be made throughout this document to the information that was gathered using that document.

Before proceeding with the install, make sure the following has taken place:

1. The MFP has been unboxed and setup as according to the end-user manual.

2. The MFP has been assigned an IP Address and is connected to the LAN.

3. You can use the web browser to navigate to the MFP’s webpage. This can be done by entering the MFP’s IP Address in the address bar of the web browser.

Once this has been verified for each MFP that will be PKI-enabled, you are ready to proceed.

2 Installing the Firmware and Applications

The PKI application support comes in three parts:

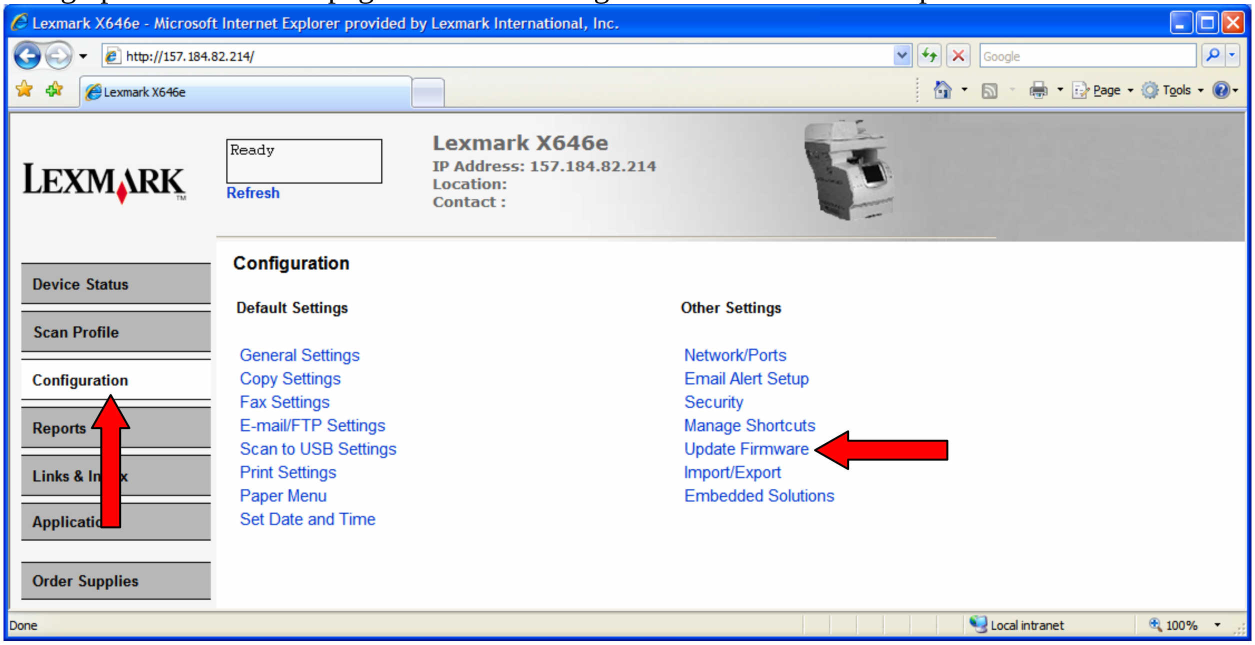
- PKI/AD Firmware
- Smartcard Driver
- PKI Applications

All three need to be installed in order to activate PKI support. **The SmartCard Reader cannot be installed on the MFP prior to completing all the steps in this section.**

2.1 Firmware Update

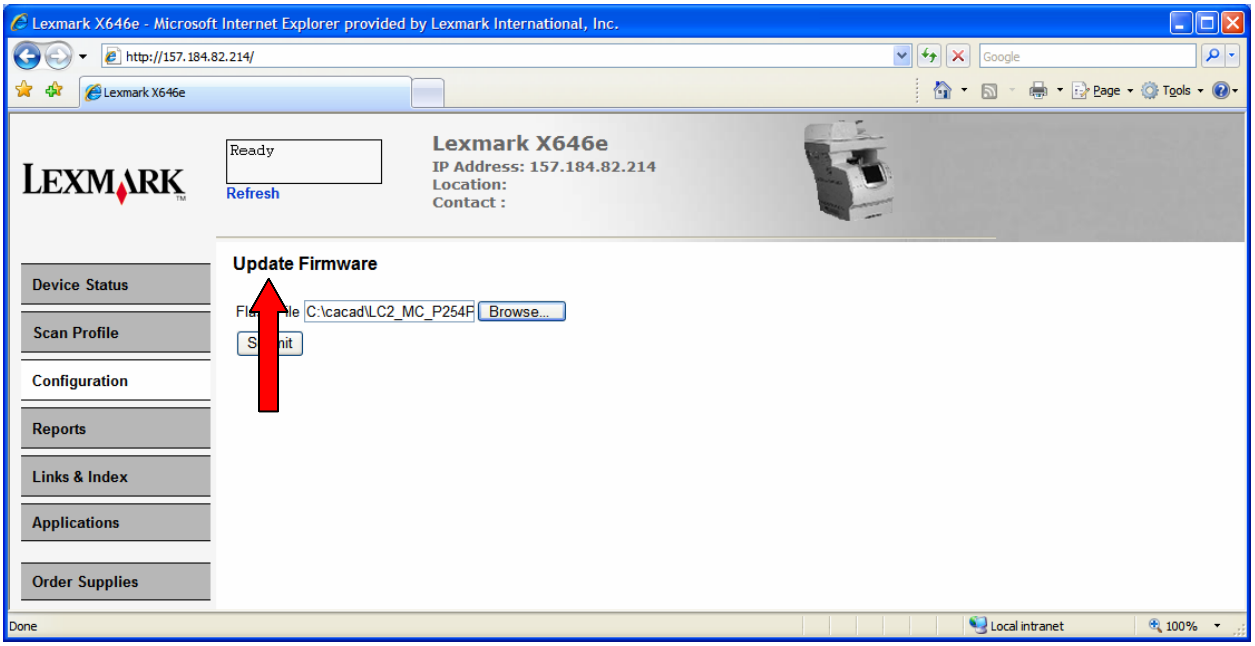
NOTE: Installing the PKI/AD Firmware will remove any previously installed embedded solutions. However, any settings that have already been configured for the device itself will be kept and used with the new firmware.

1. Bring up the MFP's web page and click Configuration and then click Update Firmware.



Lexmark X646e
IP Address: 157.184.82.214
Location:
Contact :

2. Browse to the location of the firmware file. Click Submit. See the table below for filename that corresponds to your MFP model.



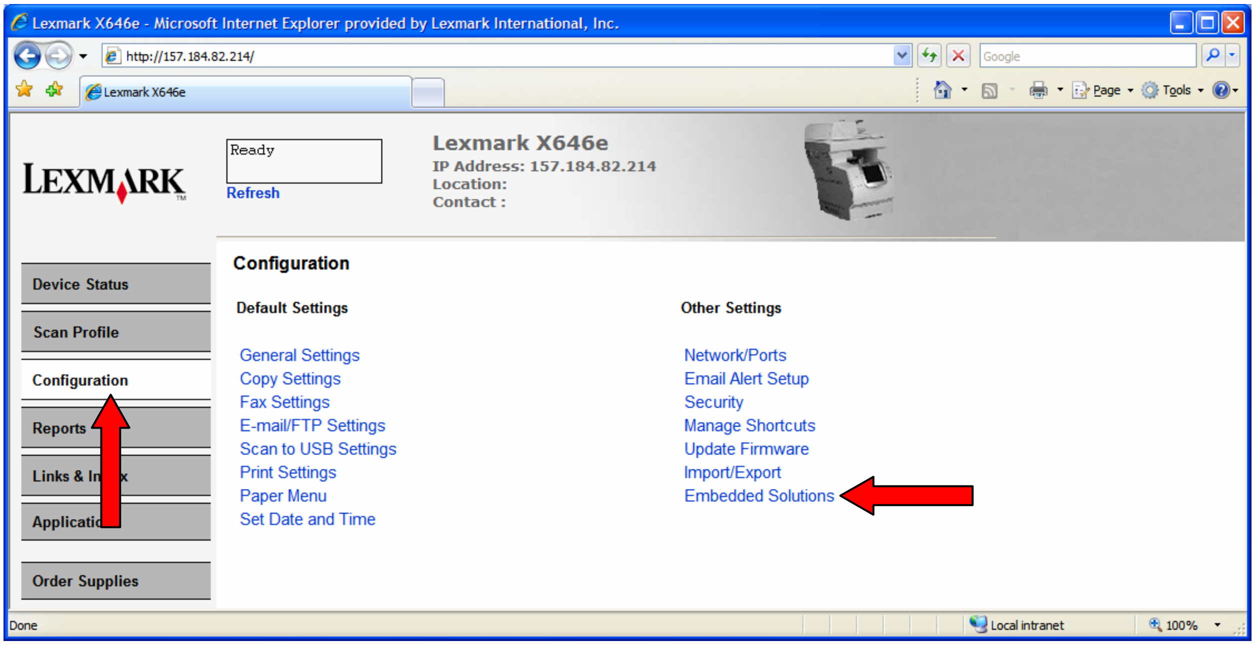
MFP Model	Firmware File
X644 and X646	LC2_MC_P254PAh1_full.fls
X85x	LC2_BE_P248PAh1_full.fls
X782	LC2_TO_P077PAh1_full.fls
X94x	LC_BR_P065PAh1_full.fls
T64x + X4600	LC2_TI_P249PAh1_full.fls

3. The file will take a few minutes to upload and for the MFP to be updated. Wait for the update to complete and then refresh the web page. **NOTE:** The MFP should not be powered off while the update is in progress.

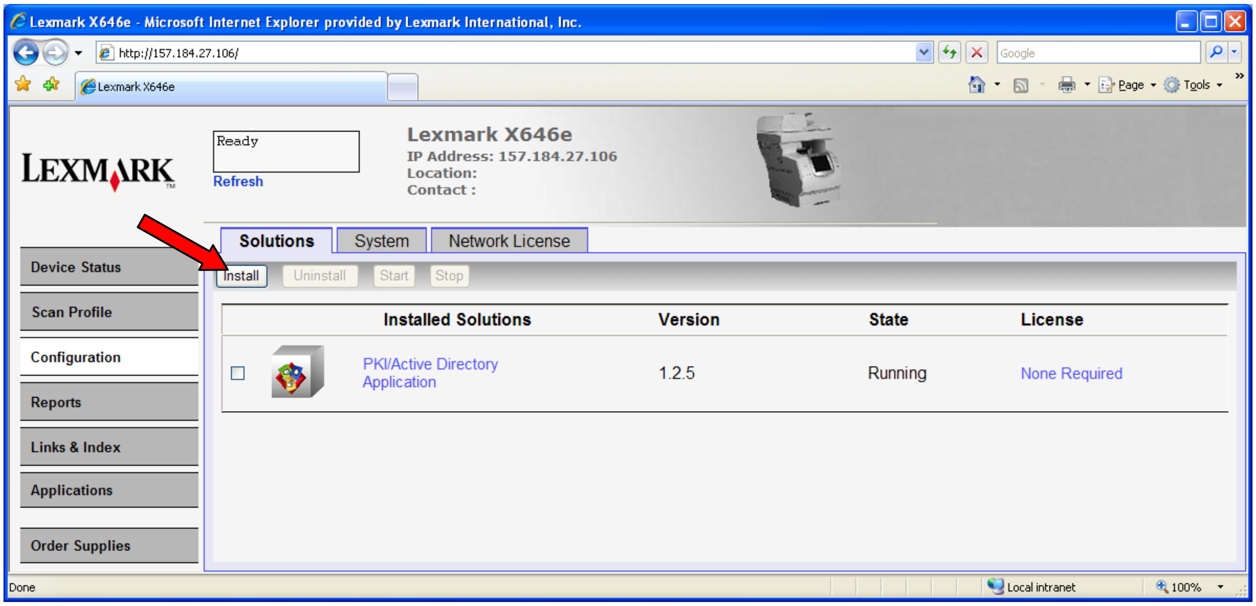
2.2 Smartcard Driver

After the firmware has been updated, the Smartcard Driver compatible with the type of cards being used must be installed.

1. Bring up the MFP's web page and click Configuration and then click Embedded Solutions.

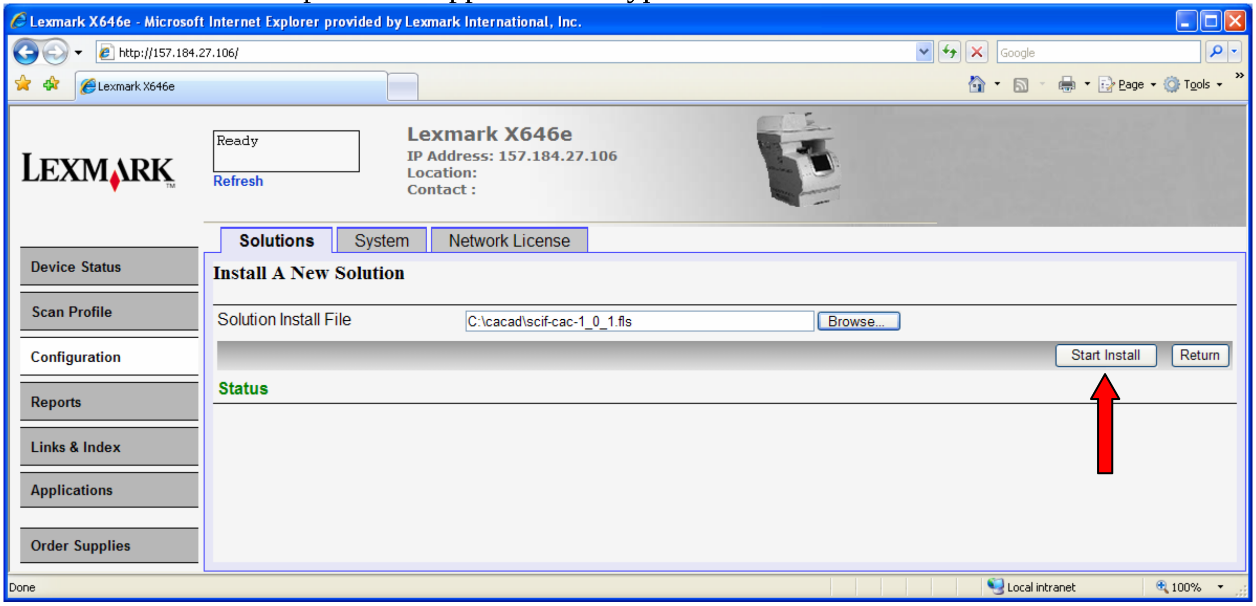


2. One Embedded Solution (PKI/Active Directory Application) is automatically installed when the PKI/AD firmware is installed. Click the Install button.



	Installed Solutions	Version	State	License
□	PKI/Active Directory Application	1.2.5	Running	None Required

3. Browse to the Smartcard Driver solution file and click Start Install. See the table below for filename that corresponds to supported card types.



Lexmark X646e - Microsoft Internet Explorer provided by Lexmark International, Inc.

http://157.184.27.106/

Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

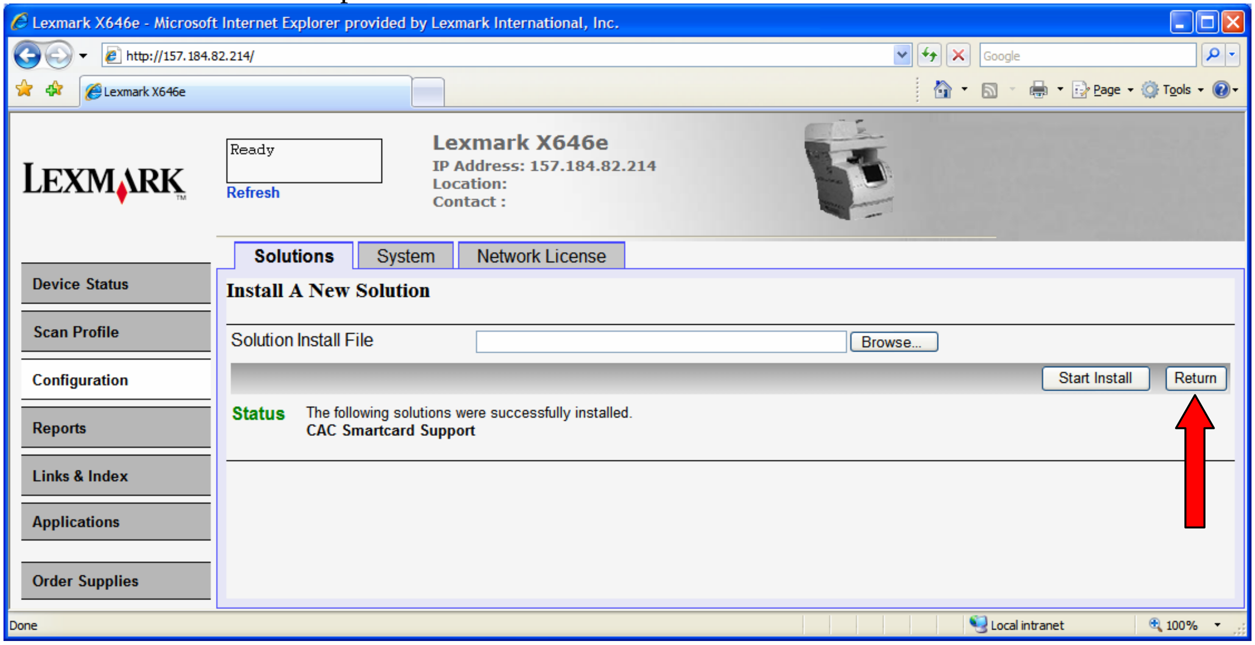
Install A New Solution

Solution Install File: C:\cacad\scif-cac-1_0_1.fls

Status

Card Type	Solution File
CAC / DOD	scif-cac-2_0_0.fls

4. Wait for the install to complete and then click Return.



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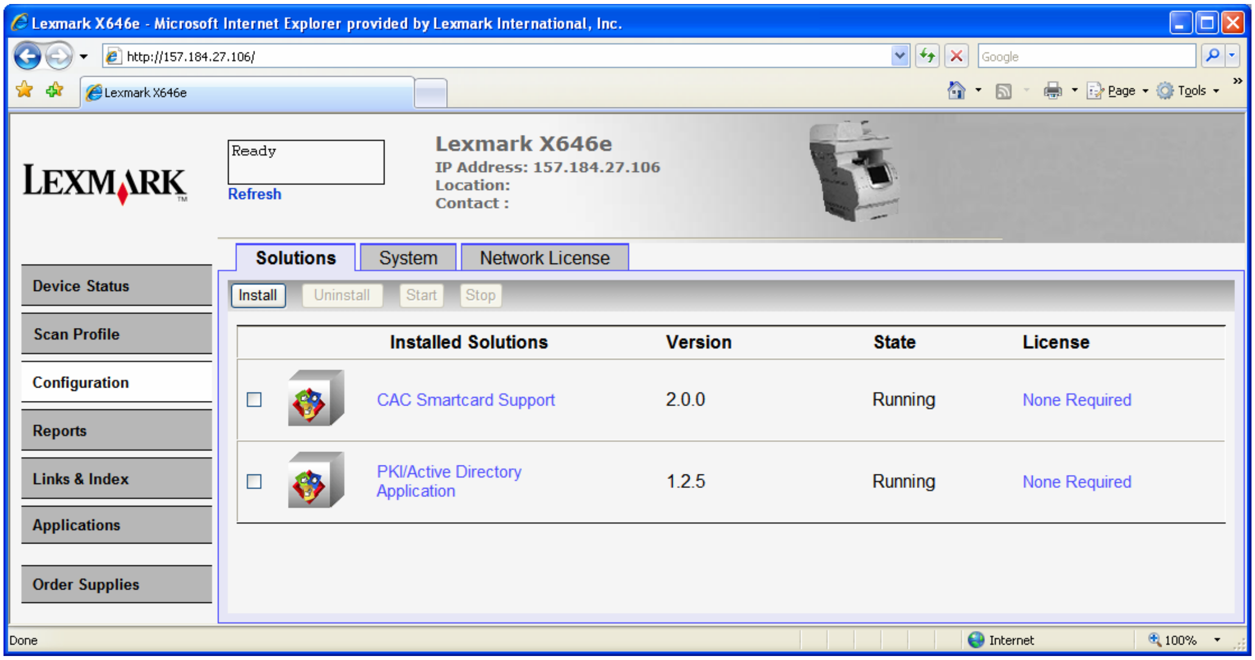
IP Address: 157.184.82.214
Location:
Contact :

Install A New Solution

Solution Install File

Status The following solutions were successfully installed.
CAC Smartcard Support

5. There should now be two embedded solutions installed on the MFP.



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http://157.184.27.106/

Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

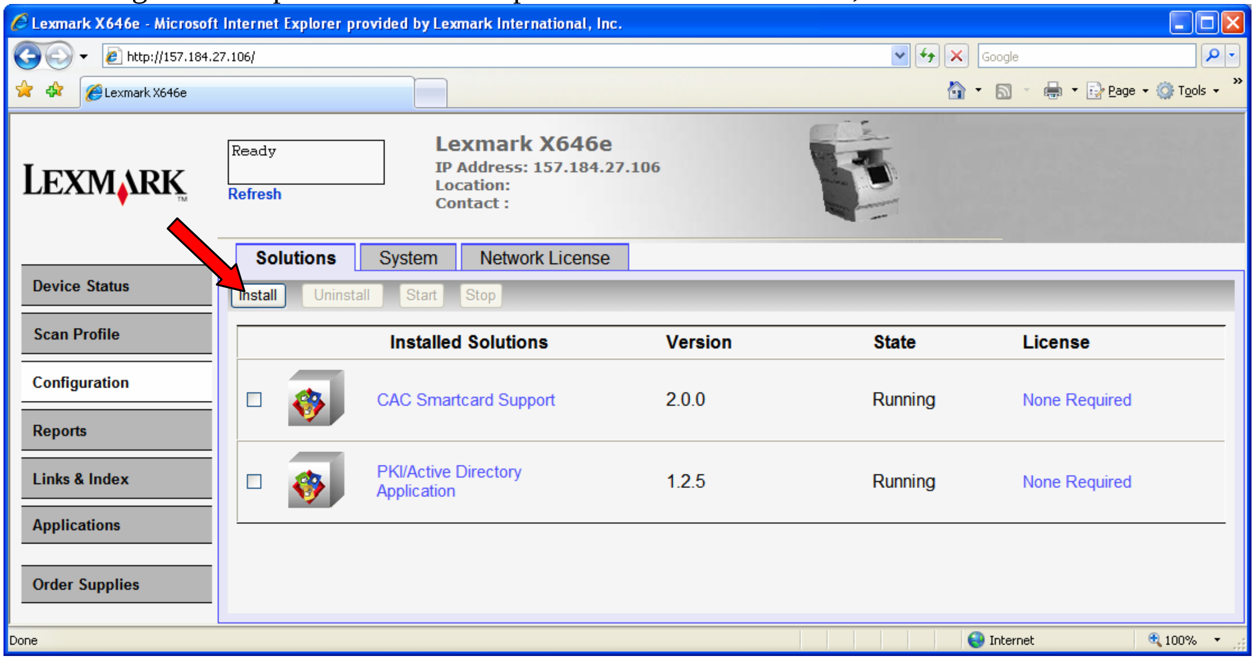
		Installed Solutions	Version	State	License
□		CAC Smartcard Support	2.0.0	Running	None Required
□		PKI/Active Directory Application	1.2.5	Running	None Required

Note: The Name and Version of the Smartcard Driver Application displayed here may differ from what is displayed on your MFP.

2.3 PKI Applications

Once the firmware and Smartcard Driver have been installed, the application files can then be installed.

1. Continuing from the previous install step for the Smartcard Driver, click Install.



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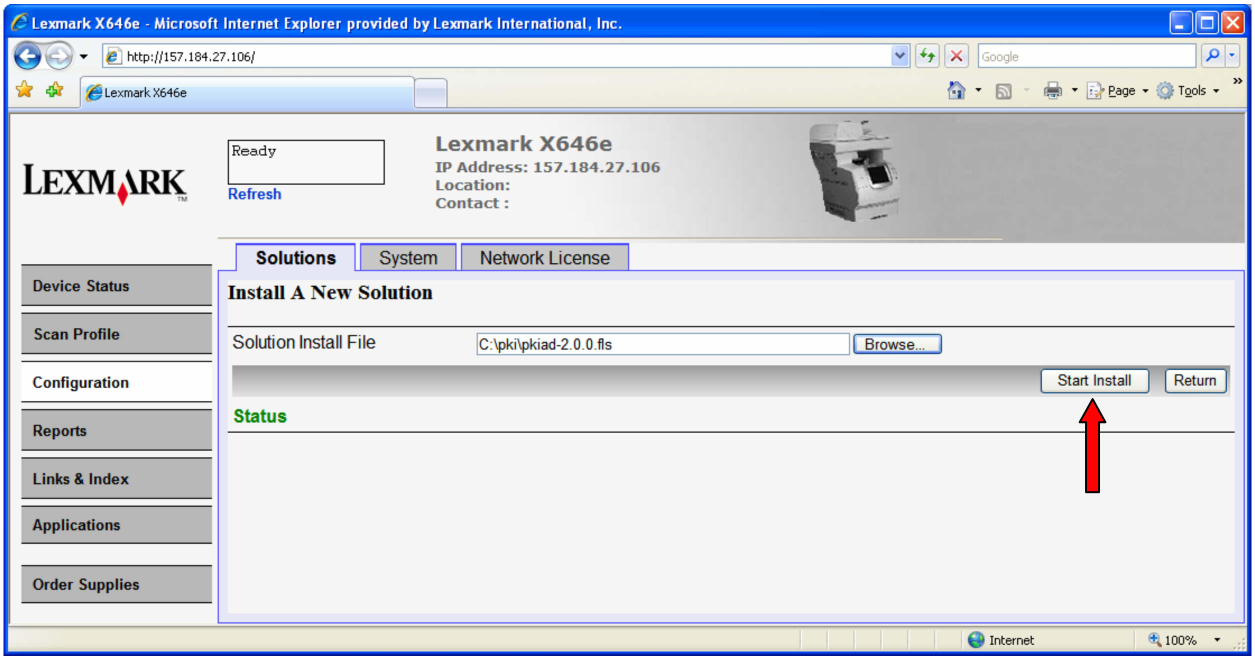
http://157.184.27.106/

Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

		Installed Solutions	Version	State	License
□		CAC Smartcard Support	2.0.0	Running	None Required
□		PKI/Active Directory Application	1.2.5	Running	None Required

2. Browse to the PKI Authentication Application solution file, pkiad-2_0_0.fls, and click Start Install.



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http://157.184.27.106/

Ready

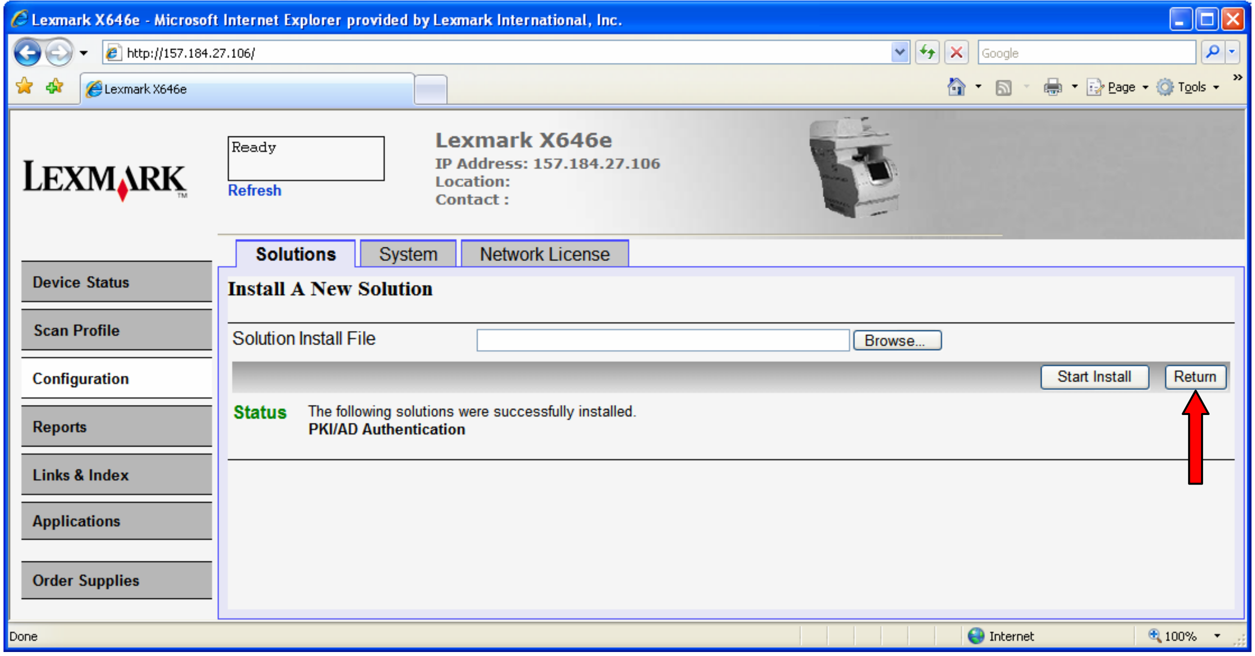
Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Install A New Solution

Solution Install File: C:\pki\pkiad-2.0.0.fls

Status

3. Wait for the install to complete and then click Return.



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http://157.184.27.106/

Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Install A New Solution

Solution Install File

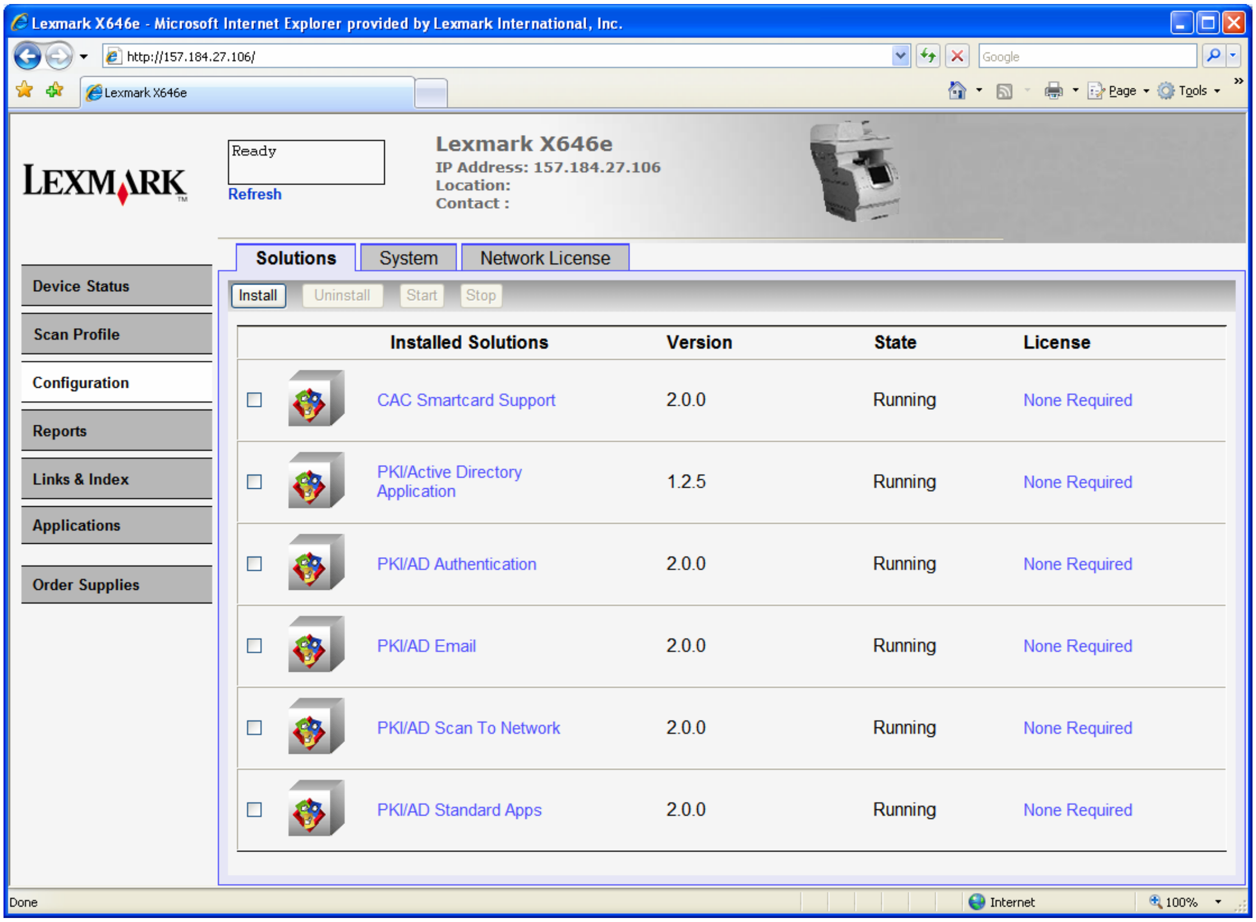
Status: The following solutions were successfully installed.
PKI/AD Authentication

Done

4. Repeat steps 1 – 3 to install each of the following PKI applications. If a particular function will not be used, it does not need to be installed.

PKI Function	Solution File
User Authorization for Copy, Fax, and/or FTP	pkistdapps-2_0_0.fls
Scan to Email	pkiemail-2_0_0.fls
Scan to Network	pkinetworkscan-2_0_0.fls

5. The list of installed solutions should now include all or some of the following:



	Installed Solutions	Version	State	License
□	CAC Smartcard Support	2.0.0	Running	None Required
□	PKI/Active Directory Application	1.2.5	Running	None Required
□	PKI/AD Authentication	2.0.0	Running	None Required
□	PKI/AD Email	2.0.0	Running	None Required
□	PKI/AD Scan To Network	2.0.0	Running	None Required
□	PKI/AD Standard Apps	2.0.0	Running	None Required

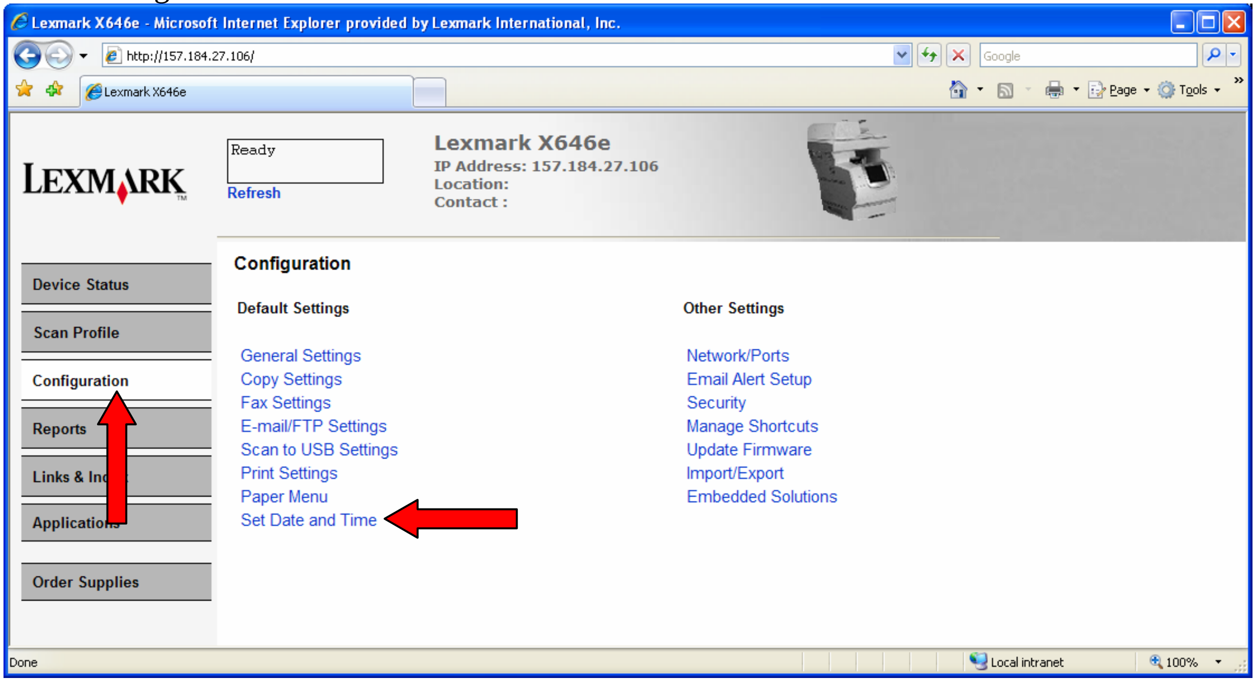
3 Configuring the Basic MFP Settings

This section describes the process for using the information obtained in the Pre-Installation Guide to configure the basic MFP Settings. Even if this device has been previously setup, follow through these steps to make sure all settings necessary for the PKI capability to function correctly have been configured.

3.1 Date and Time

In order to login in to perform a Kerberos login, the date and time must be within 5 minutes of the date and time of the Domain Controller. The time can be set manually on the device or it can be acquired from a time server.

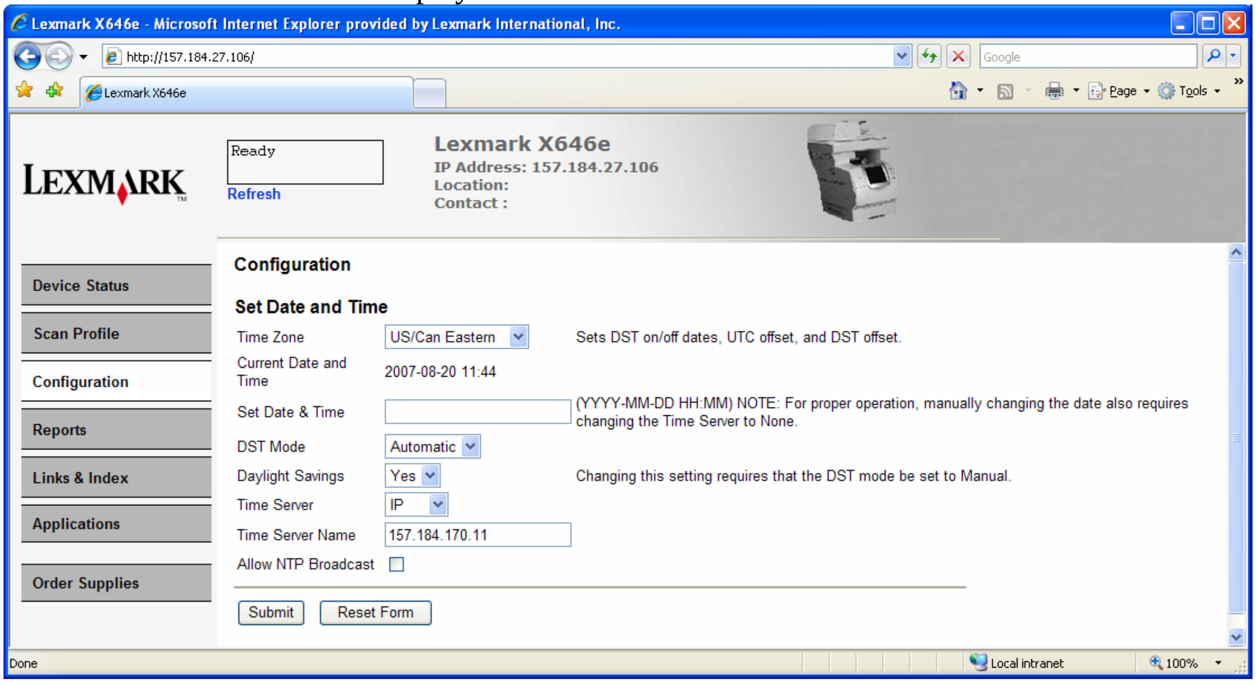
1. Click Configuration and then click Set Date and Time.



Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Pre-Installation
Section 2.3

2. The Date and Time screen is displayed.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Set Date and Time

Time Zone	US/Can Eastern	Sets DST on/off dates, UTC offset, and DST offset.
Current Date and Time	2007-08-20 11:44	
Set Date & Time		(YYYY-MM-DD HH:MM) NOTE: For proper operation, manually changing the date also requires changing the Time Server to None.
DST Mode	Automatic	
Daylight Savings	Yes	Changing this setting requires that the DST mode be set to Manual.
Time Server	IP	
Time Server Name	157.184.170.11	
Allow NTP Broadcast	□	

If setting the time manually:

- Set the Time Zone
- Set the Date & Time in the format shown
- Set DST Mode to Automatic
- Set Daylight Savings to Yes
- Set Time Server to None
- Leave Time Server Name blank

If using a Time Server:

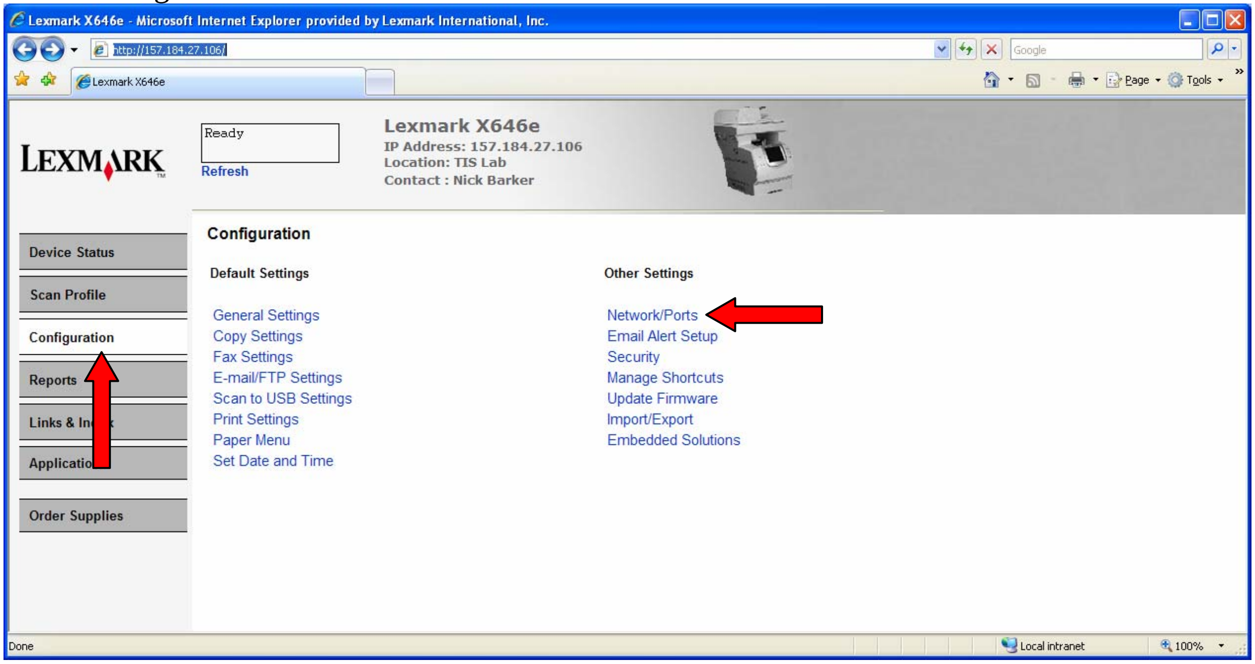
- Set the Time Zone
- Leave Set Date & Time blank
- Set DST Mode to Automatic
- Set Daylight Savings to Yes
- Set Time Server to IP
- Set Time Server Name

3. Click Submit.

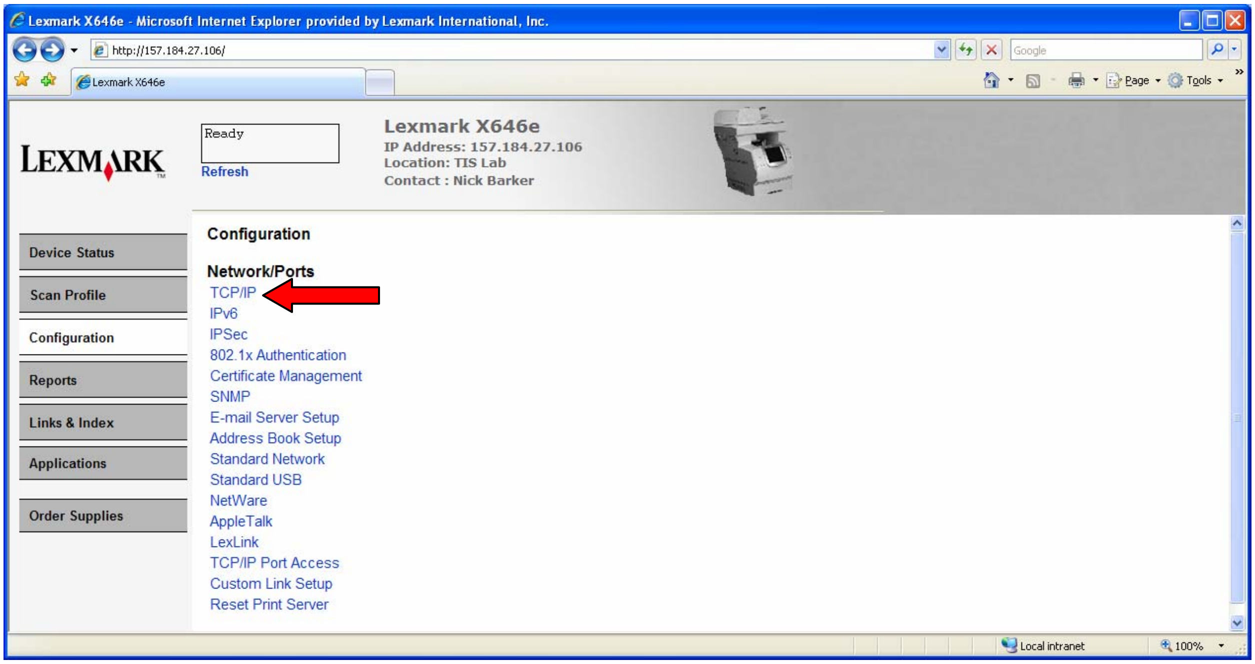
3.2 TCP/IP Settings

While not explicitly part of the PKI Application Setup, it is a good idea to verify all necessary TCP/IP Settings are configured.

1. Click Configuration and then click Network/Ports.

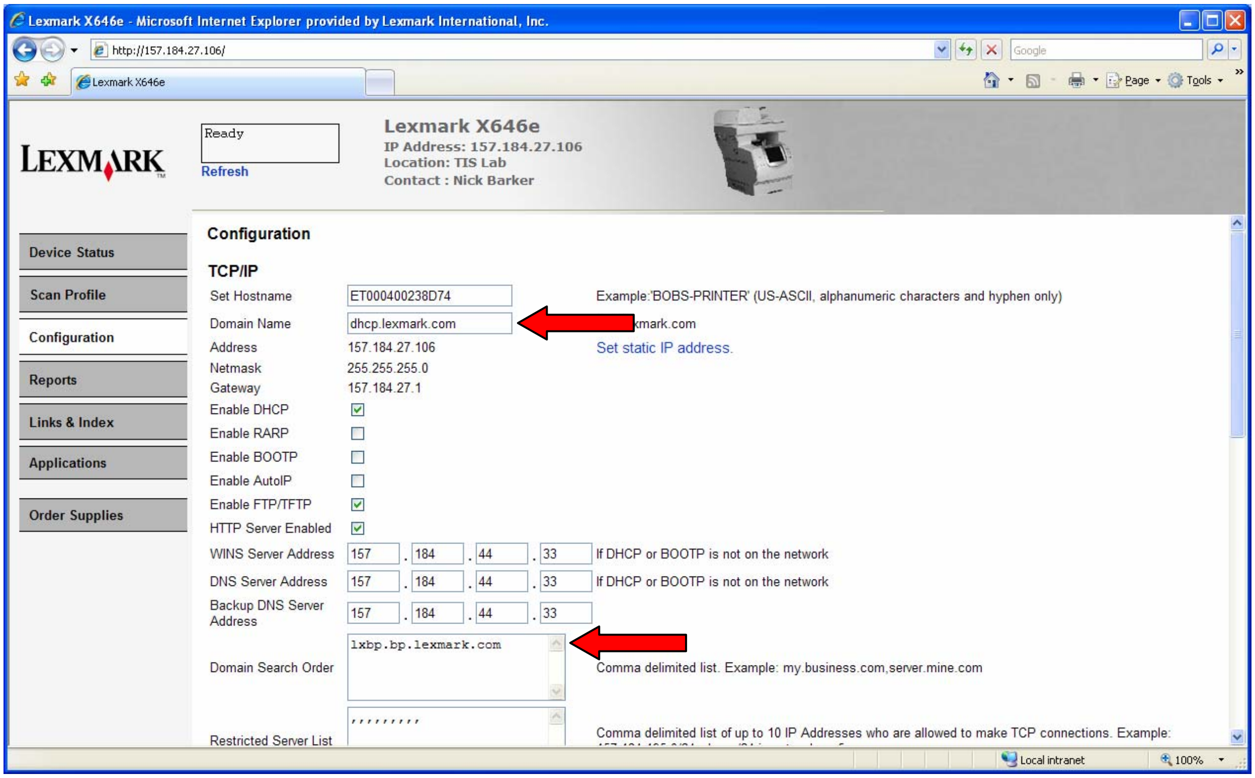


2. Click TCP/IP.



Pre-Installation
Section 2.4

3. Check the value in the Domain Name field. Set it to the value listed in Pre-Installation Section 2.4, Item 1. If there are any other values given in Items 2 to 4, add them to the Domain Search Order; multiple domain names should be separated by a comma.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location: TIS Lab
Contact : Nick Barker

Configuration

TCP/IP

Set Hostname	ET000400238D74	Example:'BOBS-PRINTER' (US-ASCII, alphanumeric characters and hyphen only)
Domain Name	dhcp.lexmark.com	xmark.com
Address	157.184.27.106	Set static IP address.
Netmask	255.255.255.0	
Gateway	157.184.27.1	
Enable DHCP	☑	
Enable RARP	□	
Enable BOOTP	□	
Enable AutoIP	□	
Enable FTP/TFTP	☑	
HTTP Server Enabled	☑	
WINS Server Address	157 . 184 . 44 . 33	If DHCP or BOOTP is not on the network
DNS Server Address	157 . 184 . 44 . 33	If DHCP or BOOTP is not on the network
Backup DNS Server Address	157 . 184 . 44 . 33	
Domain Search Order	lxbp.bp.lexmark.com	Comma delimited list. Example: my.business.com,server.mine.com
Restricted Server List	,,,,,,,,,	Comma delimited list of up to 10 IP Addresses who are allowed to make TCP connections. Example:

Pre-Installation
Section 2.2

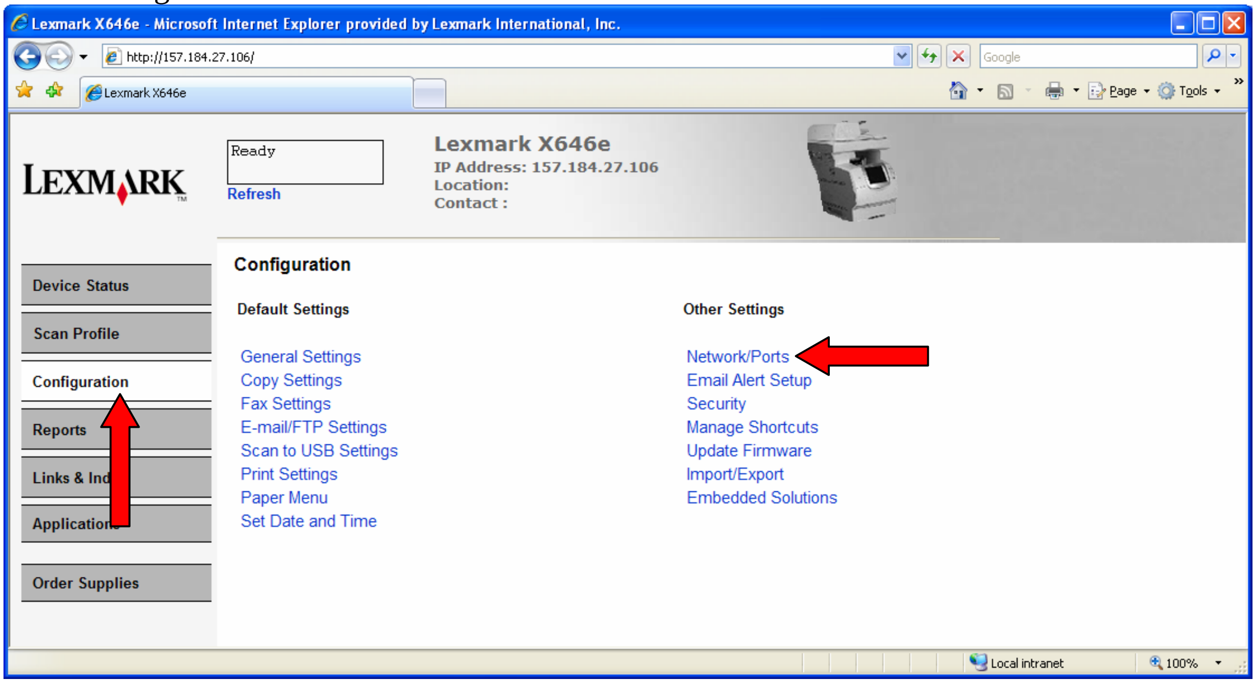
4. If using a Static IP Address, also check the WINS and DNS Server Address and make sure there is a valid value specified for each. If a backup DNS Server is available, set that value as well.

5. If any changes were made, click Submit to apply the new values.

3.3 Email Server Setup

If Scan to Email is to be allowed on this device, the Email Server settings must be configured; otherwise, this section can be skipped.

1. Click Configuration and then click Network/Ports.



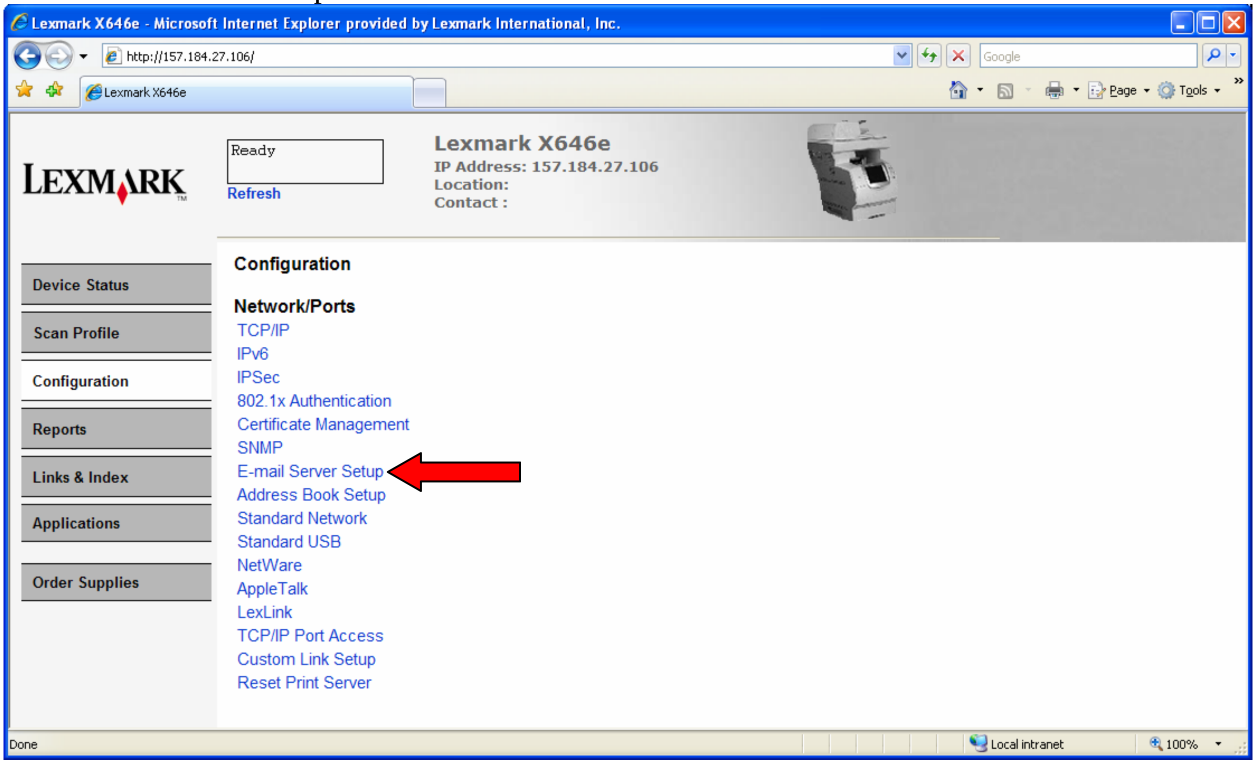
Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Default Settings	Other Settings
General Settings	Network/Ports
Copy Settings	Email Alert Setup
Fax Settings	Security
E-mail/FTP Settings	Manage Shortcuts
Scan to USB Settings	Update Firmware
Print Settings	Import/Export
Paper Menu	Embedded Solutions
Set Date and Time	

2. Click Email Server Setup.



Ready

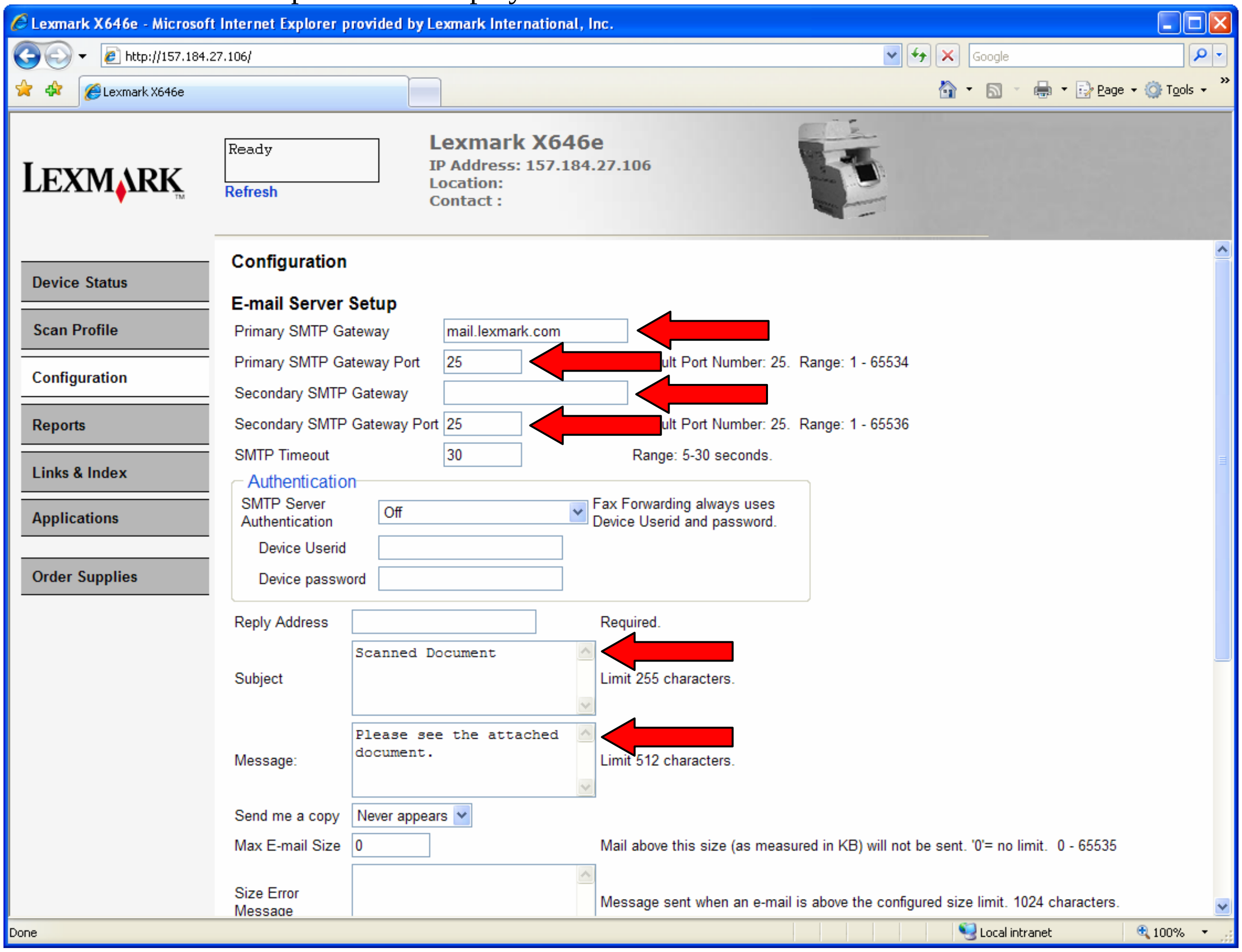
Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Network/Ports
TCP/IP
IPv6
IPSec
802.1x Authentication
Certificate Management
SNMP
E-mail Server Setup
Address Book Setup
Standard Network
Standard USB
NetWare
AppleTalk
LexLink
TCP/IP Port Access
Custom Link Setup
Reset Print Server

Pre-Installation
Section 5.2

3. The Email Server Setup screen is displayed.



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http://157.184.27.106/

Lexmark X646e

Ready

Refresh

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

E-mail Server Setup

Primary SMTP Gateway	mail.lexmark.com	
Primary SMTP Gateway Port	25	ult Port Number: 25. Range: 1 - 65534
Secondary SMTP Gateway		
Secondary SMTP Gateway Port	25	ult Port Number: 25. Range: 1 - 65536
SMTP Timeout	30	Range: 5-30 seconds.

Authentication

SMTP Server Authentication	Off	Fax Forwarding always uses Device Userid and password.
Device Userid		
Device password		

Reply Address		Required.
Subject	Scanned Document	Limit 255 characters.
Message:	Please see the attached document.	Limit 512 characters.
Send me a copy	Never appears	
Max E-mail Size	0	Mail above this size (as measured in KB) will not be sent. '0'= no limit. 0 - 65535
Size Error Message		Message sent when an e-mail is above the configured size limit. 1024 characters.

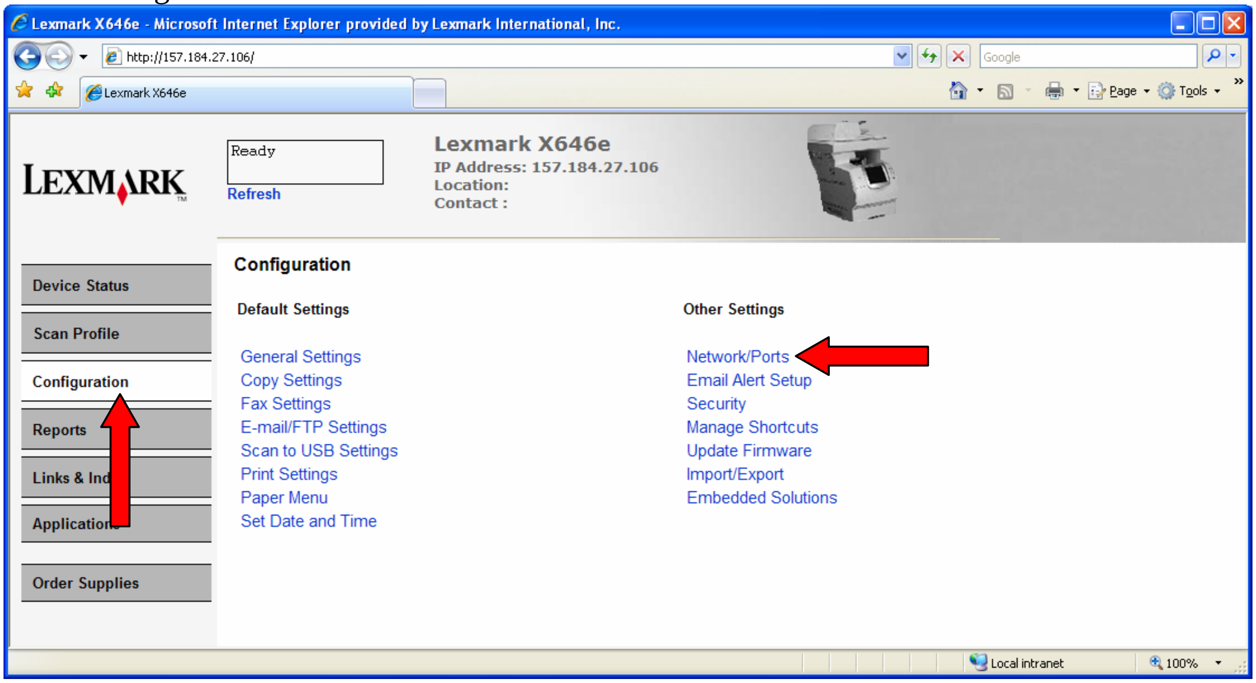
Fill in the Primary SMTP Gateway and Port. If available, fill in the Secondary SMTP Gateway and Port. Provide a default email subject and message. The Reply Address is not necessary since it will be set to the logged in user’s email address.

4. Review any of the other settings and then click Submit.

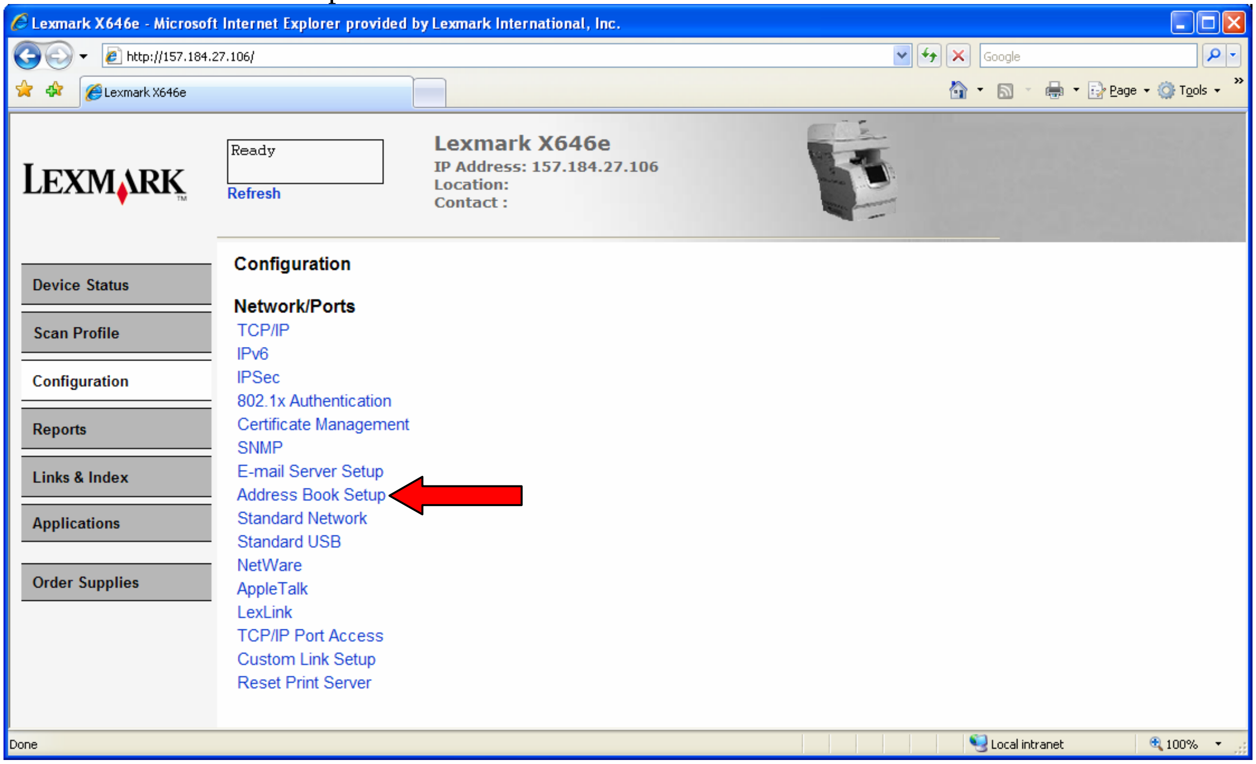
3.4 Address Book Setup

The Address Book Setup serves as the default LDAP setup for the MFP. Configuring this allows for searching the global address book when sending an email and allows the PKI Applications to lookup information such as the home directory of the logged in user.

1. Click Configuration and then click Network/Ports.

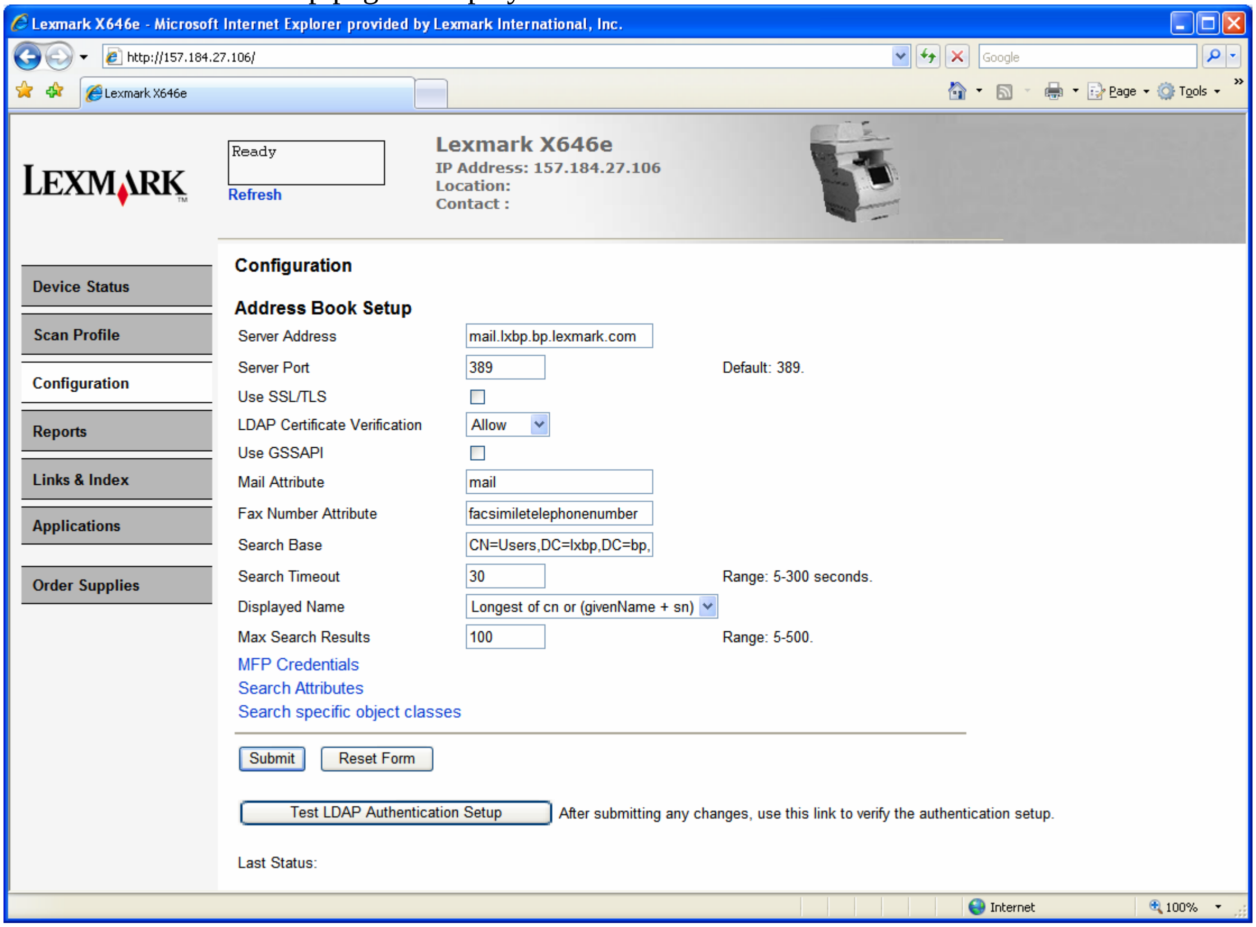


2. Click Address Book Setup.



Pre-Installation
Section 2.5,
items 1 – 7

3. The Address Book Setup page is displayed.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Google
Lexmark X646e
Page
Tools
LEXMARK
Internet
100%

Ready
Refresh

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Device Status
Scan Profile
Configuration
Reports
Links & Index
Applications
Order Supplies

Configuration

Address Book Setup

Server Address	mail.lxbp.bp.lexmark.com	
Server Port	389	Default: 389.
Use SSL/TLS	□	
LDAP Certificate Verification	Allow	
Use GSSAPI	□	
Mail Attribute	mail	
Fax Number Attribute	facsimiletelephonenumber	
Search Base	CN=Users,DC=lxbp,DC=bp,	
Search Timeout	30	Range: 5-300 seconds.
Displayed Name	Longest of cn or (givenName + sn)	
Max Search Results	100	Range: 5-500.

MFP Credentials
Search Attributes
Search specific object classes

Submit | Reset Form

Test LDAP Authentication Setup — After submitting any changes, use this link to verify the authentication setup.

Last Status:

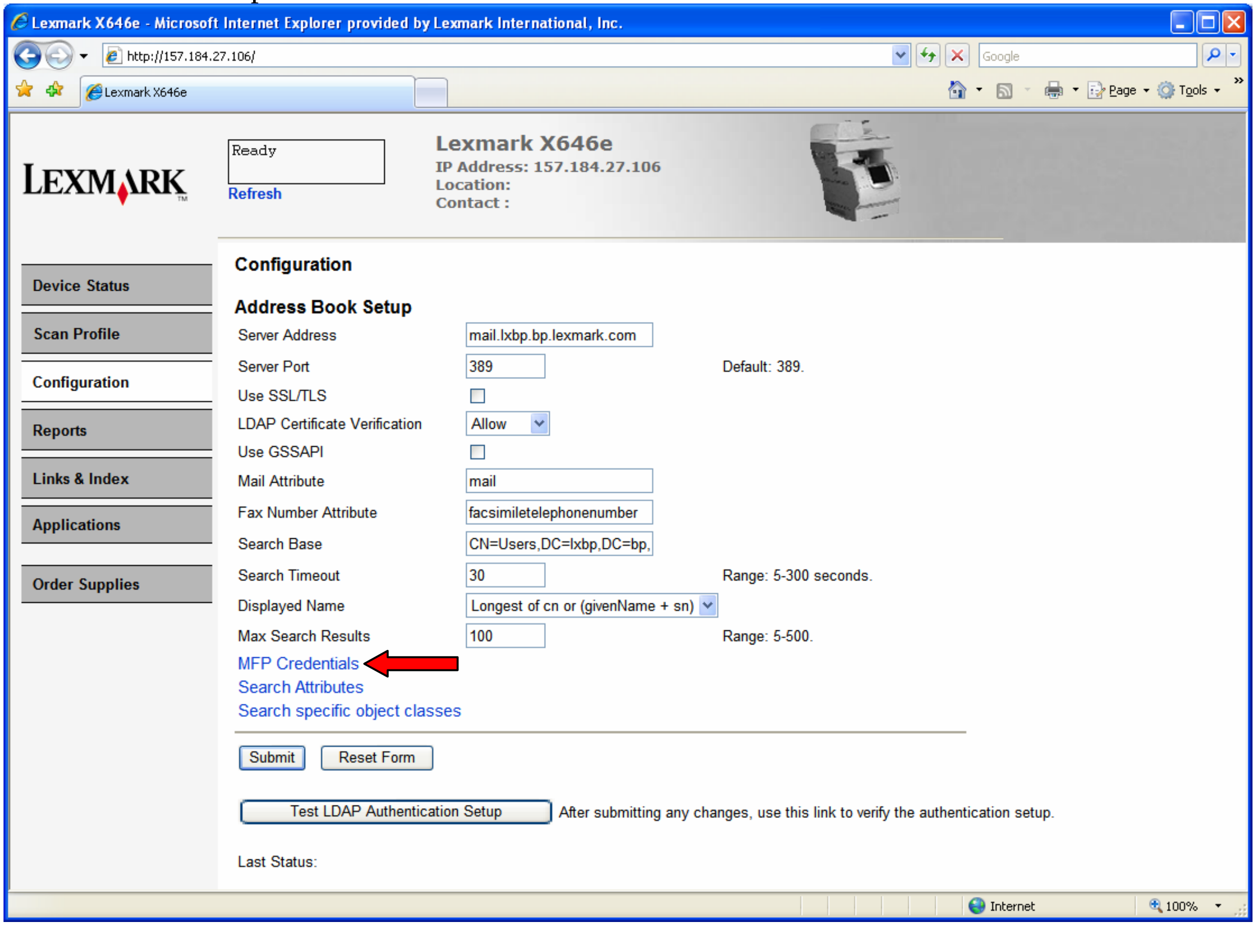
The following fields need to be filled in:

Field	Corresponding Pre-Installation Guide Section 4.2 Item
Server Address	Item 1 (Use the hostname rather than the IP address)
Server Port	Item 2
Use SSL/TLS	Item 3
LDAP Certificate Validation	Item 4
Use GSSAPI	Not used; leave unchecked.
Mail Attribute	Item 6
Fax Number Attribute	Not used; leave the default value.
Search Base	Item 5
Search Timeout	Item 7
Displayed Name	This is the combination of LDAP attributes used to display the “friendly” name for the email address. The default value of longest cn or (givenName + sn) is usually ok.
Max Search Results	Item 8

4. Click Submit once all answers have been provided.

Pre-Installation
Section 2.5,
item 8

5. If using the user’s credentials to connect to the LDAP server, no other changes are necessary.   If connecting anonymously or using a service account, then return to the Address Book Setup Screen and click MFP Credentials.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Address Book Setup

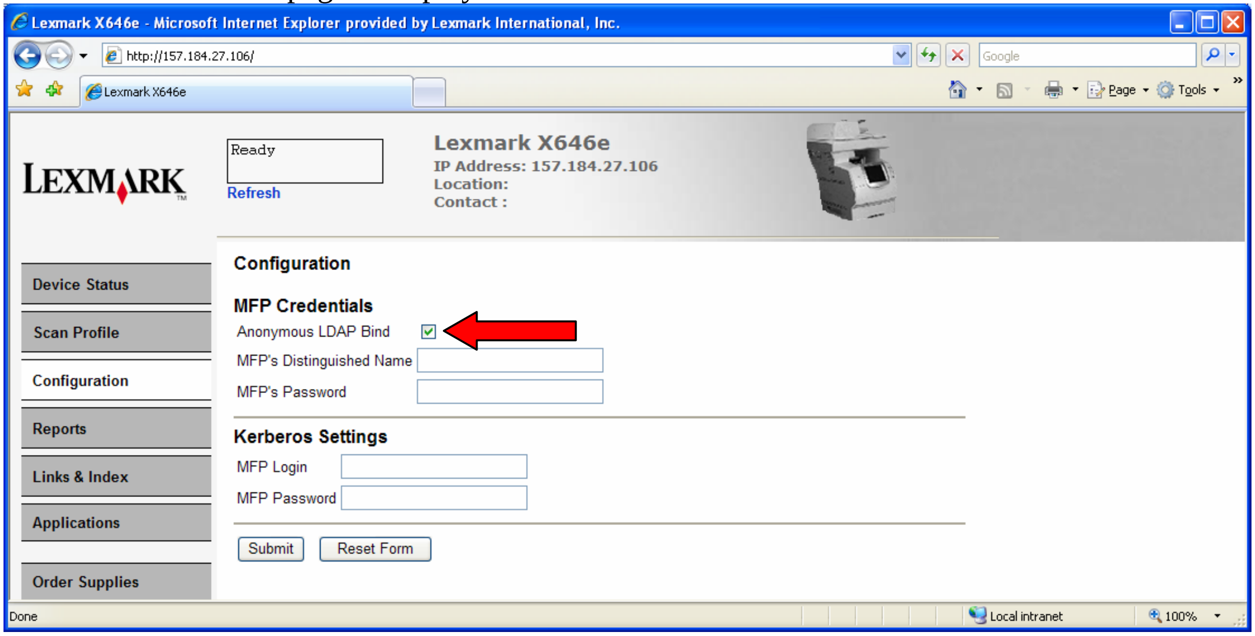
Server Address	mail.lxbp.bp.lexmark.com	
Server Port	389	Default: 389.
Use SSL/TLS	□	
LDAP Certificate Verification	Allow	
Use GSSAPI	□	
Mail Attribute	mail	
Fax Number Attribute	facsimiletelephonenumber	
Search Base	CN=Users,DC=lxbp,DC=bp,	
Search Timeout	30	Range: 5-300 seconds.
Displayed Name	Longest of cn or (givenName + sn)	
Max Search Results	100	Range: 5-500.

After submitting any changes, use this link to verify the authentication setup.

Last Status:

Pre-Installation
Section 2.5,
item 8

6. The MFP Credentials page is displayed.



Configuration

MFP Credentials

Anonymous LDAP Bind ☑
MFP's Distinguished Name
MFP's Password

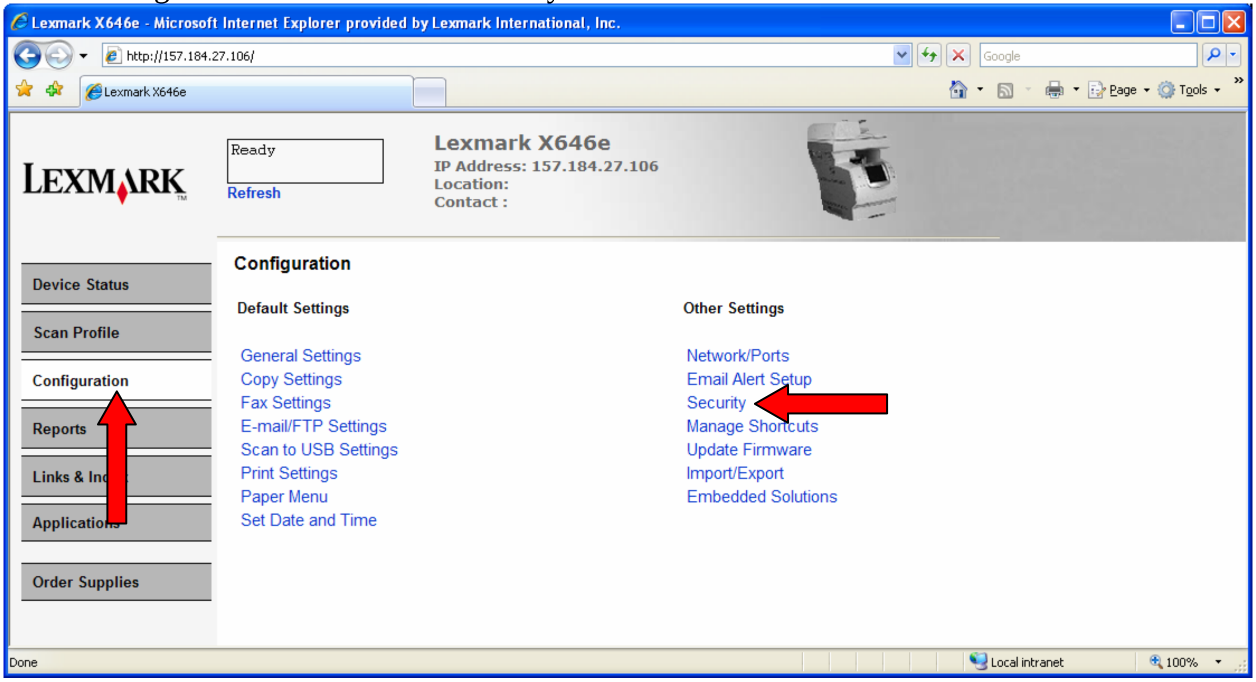
Kerberos Settings

MFP Login
MFP Password

If connecting anonymously, check the Anonymous LDAP Bind. If connecting using a service account, uncheck the Anonymous LDAP Bind option and provide the MFP's Distinguished Name and Password. The Kerberos settings are not used. Click Submit.

3.5 Auto-Logout

1. Click Configuration and then click Security.



Configuration

Default Settings

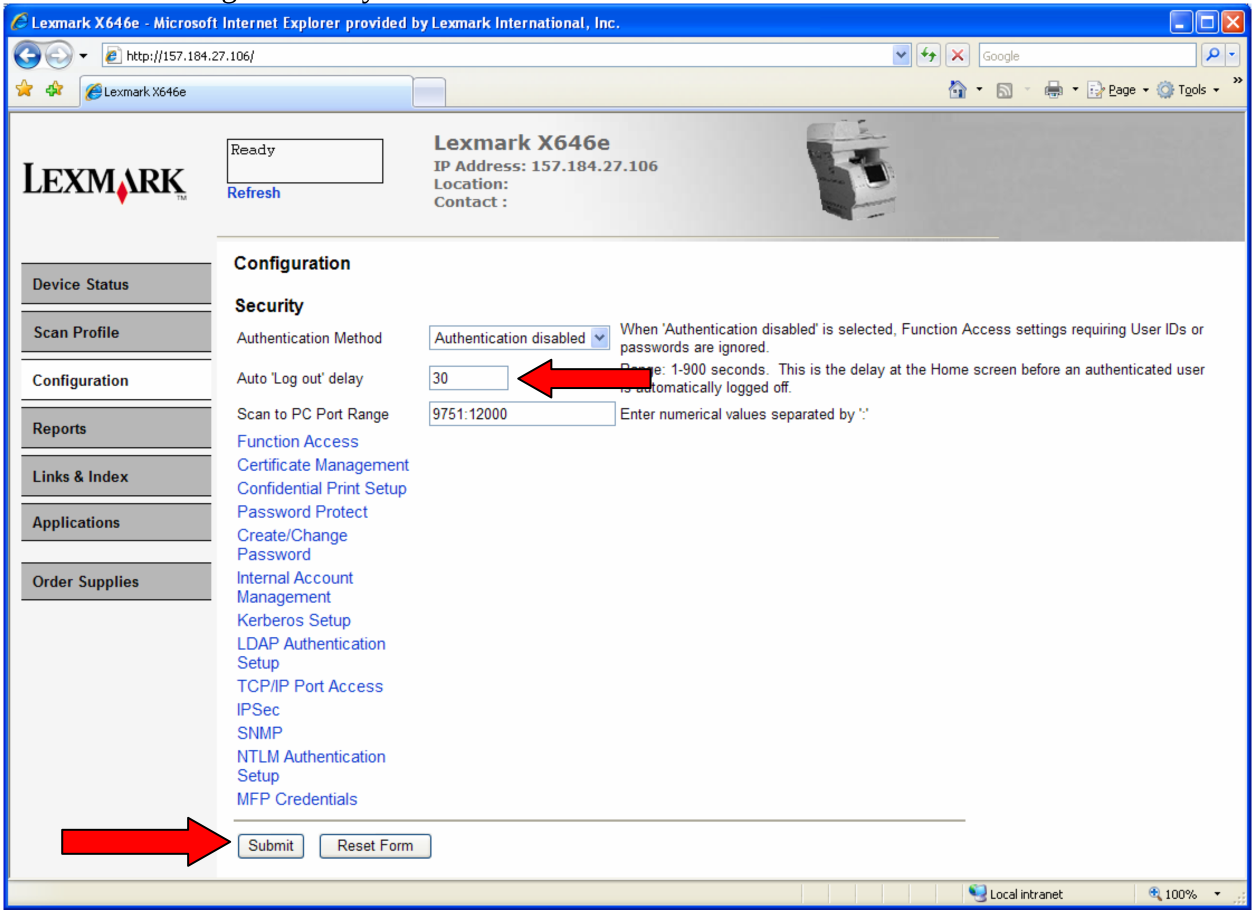
General Settings
Copy Settings
Fax Settings
E-mail/FTP Settings
Scan to USB Settings
Print Settings
Paper Menu
Set Date and Time

Other Settings

Network/Ports
Email Alert Setup
Security
Manage Shortcuts
Update Firmware
Import/Export
Embedded Solutions

Pre-Installation
Section 3.4.1

2. Set the Auto “Log out” delay value.



Configuration

Security

Authentication Method: Authentication disabled — When 'Authentication disabled' is selected, Function Access settings requiring User IDs or passwords are ignored.

Auto 'Log out' delay: 30 — Range: 1-900 seconds. This is the delay at the Home screen before an authenticated user is automatically logged off.

Scan to PC Port Range: 9751:12000 — Enter numerical values separated by ':'

3. Click Submit.

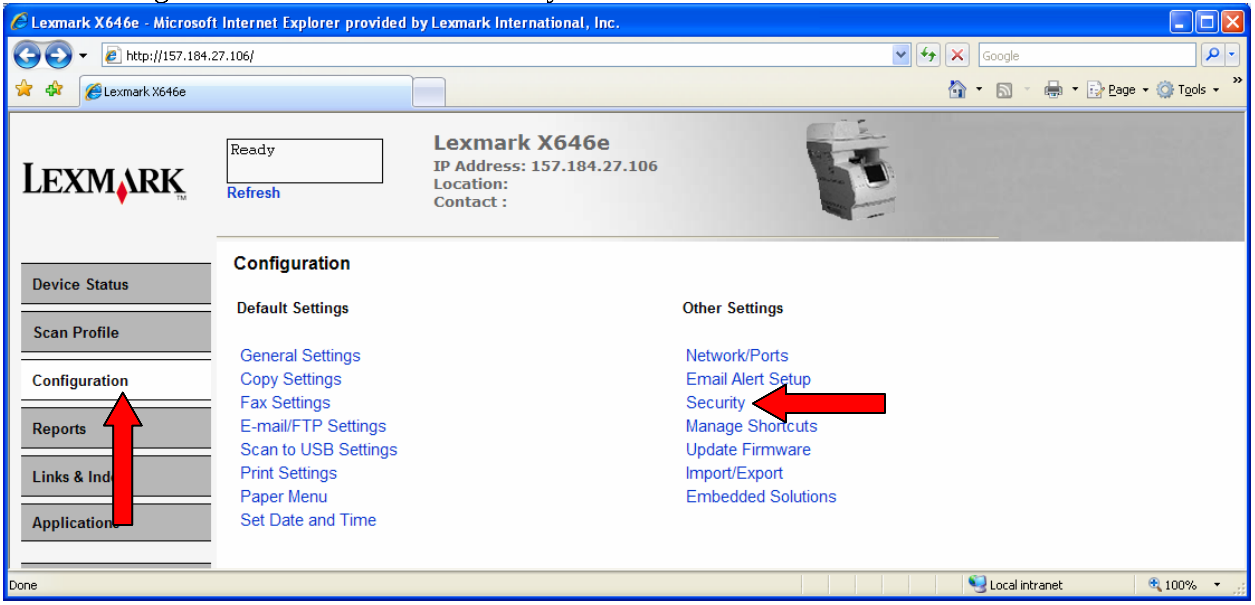
Pre-Installation
Sections 2.5
item 3,
3.2.2.1.1, 8.1,
8.2, & 8.3

3.6 Certificate Management

Certificates are needed for SSL support in LDAP lookups and for Domain Controller verification. All certificates needed by the device must be in PEM (Base64) format and combined into one file. Since the certificates are in PEM format, they can easily be cut-and-paste into a single file such as:

```
-----BEGIN CERTIFICATE-----
MIIE1jCCA76gAwIBAgIQY6sV0KL3tIhBtlr4gHG85zANBgkqhkiG9w0BAQUFADBs
…
l3DTbPe0mnIbTq0iWqKEaVne1vvaDt52iSpEQyevwgUcHD16rFy+sOnCaQ==
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
MIIE1zCCA7+gAwIBAgIQZWAEBZ+h+L5AKmbyl9hgSzANBgkqhkiG9w0BAQUFADBn
…
l3DTbPe0mnIbTq0iWqKEaVne1vvaDt52iSpEQyevwgUcHD16rFy+sOnCaQ==
-----END CERTIFICATE-----
```

1. Click Configuration and then click Security.



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Page
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LEXMARK

Ready

Refresh

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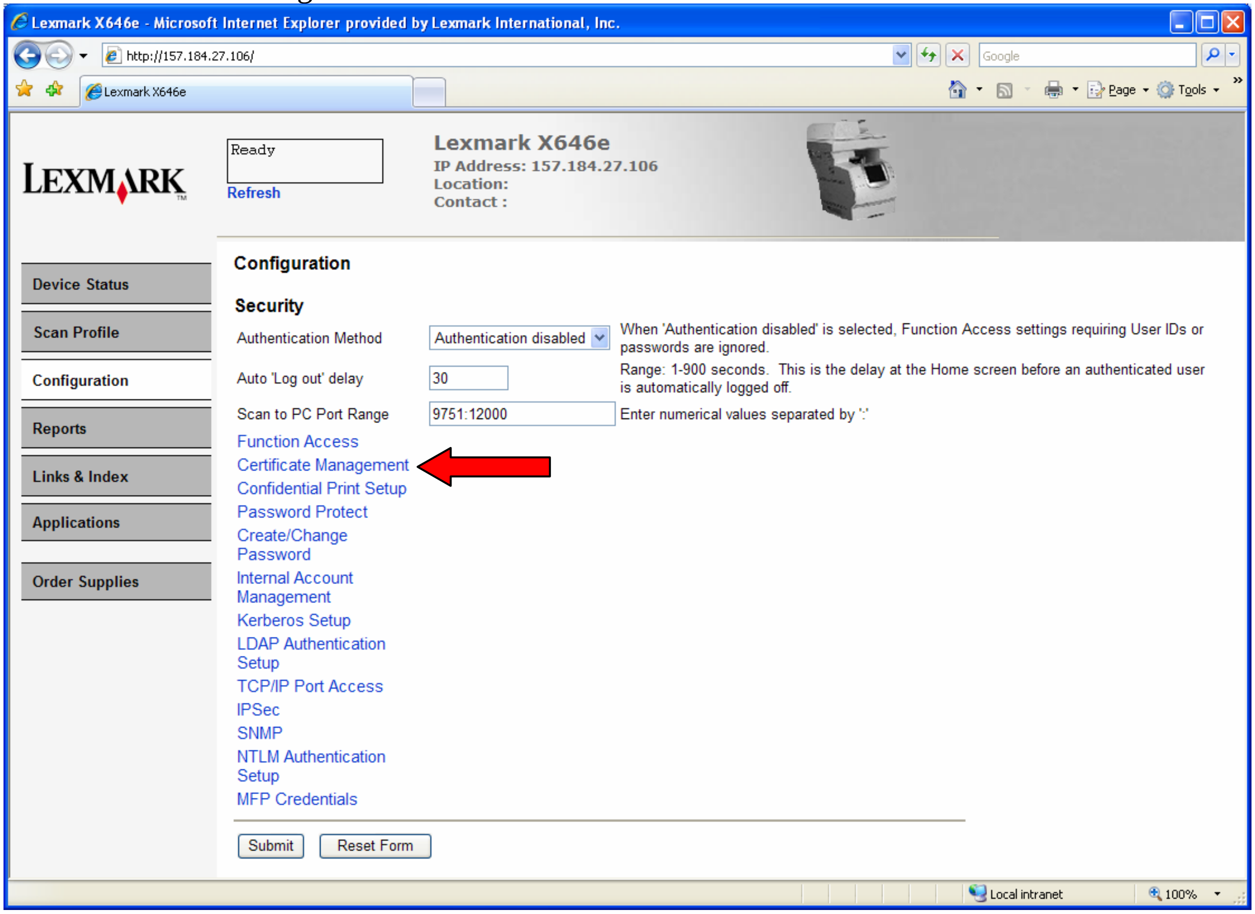
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Default Settings	Other Settings
General Settings	Network/Ports
Copy Settings	Email Alert Setup
Fax Settings	Security
E-mail/FTP Settings	Manage Shortcuts
Scan to USB Settings	Update Firmware
Print Settings	Import/Export
Paper Menu	Embedded Solutions
Set Date and Time	

2. Click Certificate Management.



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Google
Lexmark X646e
Page
Tools
LEXMARK

Ready

Refresh

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

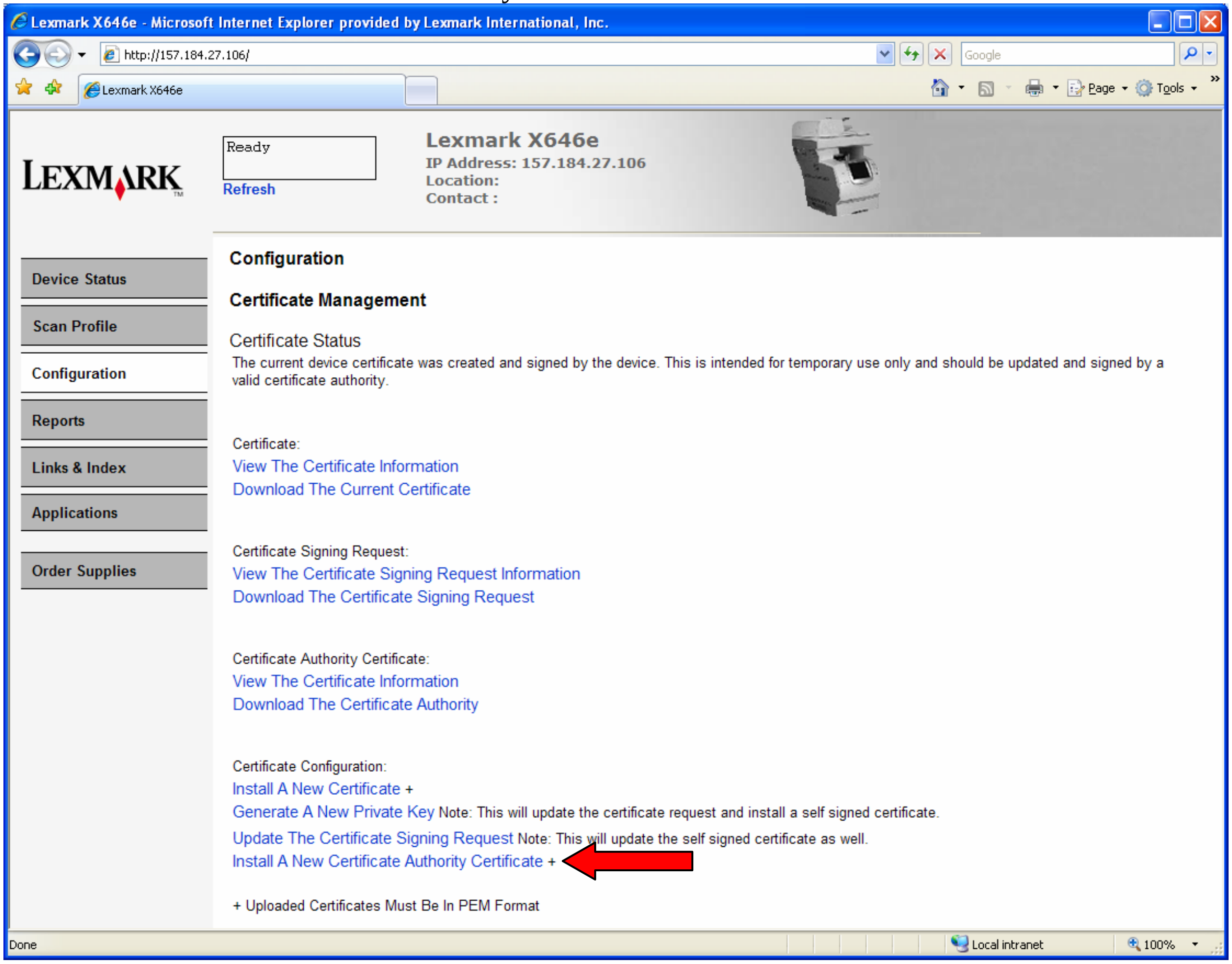
Configuration

Security

Authentication Method	Authentication disabled	When 'Authentication disabled' is selected, Function Access settings requiring User IDs or passwords are ignored.
Auto 'Log out' delay	30	Range: 1-900 seconds. This is the delay at the Home screen before an authenticated user is automatically logged off.
Scan to PC Port Range	9751:12000	Enter numerical values separated by ':'

Function Access
Certificate Management
Confidential Print Setup
Password Protect
Create/Change Password
Internal Account Management
Kerberos Setup
LDAP Authentication Setup
TCP/IP Port Access
IPSec
SNMP
NTLM Authentication Setup
MFP Credentials

3. Click Install a New Certificate Authority Certificate.



Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Certificate Management

Certificate Status

The current device certificate was created and signed by the device. This is intended for temporary use only and should be updated and signed by a valid certificate authority.

Certificate:
View The Certificate Information
Download The Current Certificate

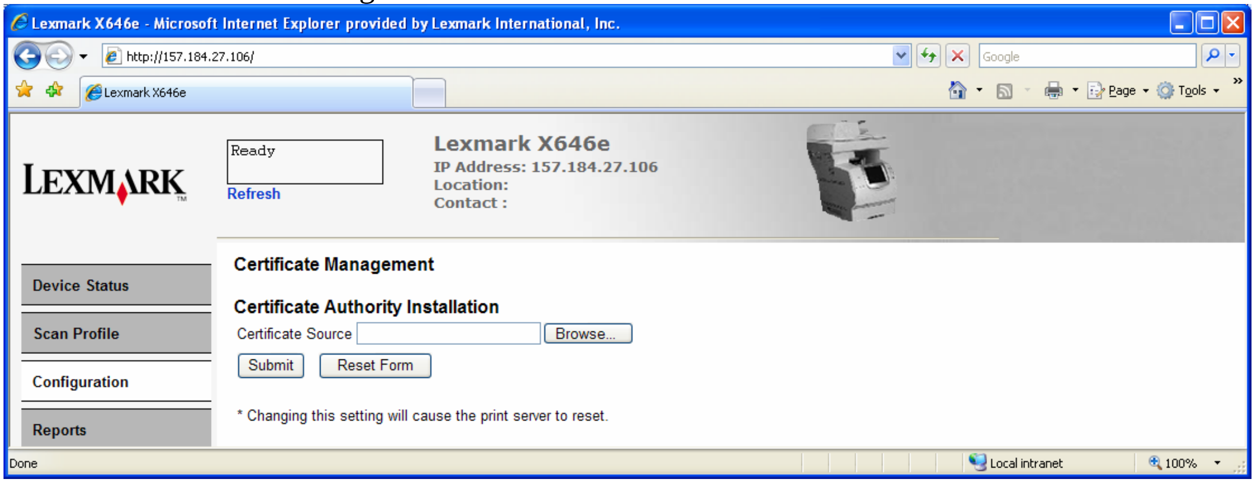
Certificate Signing Request:
View The Certificate Signing Request Information
Download The Certificate Signing Request

Certificate Authority Certificate:
View The Certificate Information
Download The Certificate Authority

Certificate Configuration:
Install A New Certificate +
Generate A New Private Key Note: This will update the certificate request and install a self signed certificate.
Update The Certificate Signing Request Note: This will update the self signed certificate as well.
Install A New Certificate Authority Certificate +

+ Uploaded Certificates Must Be In PEM Format

4. Browse to the file containing the certificates and then click Submit.



Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Certificate Management

Certificate Authority Installation

Certificate Source [ ] Browse...

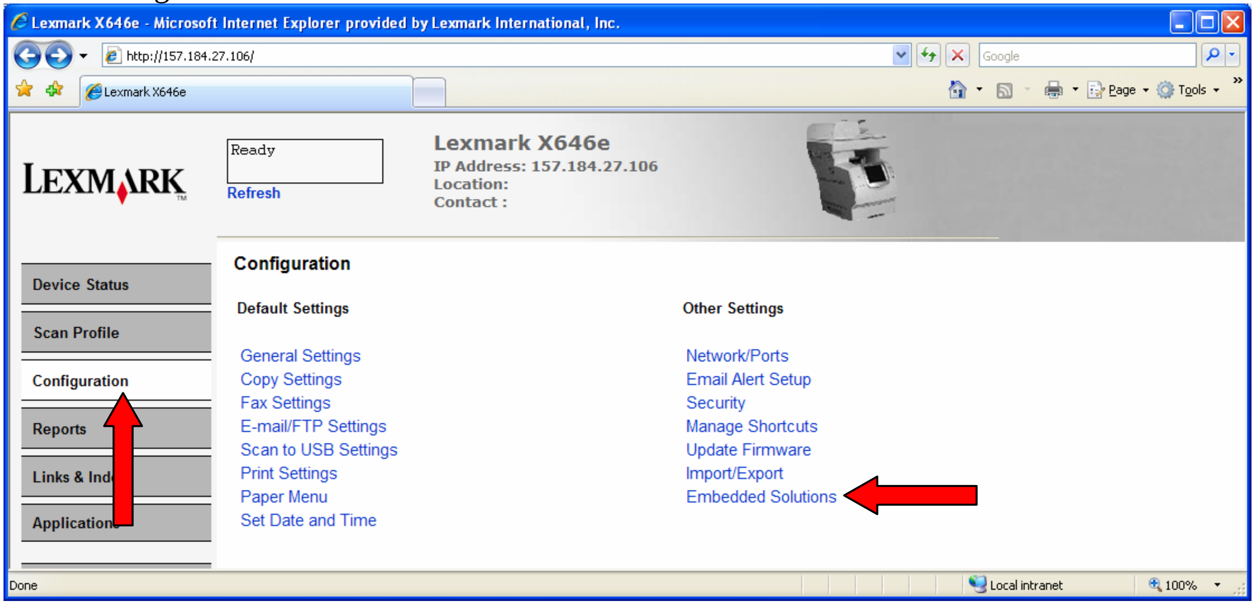
Submit Reset Form

* Changing this setting will cause the print server to reset.

4 Configuring PKI/AD Authentication

This application is required for the PKI-enabled MFP. This section details the configuration steps.

1. Click Configuration and then click Embedded Solutions.



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LEXMARK
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Refresh

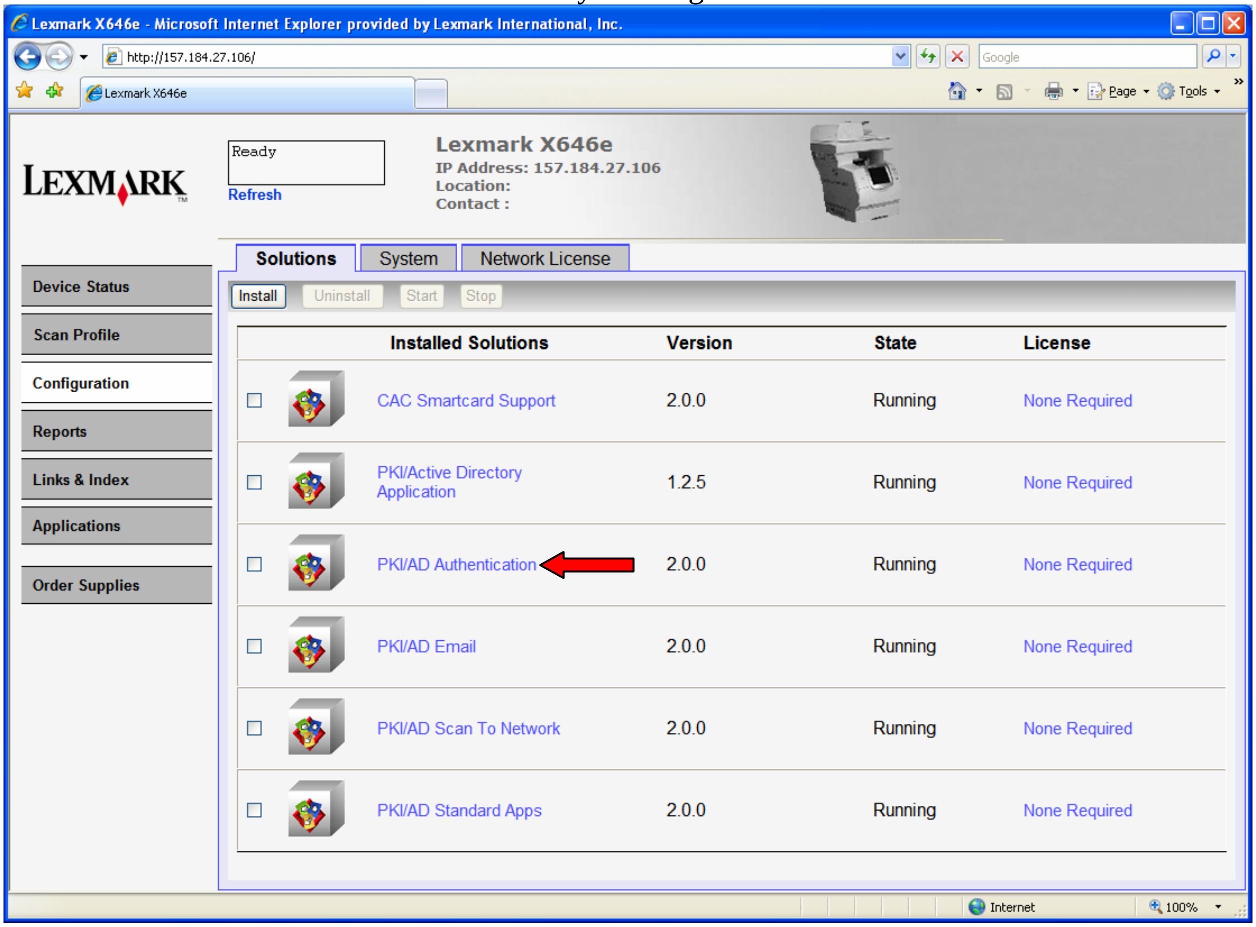
Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

Configuration

Default Settings

Other Settings

2. Select the PKI/AD Authentication solution by clicking its name.



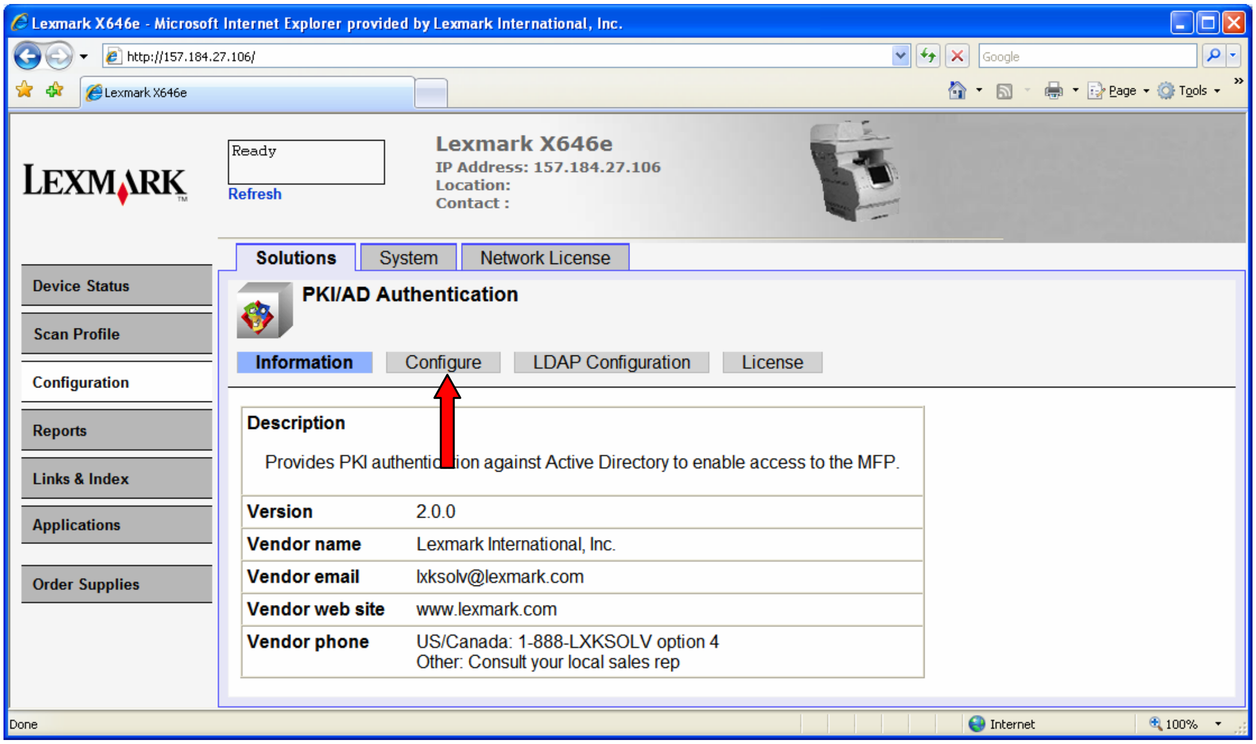
Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

	Installed Solutions	Version	State	License
□	CAC Smartcard Support	2.0.0	Running	None Required
□	PKI/Active Directory Application	1.2.5	Running	None Required
□	PKI/AD Authentication	2.0.0	Running	None Required
□	PKI/AD Email	2.0.0	Running	None Required
□	PKI/AD Scan To Network	2.0.0	Running	None Required
□	PKI/AD Standard Apps	2.0.0	Running	None Required

4.1 General Settings

After selecting PKI/AD Authentication from the Embedded Solutions list, click the Configure tab.



PKI/AD Authentication

Description	
Provides PKI authentication against Active Directory to enable access to the MFP.	
Version	2.0.0
Vendor name	Lexmark International, Inc.
Vendor email	lxksolv@lexmark.com
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

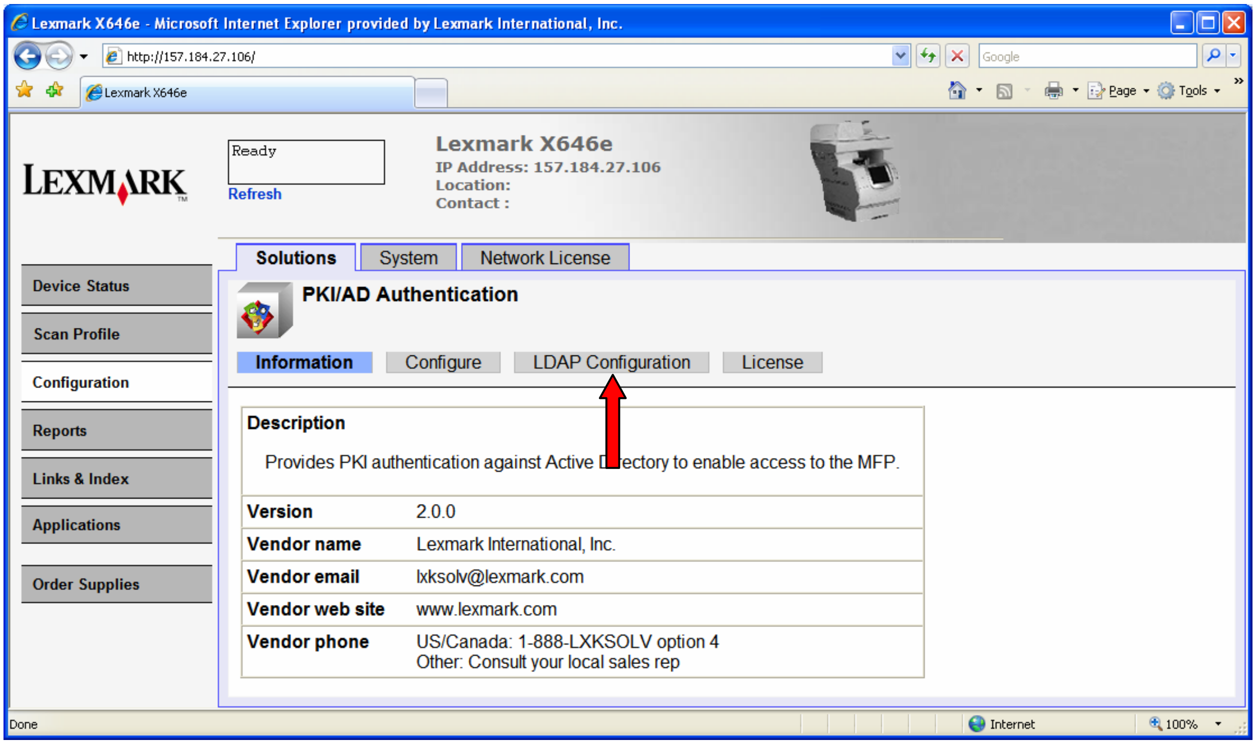
The following table lists each setting and the corresponding Pre-Installation Section/Item that contains the value needed for that field.

Setting	Corresponding Pre-Installation Guide Section/Item
User Validation Mode	Section 3.2
DC Validation Mode	Section 3.2.2.1.1
OCSP Responder URL	Section 3.2.2.1.1 Item 1 The format should be http://<ipaddress>:<port>. Separate multiple URLs with a comma.
OCSP Proxy URL	Section 3.2.2.1.1 Item 2 The format should be http://<ipaddress>:<port>. Only one value is allowed.
OCSP Responder Certificate	Section 3.2.2.1.1 Item 4
OCSP Responder Timeout	Section 3.2.2.1.1 Item 3
Use MFP Kerberos Setup	Section 3.2.2 Item 2 If “One Kerberos Realm” is selected, uncheck this box; the next three settings should be filled in. Otherwise, check this box and the following three settings are not needed.
Kerberos Realm	Section 3.2.2 Item 2
Kerbeos KDC	Section 3.2.2 Item 1 If there are multiple KDCs, enter them all here separated by a comma.
Kerberos Domain	The default value of “mil,.mil” should be sufficient. If Manual Login is allowed, other values may be needed

	here.
Disable Reverse DNS Lookups	Section 3.2.2 Item 3
Use KDC for LDAP Server	Section 3.2.2 Item 4
Login Screen Text	Section 3.1.3 Item 1
Login Screen Image	Section 3.1.3 Item 2
Logout Behavior	Section 3.4.2
Allow Copy Without Card	Section 3.1.1
Allow Fax Without Card	Section 3.1.2
Logon Type	Section 3.1.4
Manual Login Default Domain	Section 3.2.2.2 Item 1 This domain should be added to the Kerberos Domains listed above.
Manual Login Search Attribute	Section 3.2.2.2 Item 2
Manual Login Code Page	Section 3.2.2.2 Item 3
Display MFP Info	Section 3.1.5
Display Printer Status	Section 3.1.6
MFP Default Card Lookup Field	Section 3.2.2.1.2 Item 1
MFP Default Search Attribute	Section 3.2.2.1.2 Item 2
Enable User Authorization	Section 3.3 Item 1
User Authorization Lookup	Section 3.3 Item 2
Device Authorization	Section 3.3 Item 3
Authorization List	Section 3.3 Item 4

4.2 Custom LDAP Settings

If you have defined a custom LDAP configuration that differs from the MFP's Default LDAP Configuration, continue with this section; otherwise, it can be skipped. After selecting PKI/AD Authentication from the Embedded Solutions list, click the LDAP Configuration tab.



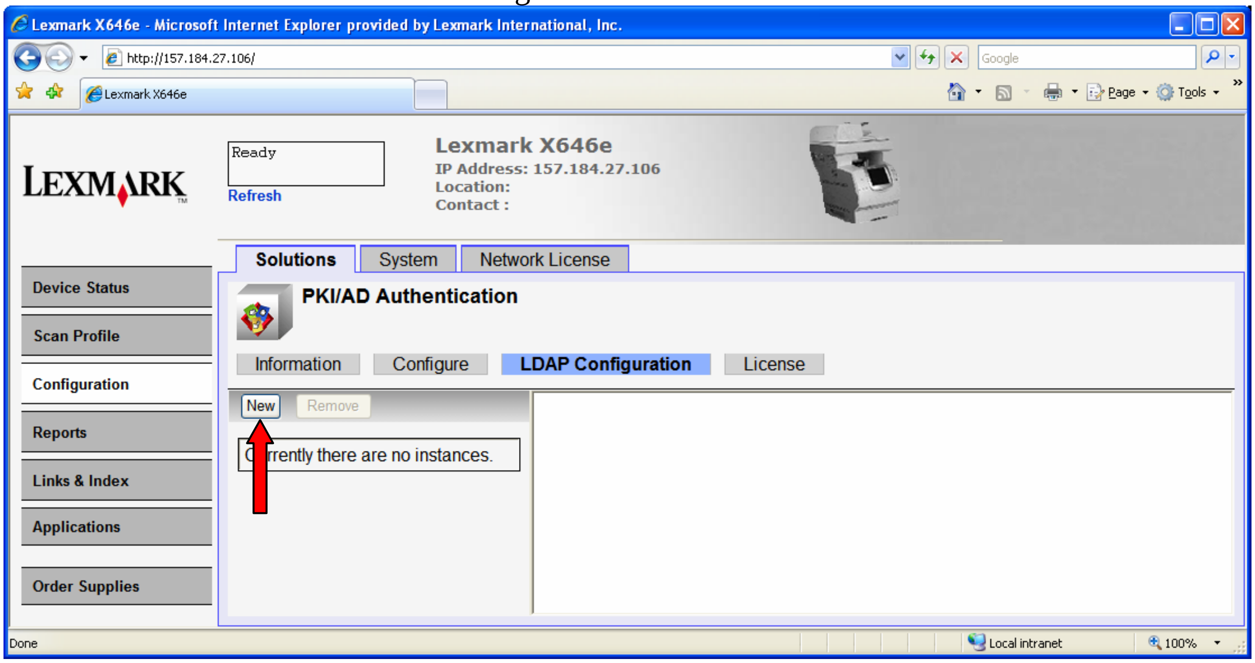
Description

Provides PKI authentication against Active Directory to enable access to the MFP.

Version	2.0.0
Vendor name	Lexmark International, Inc.
Vendor email	lxksolv@lexmark.com
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

4.2.1 Adding a New Configuration

1. Click New to create a new LDAP Configuration.



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Ready

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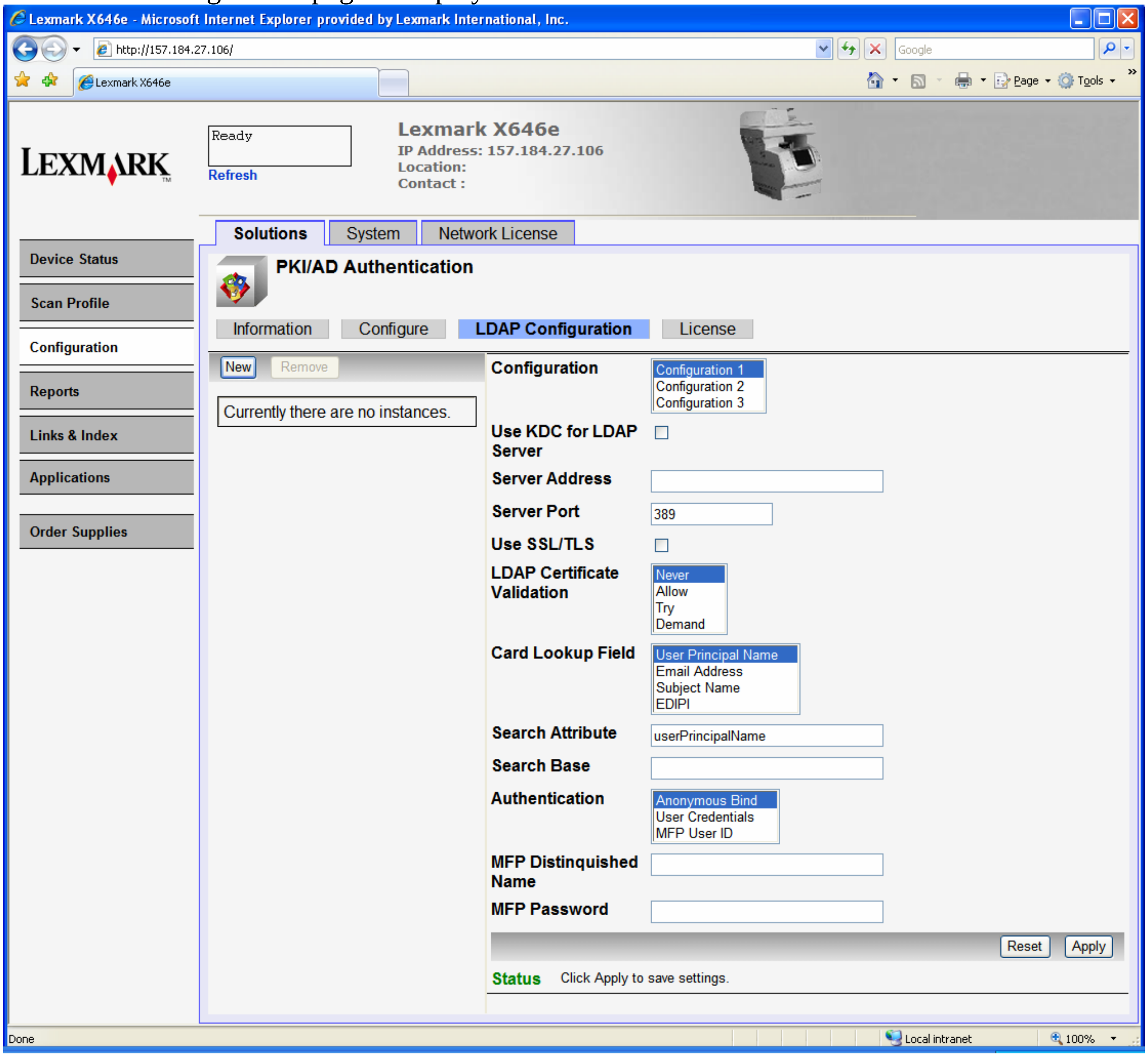
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Authentication

C rrently there are no instances.

2. The LDAP Configuration page is displayed.



Lexmark X646e - Microsoft Internet Explorer provided by Lexmark International, Inc.

http://157.184.27.106/

Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Authentication

Currently there are no instances.

Configuration	Configuration 1 Configuration 2 Configuration 3
Use KDC for LDAP Server	□
Server Address	
Server Port	389
Use SSL/TLS	□
LDAP Certificate Validation	Never Allow Try Demand
Card Lookup Field	User Principal Name Email Address Subject Name EDIPI
Search Attribute	userPrincipalName
Search Base	
Authentication	Anonymous Bind User Credentials MFP User ID
MFP Distinguished Name	
MFP Password	

Status Click Apply to save settings.

Done

Referring to section 7 of the Pre-Installation Guide, use the following table to configure the settings.

3.

Setting	Corresponding Pre-Installation Guide Section/Item
Configuration	Configuration 1 uses Section 8.1; Configuration 2 uses Section 8.2; Configuration 3 uses Section 8.3
Use KDC for LDAP Server	Item 1
Server Address	Item 2
Server Port	Item 3
Use SSL/TLS	Item 4
LDAP Certificate Validation	Item 5
Card Lookup Field	Item 6
Search Attribute	Item 7

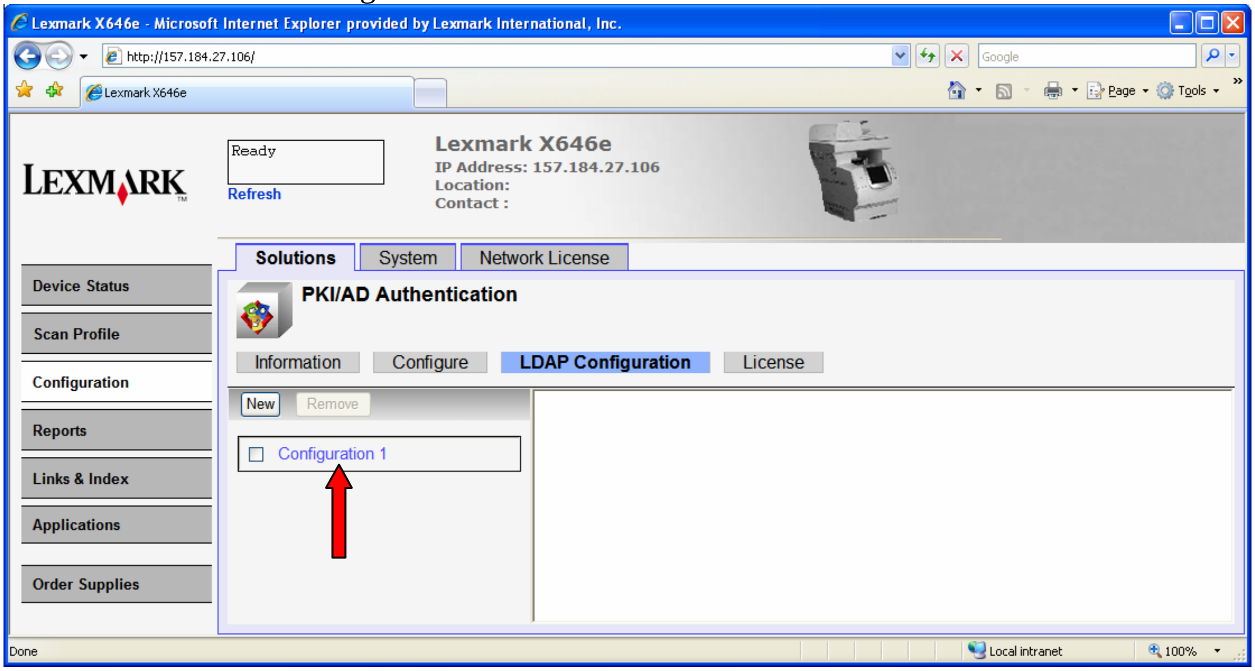
Search Base	Item 8
Authentication	Item 9
MFP Distinquished Name	Item 9 Only Used if Authentication is set to MFP User ID.
MFP Password	Item 9 Only Used if Authentication is set to MFP User ID.

4. Click Apply.

5. Repeat for each custom configuration that needs to be created. A maximum of three configurations can be created; and each must be named a different configuration.

4.2.2 Editing an Existing Configuration

1. Click the name of the Configuration to be edited.



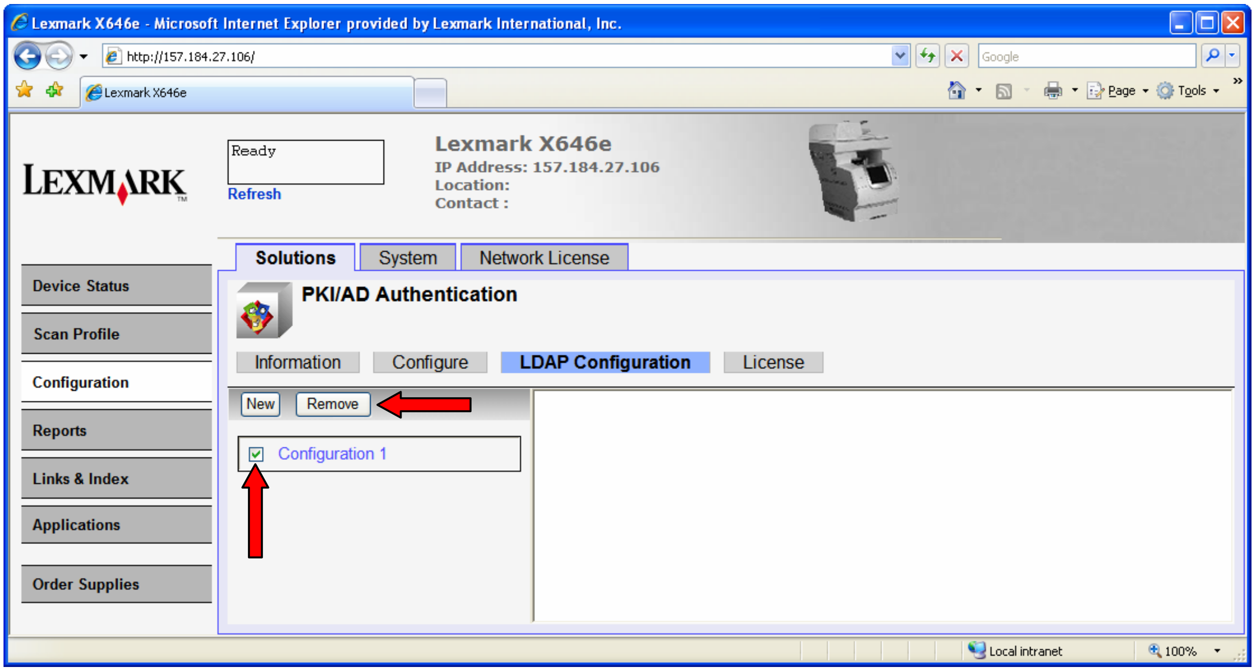
2. The LDAP Configuration page for that configuration will be displayed.

3. Make any changes and then click Apply.

4.2.3 Removing an Existing Configuration

1. Check the box next to the configuration to be removed.

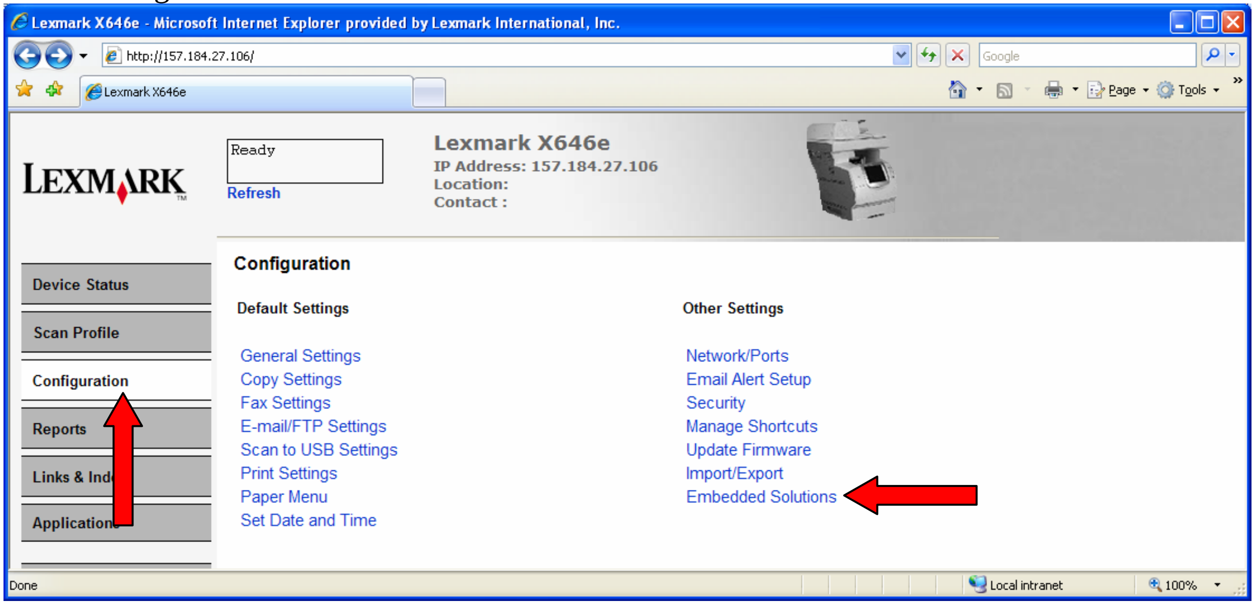
2. Click the Remove button.



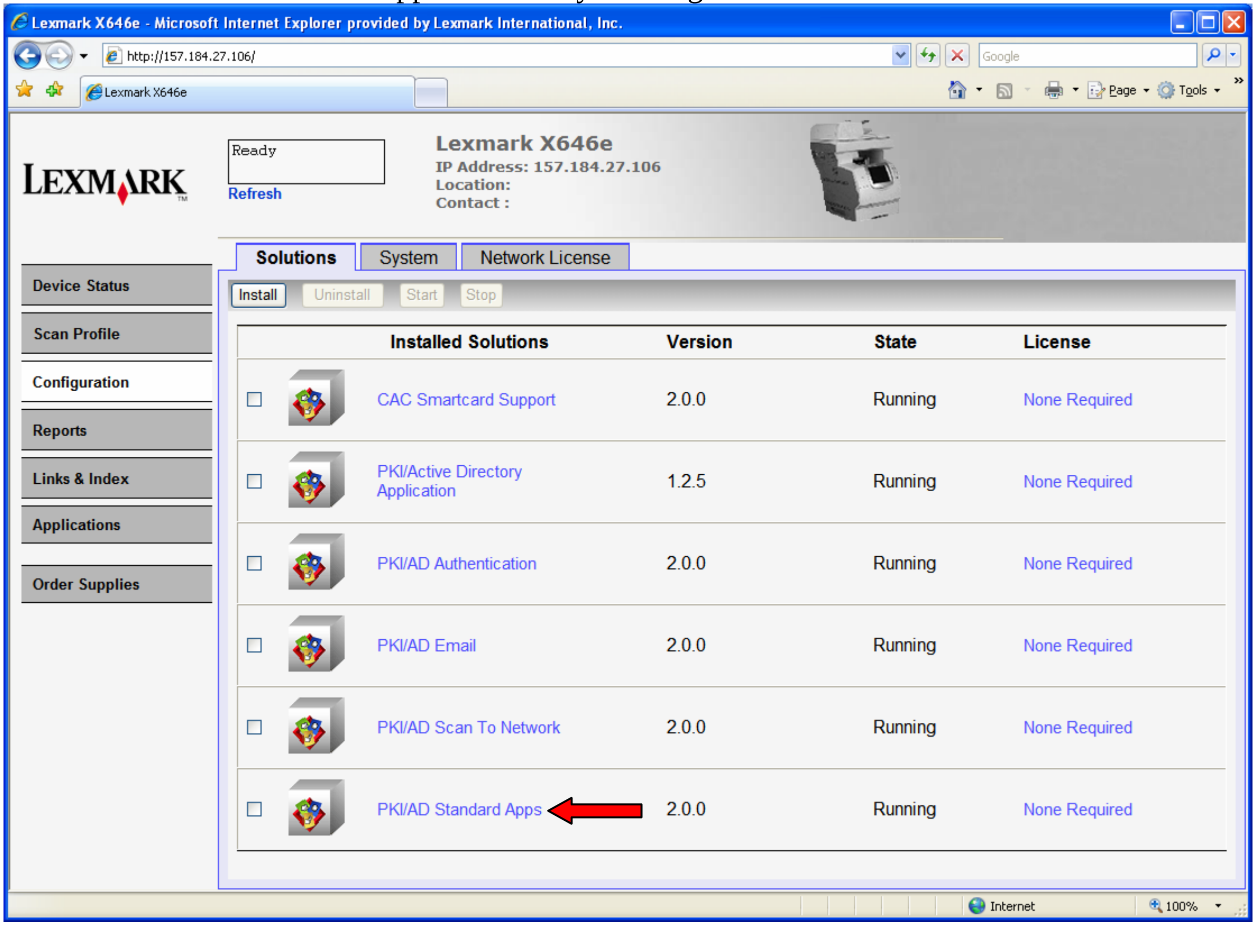
5 Configuring PKI/AD Standard Applications

This application is only used if User Authorization is enabled for Copy, Fax, or FTP. You can skip this section if this application has not been installed.

1. Click Configuration and then click Embedded Solutions.

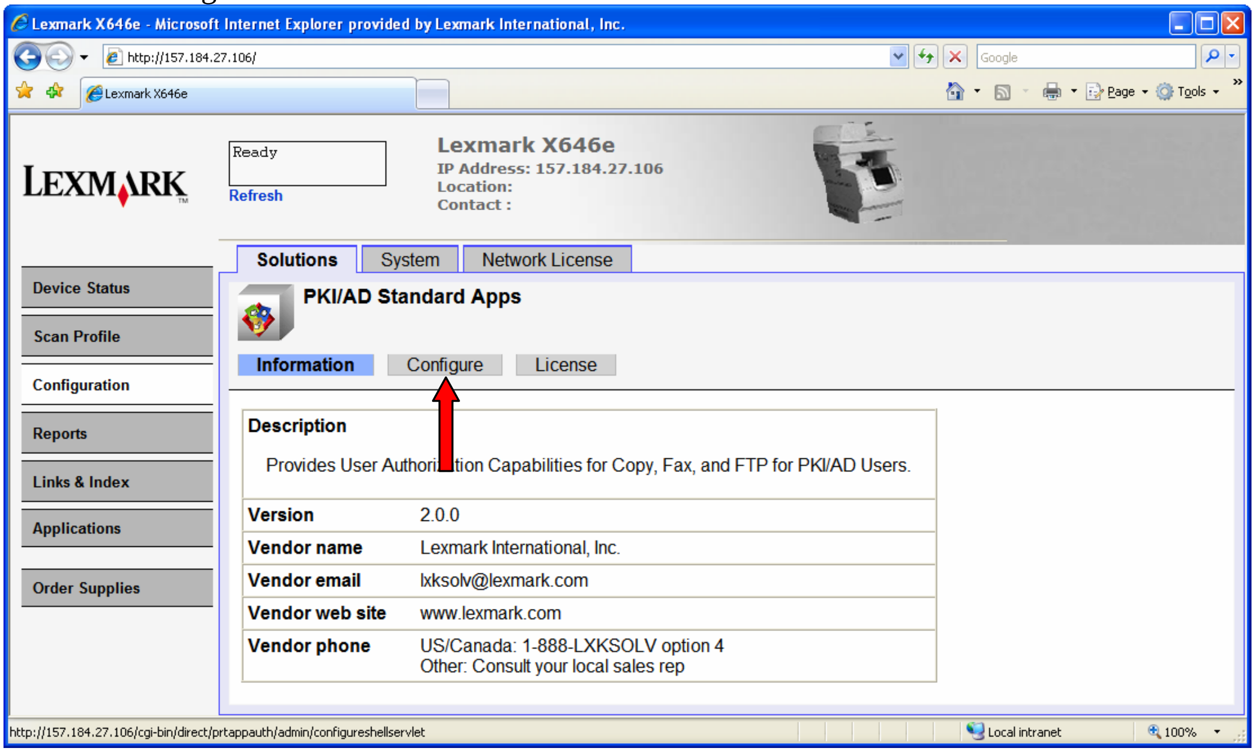


2. Select the PKI/AD Standard Apps solution by clicking its name.



	Installed Solutions	Version	State	License
□	CAC Smartcard Support	2.0.0	Running	None Required
□	PKI/Active Directory Application	1.2.5	Running	None Required
□	PKI/AD Authentication	2.0.0	Running	None Required
□	PKI/AD Email	2.0.0	Running	None Required
□	PKI/AD Scan To Network	2.0.0	Running	None Required
□	PKI/AD Standard Apps	2.0.0	Running	None Required

3. Click the Configure Tab.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Standard Apps

Description

Provides User Authorization Capabilities for Copy, Fax, and FTP for PKI/AD Users.

Version	2.0.0
Vendor name	Lexmark International, Inc.
Vendor email	lxksolv@lexmark.com
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

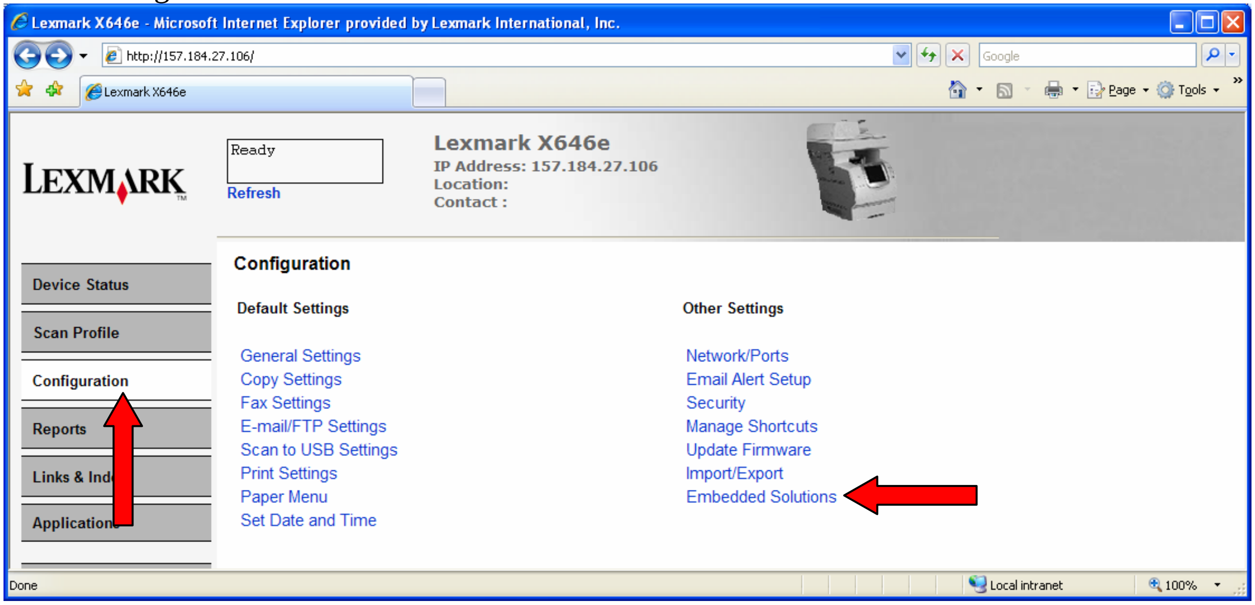
4. The following table lists each setting and the corresponding Pre-Installation Section/Item that contains the value needed for that field.

Setting	**Corresponding Pre-Installation Guide Section/Item**
Copy Authorization	Section 4.1 Item 1
Copy Authorization List	Section 4.1 Item 2
Fax Authorization	Section 4.2 Item 1
Fax Authorization List	Section 4.2 Item 2
FTP Authorization	Section 4.3 Item 1
FTP Authorization List	Section 4.3 Item 2

6 Configuring PKI/AD Email

This application is only used if Scan to Email is enabled. You can skip this section if this application has not been installed.

1. Click Configuration and then click Embedded Solutions.



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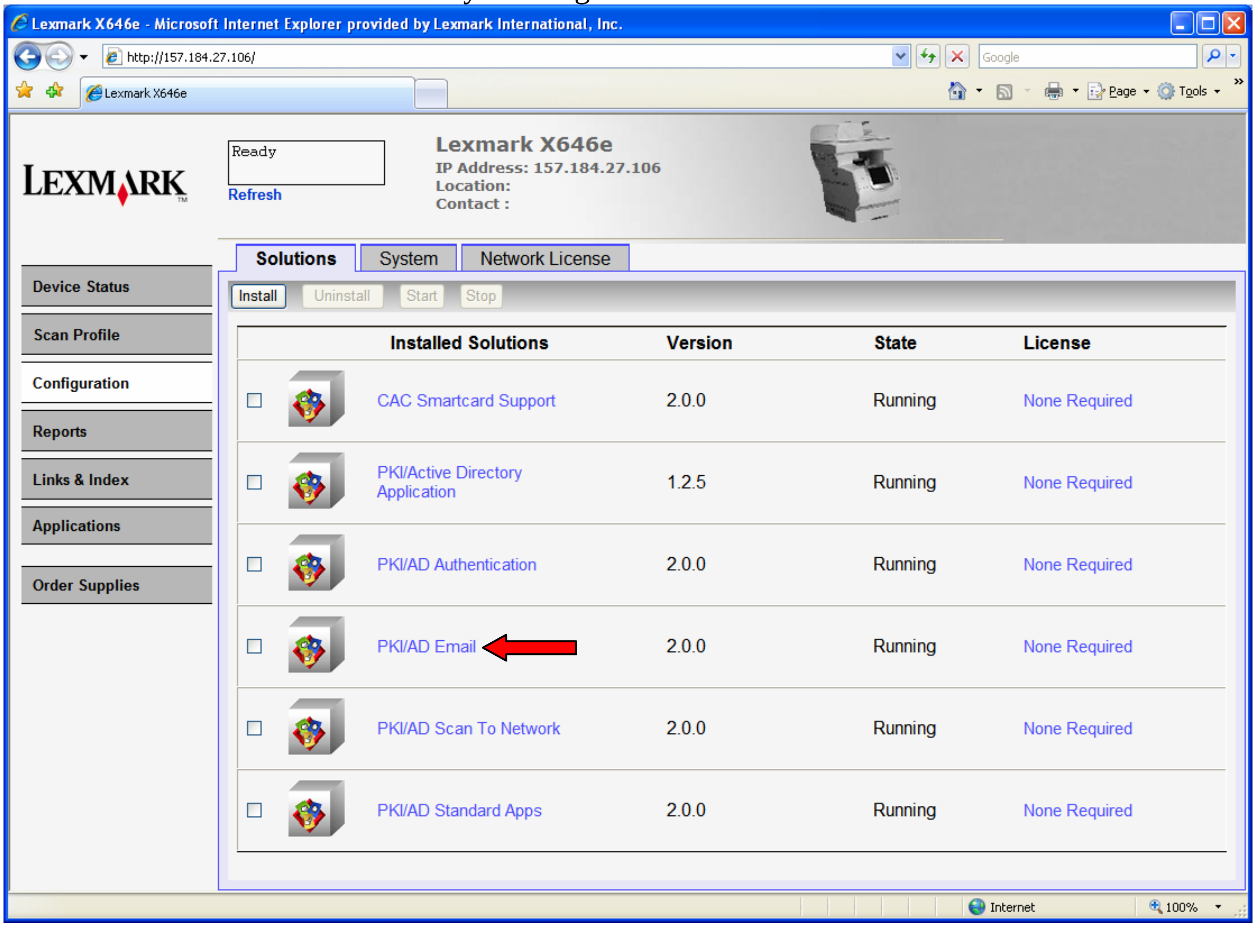
http://157.184.27.106/

Ready

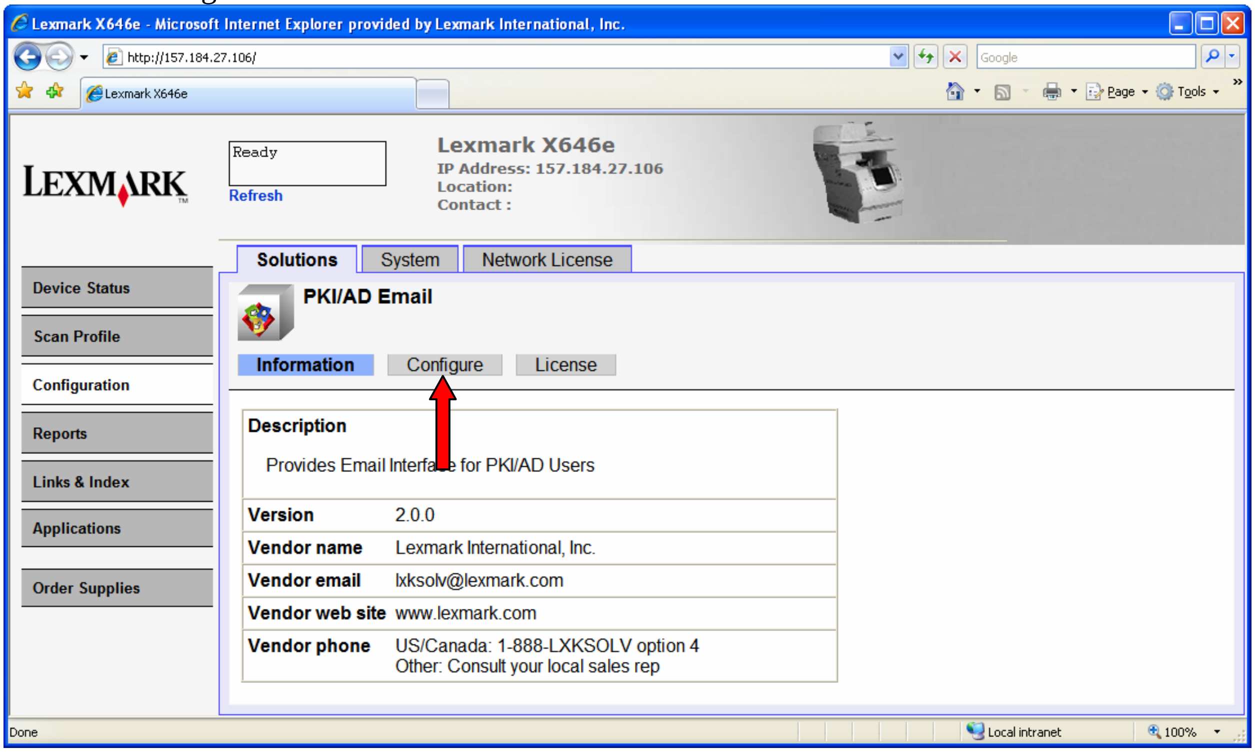
Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

2. Select the PKI/AD Email solution by clicking its name.



		Installed Solutions	Version	State	License
□		CAC Smartcard Support	2.0.0	Running	None Required
□		PKI/Active Directory Application	1.2.5	Running	None Required
□		PKI/AD Authentication	2.0.0	Running	None Required
□		PKI/AD Email	2.0.0	Running	None Required
□		PKI/AD Scan To Network	2.0.0	Running	None Required
□		PKI/AD Standard Apps	2.0.0	Running	None Required

3. Click the Configure Tab.



Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Email

Description	
Provides Email Interface for PKI/AD Users	
Version	2.0.0
Vendor name	Lexmark International, Inc.
Vendor email	lxksolv@lexmark.com
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

4. The following table lists each setting and the corresponding Pre-Installation Section/Item that contains the value needed for that field.

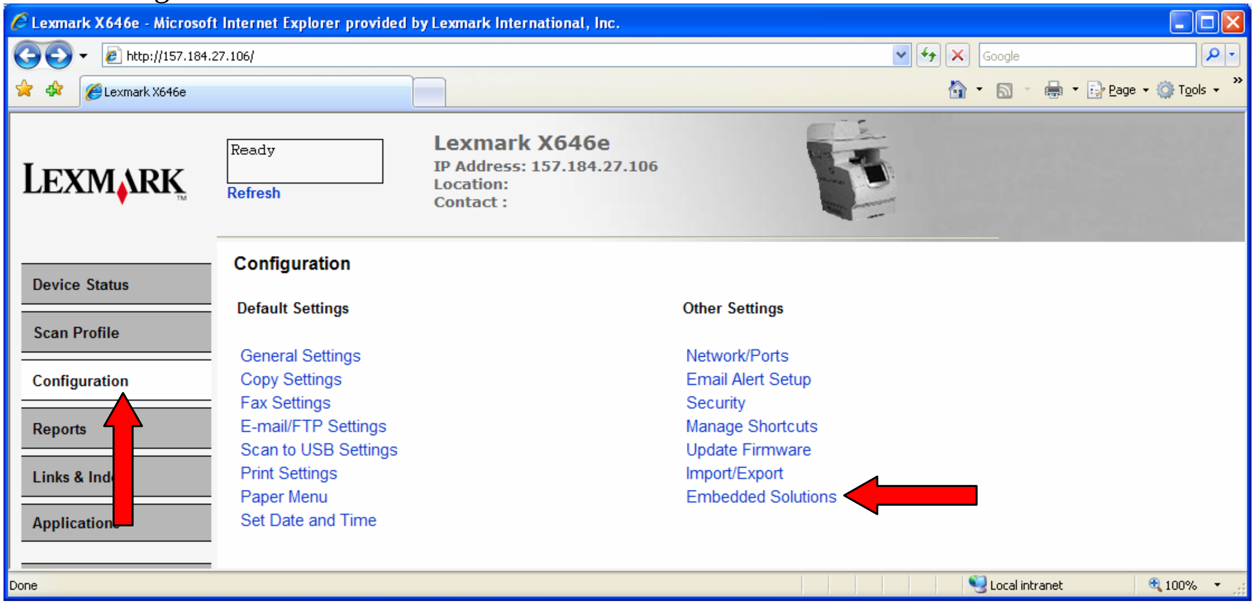
Setting	Corresponding Pre-Installation Guide Section/Item
Email Authorization	Section 5.1 Item 1
Email Authorization List	Section 5.1 Item 2
SMTP Server Authentication	Section 5.2 Item 2
Device Userid	Section 5.2 Item 2 Only used if Authentication set to Device
Device Password	Section 5.2 Item 2 Only used if Authentication set to Device
User Can Change Subject	Section 5.3 Item 1
User Can Change Message	Section 5.3 Item 2
User Can Change Scan Options	Section 5.3 Item 3
User Can Send Multiple Emails	Section 5.3 Item 4
From Address	Section 5.4
LDAP-From Email Address	If Card Email Address is chosen, this option is not used; otherwise, see Section 5.4.2 Item 2`
To Address	Section 5.5 Item 1
Limit Destinations	Section 5.5 Item 2
Send Email To User	Section 5.5 Item 3
Address Book Lookup	Section 5.5 Item 4

Sign Email	Section 5.6.1 Item 1
Encrypt Email	Section 5.6.2 Item 1
Require Email to be Signed or Encrypted	Section 5.6.3 (after table)
Signing Method	Section 5.6.1 Item 2
Signing Algorithm	SHA1 – only algorithm currently supported
Non-Repudiation Required for Signing	Section 5.6.1 Item 3
Sign and Encrypt Method	Section 5.6.2 Item 2
Encryption Algorithm	Triple DES – only algorithm currently supported
LDAP – Primary Certificate	Section 5.6.2 Item 3
LDAP – Alternate Certificate	Section 5.6.2 Item 3

7 Configuring PKI/AD Scan to Network

This application is only used if Scan to Network is enabled. You can skip this section if this application has not been installed.

1. Click Configuration and then click Embedded Solutions.



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Ready

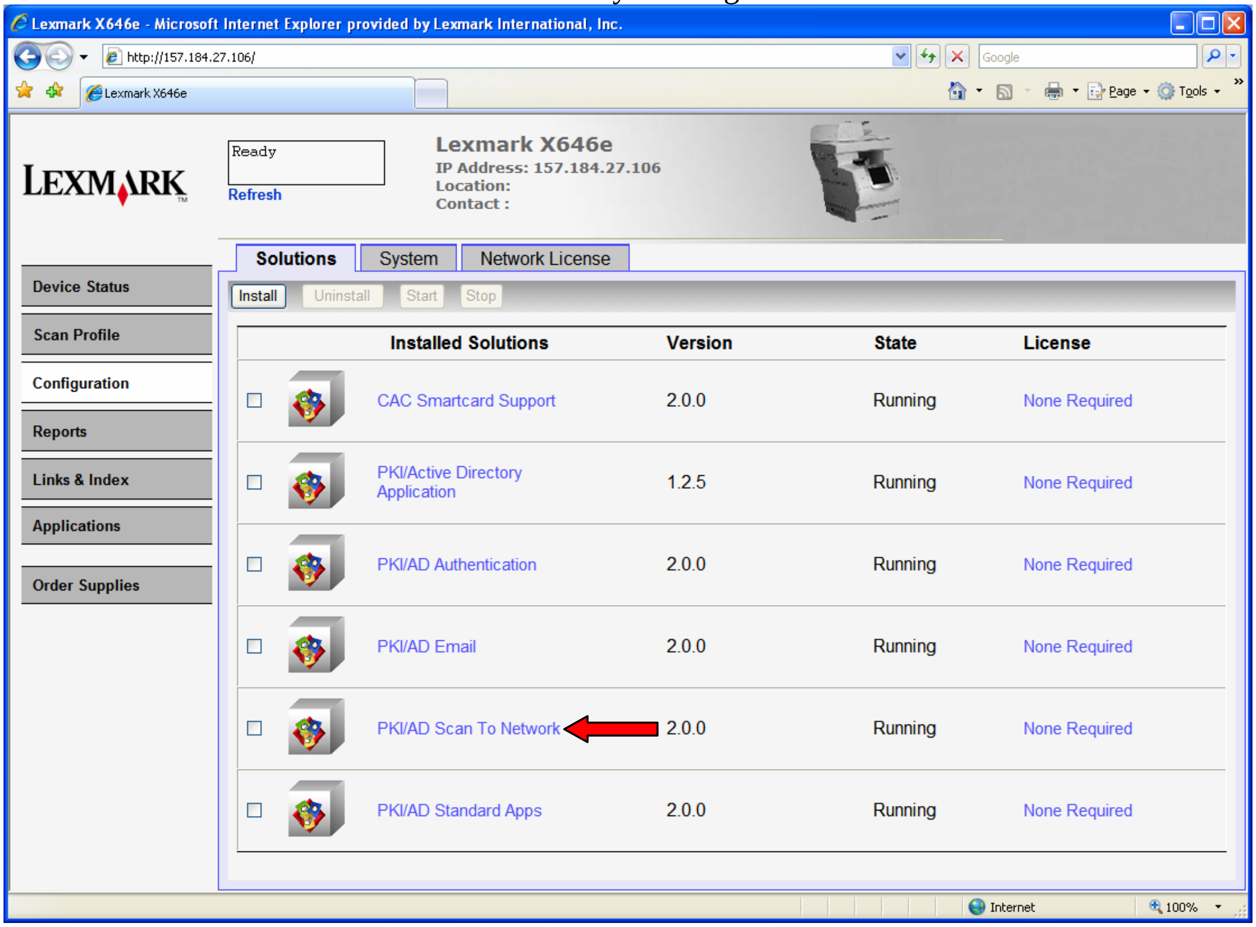
Lexmark X646e

IP Address: 157.184.27.106

Location:

Contact :

2. Select the PKI/AD Scan To Network solution by clicking its name.



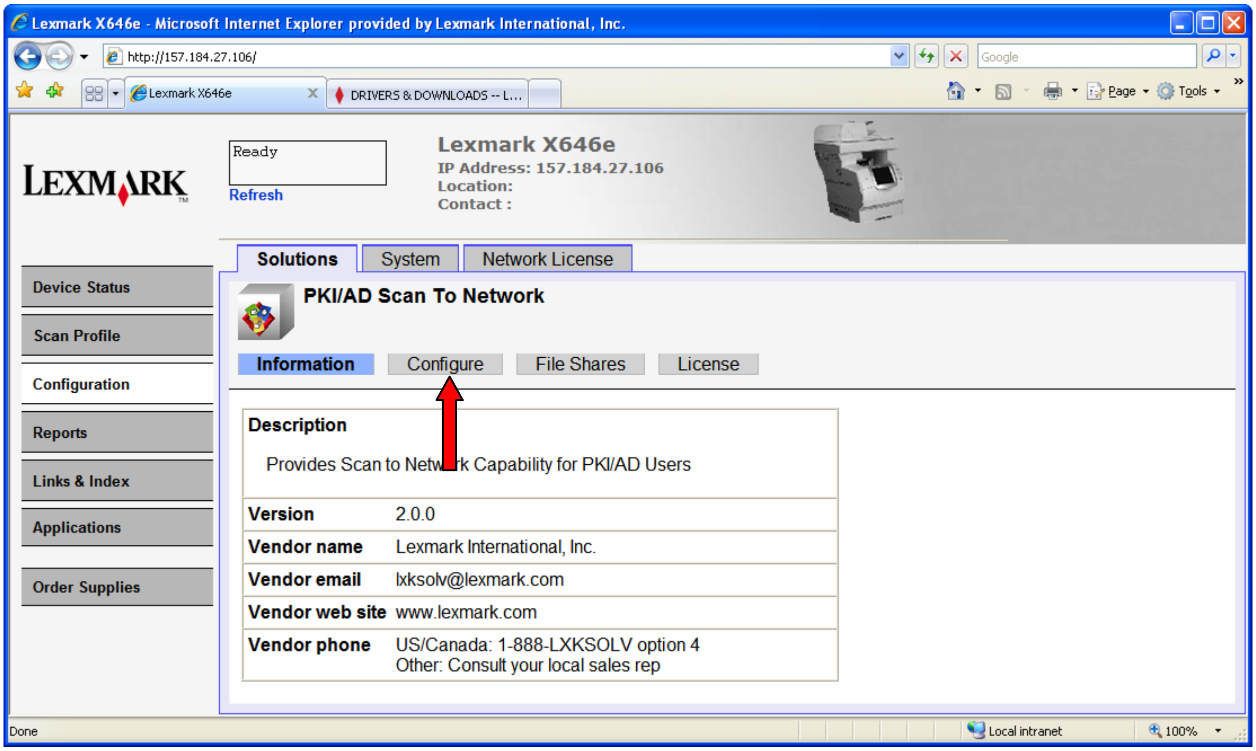
Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

	Installed Solutions	Version	State	License
□	CAC Smartcard Support	2.0.0	Running	None Required
□	PKI/Active Directory Application	1.2.5	Running	None Required
□	PKI/AD Authentication	2.0.0	Running	None Required
□	PKI/AD Email	2.0.0	Running	None Required
□	PKI/AD Scan To Network	2.0.0	Running	None Required
□	PKI/AD Standard Apps	2.0.0	Running	None Required

7.1 General Settings

After selecting PKI/AD Scan To Network from the Embedded Solutions list, click the Configure tab.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Scan To Network

Description

Provides Scan to Network Capability for PKI/AD Users

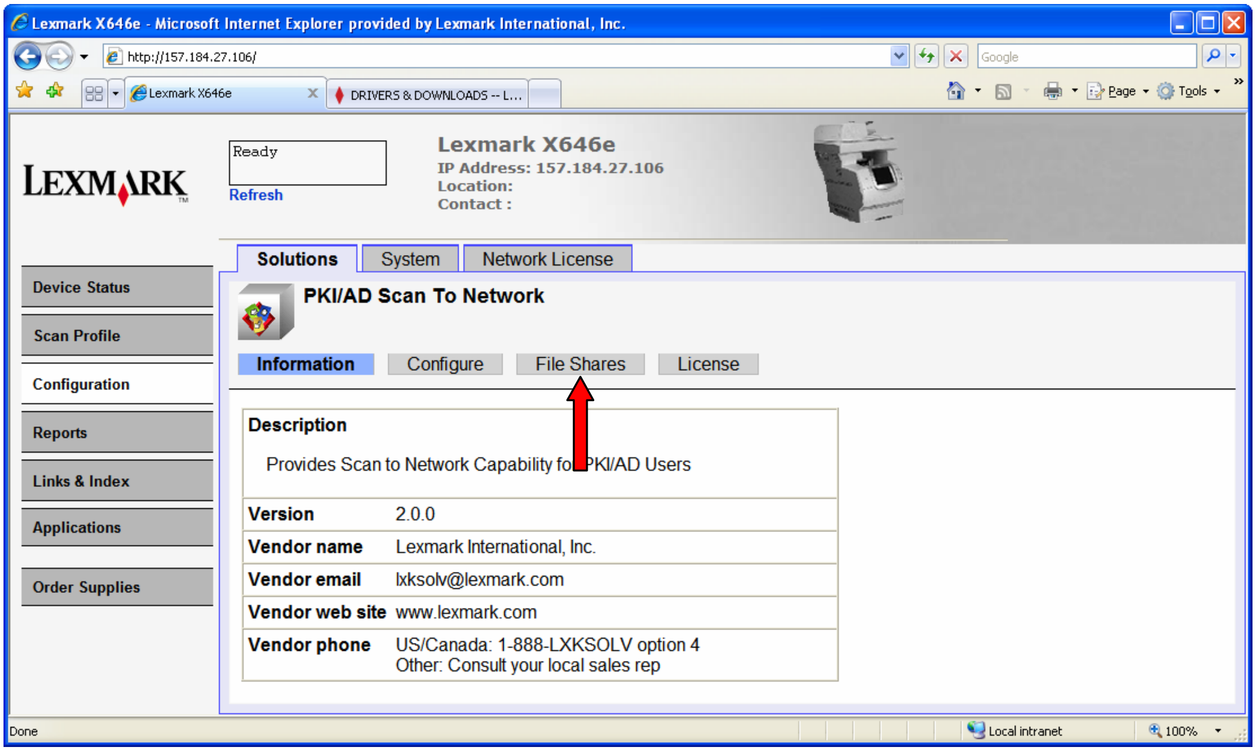
Version	2.0.0
Vendor name	Lexmark International, Inc.
Vendor email	lxksolv@lexmark.com
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

The following table lists each setting and the corresponding Pre-Installation Section/Item that contains the value needed for that field.

Setting	Corresponding Pre-Installation Guide Section/Item
Button Text	Section 6.1 Item 1
Up Icon	To use a different icon, contact Lexmark to get a “blank” button to be used as the base.
Down Icon	To use a different icon, contact Lexmark to get a “blank” button to be used as the base.
Scan To Network Authorization	Section 6.1 Item 2
Authorization List	Section 6.1 Item 3

7.2 Fileshare Settings

After selecting PKI/AD Scan To Network from the Embedded Solutions list, click the File Shares tab to define one or more fileshares that users can access. At least one fileshare must be defined or the user will see an error that this feature has not yet been configured.



Ready

Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Scan To Network

Description

Provides Scan to Network Capability for PKI/AD Users

Version	2.0.0
Vendor name	Lexmark International, Inc.
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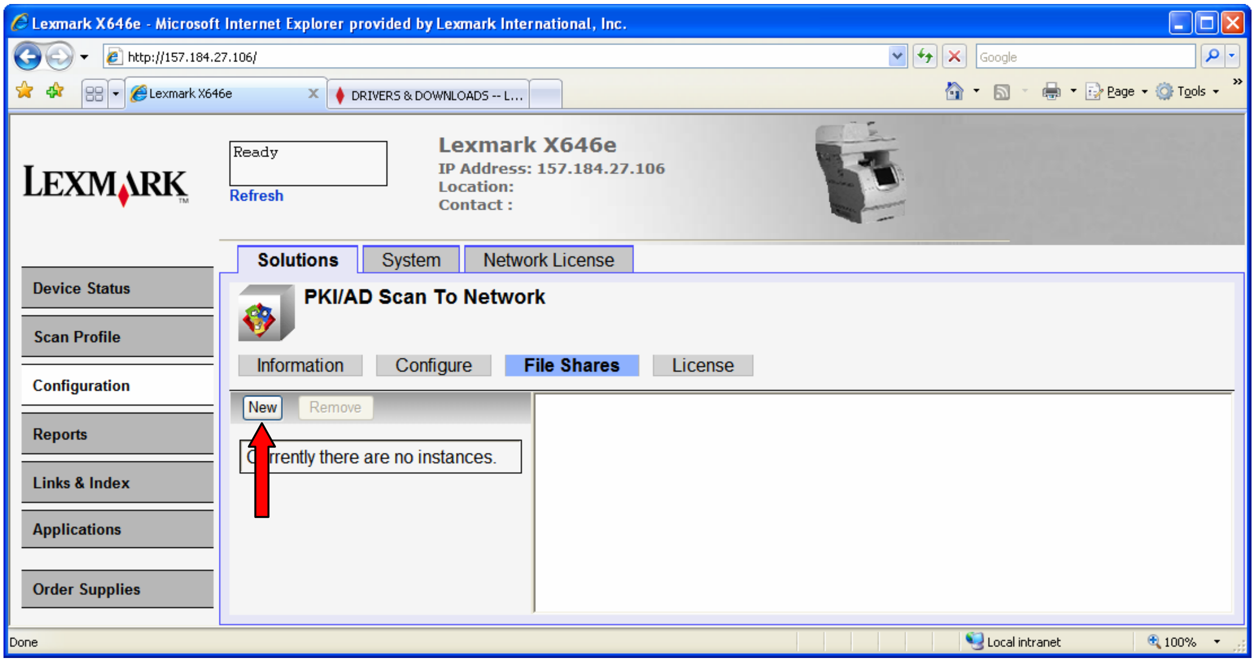
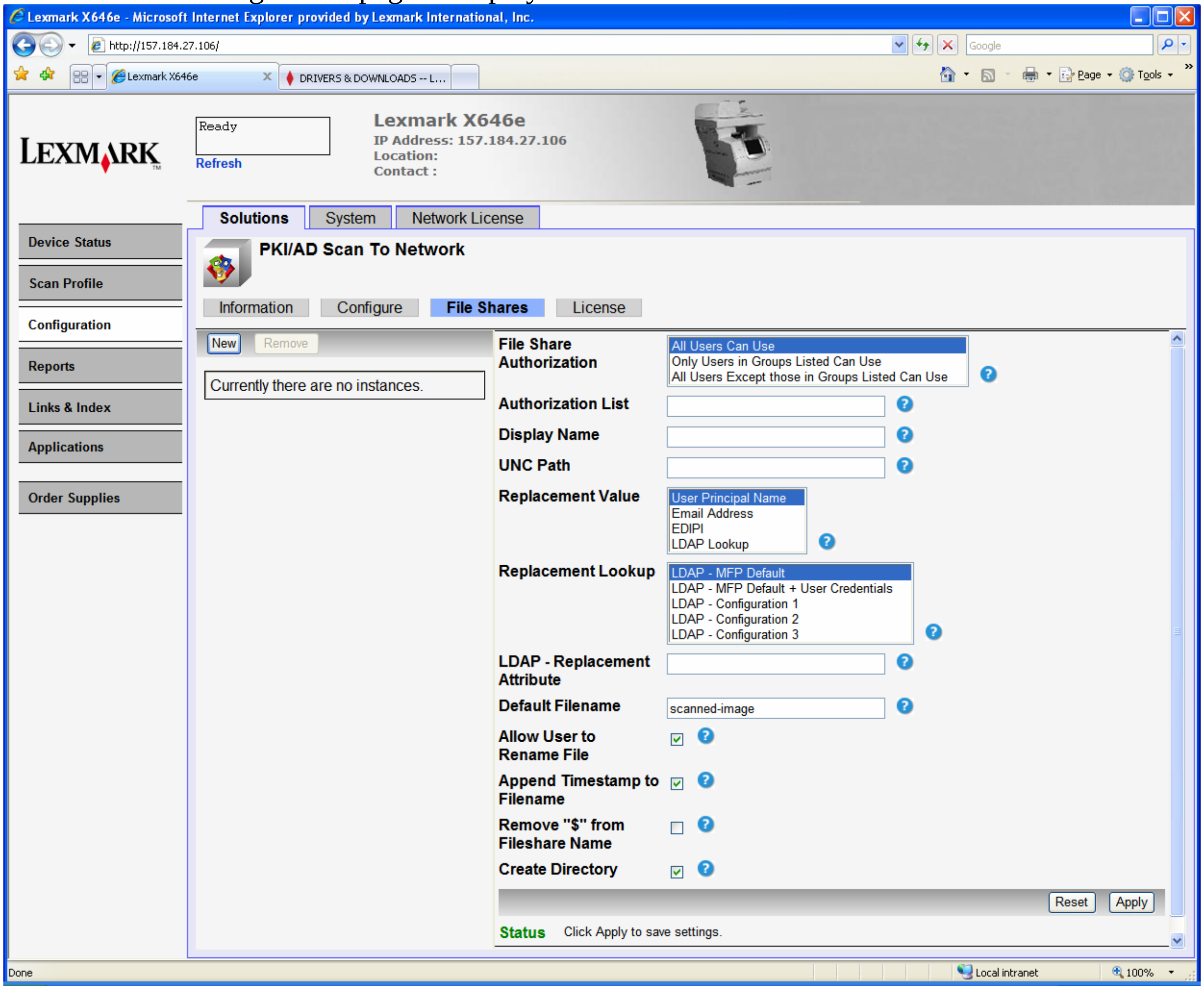
Vendor web site	www.lexmark.com
Vendor phone	US/Canada: 1-888-LXKSOLV option 4 Other: Consult your local sales rep

7.2.1 Adding a New Fileshare

1. Click New to create a new Fileshare.



2. The Fileshare Configuration page is displayed.



Lexmark X646e
IP Address: 157.184.27.106
Location:
Contact :

PKI/AD Scan To Network

Currently there are no instances.

File Share Authorization: All Users Can Use / Only Users in Groups Listed Can Use / All Users Except those in Groups Listed Can Use

Authorization List:

Display Name:

UNC Path:

Replacement Value: User Principal Name / Email Address / EDIPI / LDAP Lookup

Replacement Lookup: LDAP - MFP Default / LDAP - MFP Default + User Credentials / LDAP - Configuration 1 / LDAP - Configuration 2 / LDAP - Configuration 3

LDAP - Replacement Attribute:

Default Filename: scanned-image

Allow User to Rename File ☑

Append Timestamp to Filename ☑

Remove "$" from Fileshare Name ☐

Create Directory ☑

Status Click Apply to save settings.

3. Use the following table to configure the settings.

Setting	Corresponding Pre-Installation Guide Section/Item
File Share Authorization	Section 6.2 Item 1
Authorization list	Section 6.2 Item 2
Display Name	Section 6.2 Item 3
UNC Path	Section 6.2 Item 4
Replacement Value	If the UNC Path does not have a “%u”, this setting can be skipped; otherwise, see Section 6.2 Item 5
Replacement Lookup	If the Replacement Value is not LDAP Lookup, this setting can be skipped; otherwise see Section 6.2 Item 5
LDAP – Replacement Attribute	If the Replacement Value is not LDAP Lookup, this setting can be skipped; otherwise see Section 6.2 Item 5
Default Filename	Section 6.2 Item 6
Allow User to Rename File	Section 6.2 Item 7
Append Timestamp to Filename	Section 6.2 Item 8

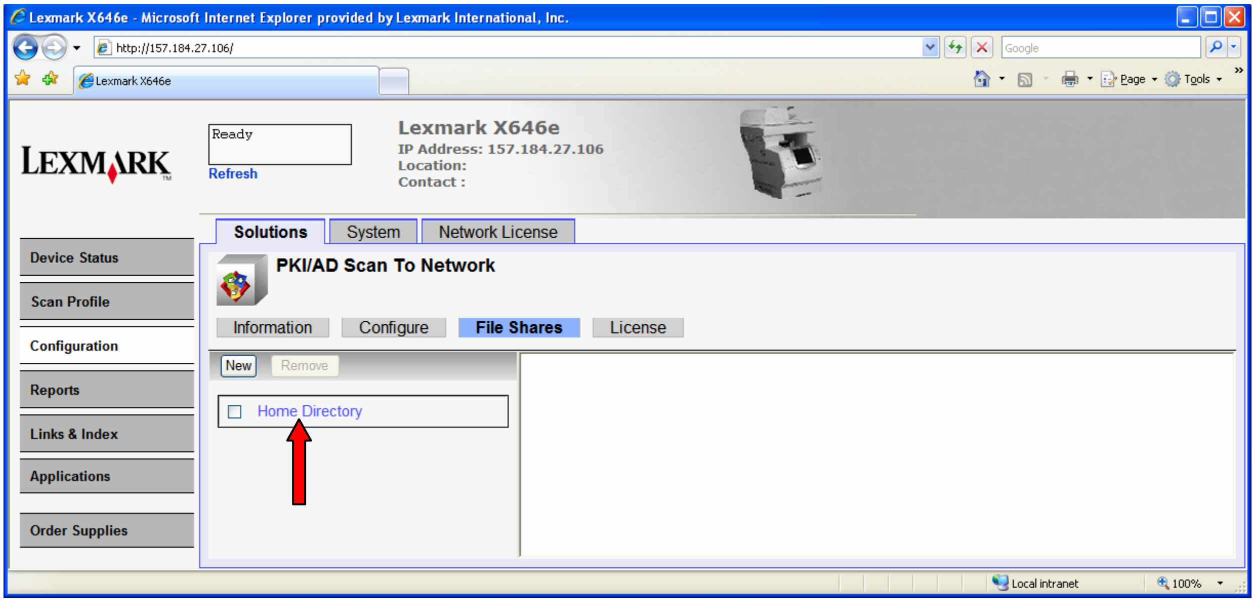
Remove "$" from Fileshare Name	Section 6.2 Item 9
Create Directory	Section 6.2 Item 10

4. Click Apply.

5. Repeat for each fileshare that needs to be created. There is no limit to the number of fileshares that can be created.

7.2.2 Editing an Existing Fileshare

1. Click the name of the Fileshare to be edited.



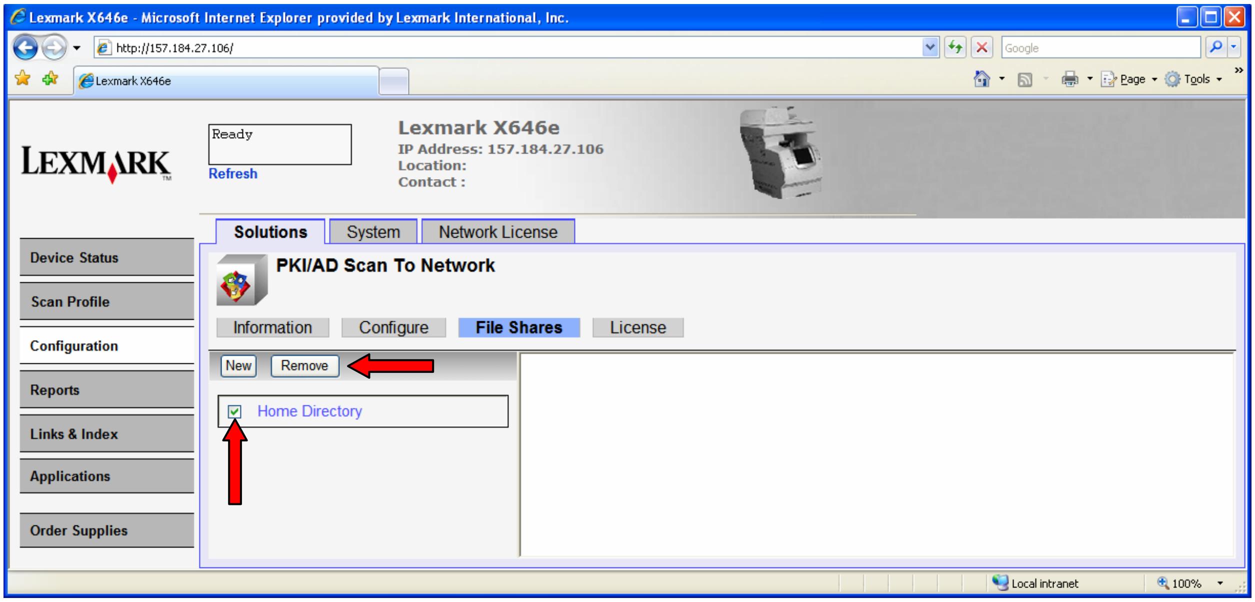
2. The Fileshare Configuration page for that configuration will be displayed.

3. Make any changes and then click Apply.

7.2.3 Removing an Existing Fileshare

1. Check the box next to the fileshare to be removed.

2. Click the Remove button.



8 Troubleshooting

This section details some of the common issues that occur when setting up the PKI-enabled MFP. Please review these and possible causes/resolutions prior to contacting the Lexmark Solutions HelpDesk.

8.1 Login Issues

Error Message/Symptom	*Possible Cause/Resolution*
Unsupported USB Device	**Cause:** A supported SmartCard reader has been installed prior to the PKI firmware and applications being installed. **Resolution:** Remove the reader and complete section 2 of this guide. The reader cannot be installed until the firmware and applications have been installed. **Cause:** A non-supported SmartCard reader is attached. Only the OmniKey reader shipped with the MFP is supported. **Resolution:** Removed the unsupported reader and attach the OmniKey reader.
MFP is at the Welcome Screen and not locked out	**Cause:** The SmartCard Driver or PKI/AD Authenticatin solution is not installed. **Resolution:** Perform step 1 in section 2.2. Look at the list of installed solutions. If the SmartCard Driver is not installed, complete section 2.2. If the PKI/AD Authentication solution is not installed, complete section 2.3. **Cause:** The SmartCard Driver solution is not running. **Resolution:** Perform step 1 in section 2.2. Look at the list of installed solutions. If the SmartCard Driver status is not “Running”, check the box next to that solution and click Start. **Cause:** The PKI/AD Authentication solution is not running. **Resolution:** Perform step 1 in section 2.2. Look at the list of installed solutions. If the PKI/AD Authentication solution status is not “Running”, check the box next to that solution and click Start.
Login screen does not appear when the card is inserted	**Cause:** The card is not recognized by the reader. **Resolution:** Contact Lexmark Solutions HelpDesk for further assistance.
KDC and MFP clocks are different	**Cause:** The date and time on MFP are not within 5

beyond an acceptable range; check the MFP's date and time.	minutes of each other. **Resolution:** Verify the date and time on the MFP; see section 3.1. Be sure the time zone and daylight savings time settings are correct.
Kerberos configuration file has not been uploaded.	**Cause:** The PKI/AD Authentication solution is configured to use the MFP Kerberos setup but no Kerberos file was uploaded. **Resolution:** See section 4.1 If the Kerberos settings are provided in the PKI/AD Authentication are provided in the settings, uncheck the “Use MFP Kerberos Setup” checkbox and click apply. **Resolution:** If a Kerberos file really needs to be used, click “Configuration | Security | Kerberos Setup”. Browse to the Kerberos file and click submit. A reboot will be required.
The Domain Controller Issuing Certificate has not been installed.	**Cause:** No certificate has been installed on the MFP. **Resolution:** See section 3.6. If you install the wrong certificate, the error message on the device will provide the name of the certificate needed.
The Domain Controller Issuing Certificate (“name of certificate”) has not been installed.	**Cause:** The certificate specified in the error message is needed to validate the domain controller. **Resolution:** See the PKI Pre-Installation Guide for information on obtaining the certificate. See section 3.6 for information on installing the certificate.
The KDC did not respond within the required time.	**Cause:** The hostname or IP address of the KDC is not correct. **Resolution:** Verify the hostname or IP address and check against the value in the PKI/AD Authentication solution or Kerberos file. **Cause:** The KDC is not currently available. **Resolution:** Multiple KDCs can be specified in the PKI/AD Authentication solution or Kerberos file; this will typically resolve this issue. **Cause:** Port 88 is blocked by a firewall. **Resolution:** This is the Kerberos Port and is used by the MFP to communicate with the KDC. The port must be opened between the MFP and KDC in order for authentication to work.
User's Realm was not found in the Kerberos Configuration File.	**Cause:** This error occurs during a manual login and indicates the Windows domain is not specified in the Kerberos Configuration file. **Resolution:** If using the PKI/AD Authentication solution for the Kerberos settings, add the

	Windows domain in lower case to the Kerberos Domain setting. For example, if the user's domain is "x.y.z", set the Kerberos Domain to "mil,.mil.x.y.z". **Resolution:** If using a Kerberos Configuration File, add a mapping to the "domain_realm" section, the maps from the lower case windows domain to the uppercase realm – similar to the existing mapping for the mil domain.
Realm on the card was not found in the Kerberos Configuration File.	**Cause:** This error occurs during a card login and indicates the Kerberos Realm referred to does not exist in the Kerberos Configuration File. **Resolution:** The PKI/AD Authentication solutions' Kerberos settings cannot be used to support multiple Kerberos Realms. Refer to the PKI Pre-Installation Guide for creating a Kerberos Configuration File. **Resolution:** A Kerberos Configuration File is already being used; the "realms" section of the configuration file needs to be updated to include the missing realm.
Client ("name") unknown.	**Cause:** The KDC being used to authenticate the user does not know the User Principal Name (12345678@mil) specified in the error message. **Resolution:** Verify the KDC specified in the Kerberos settings is the correct one to be using.
Login hangs for a long time at "Getting User Info…"	**Cause:** The LDAP lookup is taking a long time to complete. **Resolution:** See the LDAP Troubleshooting section below.
User is almost immediately logged out after logging in.	**Cause:** The "Auto Log-Out" timeout is set too short. **Resolution:** See section 3.5 to configure this setting.

8.2 LDAP Issues

Error Message/Symptom	***Possible Cause/Resolution***
LDAP lookups (at "Getting User Info" during login or searching the address book) take a long time and then fail	**Cause:** The user's credentials are being used to connect to the LDAP server but the hostname for the LDAP server was not used. **Resolution:** When the user's credentials are used to connect to the LDAP server, the hostname of the LDAP server must be used instead of the IP address. Check the LDAP configuration. **Cause:** Port 389 (non-SSL) or Port 636 (SSL) is

	blocked by a firewall. **Resolution:** These ports are used by the MFP to communicate with the LDAP Server and must be open in order for LDAP lookups to work. **Cause:** Reverse DNS lookup are disabled on the network. **Resolution:** The MFP uses reverse DNS lookups to verify IP addresses. If these lookups are disabled on the network, check the Disable Reverse DNS Lookups option in the PKI/AD Authentication solution settings. **Cause:** The LDAP search base is too broad in scope **Resolution:** Narrow the LDAP search base to the lowest possible scope that will include all necessary users.
LDAP lookups (searching address book, getting user’s email address, getting user’s home directory) fail almost immediately	**Cause:** The user’s credentials are being used to connect to the LDAP server but IP address for the LDAP server was used. **Resolution:** When the user’s credentials are used to connect to the LDAP server, the hostname of the LDAP server must be used instead of the IP address. **Cause:** Port 389 is being used but the LDAP Server requires SSL to be used. **Resolution:** Change the LDAP Port to 636; check the Use SSL/TLS checkbox; change the LDAP Certificate Verification to “Never”. **Cause:** The LDAP search base is incorrect. **Resolution:** Correct the LDAP search base to be the lowest possible scope that will include all necessary users. **Cause:** The LDAP attribute being searched for is not correct. **Resolution:** Verify the LDAP attributes for email addresses and/or the user’s home directory is correct.

8.3 Scan To Email Issues

Error Message/Symptom	*Possible Cause/Resolution*
Email cannot be sent because an error occurred trying to get your email address.	**Cause:** Using manual login and the From Email Address is configured to come from the card. **Resolution:** If manual login is allowed, the From Email Address must come from LDAP since a card may not (or can not) be used. Modify the PKI/AD Email settings to get the From Address from LDAP. **Cause:** The LDAP lookup failed. **Resolution:** See section 8.2 above.
Email cannot be sent because you are not authorized to perform this function.	**Cause:** User authorization is enabled for email and the user is not in an Active Directory group that is authorized to use this function. **Resolution:** This is not an error; if this user needs access to email, the authorization list needs to be expanded to include an Active Directory group that includes this user.
The email cannot be sent because a valid digital signature could not be found on your card.	**Cause:** The user is required or chose to digitally sign the email but a certificate valid for signing emails was not found on the card. **Resolution:** An email can only be signed if a certificate valid for signing is on the card. By default, the non-repudiation option is required for the signing certificate. If your certificates do not have this, this can be disabled in the PKI/AD Email solution settings.
The email cannot be sent because it cannot be digitally signed when a manual login is performed.	**Cause:** Emails can only be digitially signed if the user logs in with a card. **Resolution:** Set the email signing option in the PKI/AD Email solution settings to Disabled or Prompt User; instruct users that perform a manual login to not choose the signing option.
Email cannot be sent. Unable to find valid encryption certificate for "email address".	**Cause:** The encryption certificate for the specified email address was not found in the LDAP Directory specified by the Address Book Lookup in the PKI/AD Email solution settings. **Resolution:** The encryption certificate is required for each recipient of the email. Encrypted emails can only be sent to those recipients that are in the global address book.
Unable to send email.	**Cause:** SMTP Server Authentication is set to Anonymous but the SMTP Server only allows an authenticated user to send email.

	Resolution: Change the SMTP Server Authentication option in the PKI/AD Email solution settings to User Credentials. **Resolution:** Add the IP Address of the MFP as an SMTP Relay. **Cause:** SMTP Server Authentication is set to User Credentials but the SMTP Server was specified used an IP Address. **Resolution:** In order to use the User Credentials for sending email, the SMTP Server must be specified using the hostname. See section 3.3. **Cause:** SMTP Server Authentication is set to User Credentials but the SMTP Server reports GSSAPI is not supported. **Resolution:** Change the SMTP Server Authentication option in the PKI/AD Email solution settings to Anonymous. **Cause:** Port 25 is blocked so the MFP is unable to connect to the SMTP server. **Resolution:** Access to port 25 is required in order for the MFP to communicate with the SMTP Server.

8.4 Scan To Network Issues

Error Message/Symptom	*Possible Cause/Resolution*
You are not authorized to use this feature.	**Cause:** User authorization is enabled for Scan To Network and the user is not in an Active Directory group that is authorized to use this function. **Resolution:** This is not an error; if this user needs access to Scan to Network, the authorization list needs to be expanded to include an Active Directory group that includes this user.
This feature is not available because no fileshares have been configured by the system administrator.	**Cause:** The PKI/AD Scan to Network solution has been installed but no Fileshare destinations have been defined. **Resolution:** See section 7.2.1 for adding fileshares.
This feature is not available because you are not authorized to scan to any of the available file shares.	**Cause:** All fileshares that have been defined have user authorization enabled and this user is not in Active Directory group that is authorized for any of the defined shares. **Resolution:** This is not an error; if this user needs

	access to any of the defined fileshares, the authorization list for the fileshare needs to be expanded to include an Active Directory group that includes this user.
An LDAP error occurred trying to retrieve the selected file share destination.	**Cause:** The LDAP lookup failed. **Resolution:** See section 8.2 above**.** **Cause:** The LDAP lookup succeeded but the attribute chosen for the replacement value does not exist or has no value. **Resolution:** See section 7.2.2 for editing an existing fileshare.
No UNC Path has been defined for this destination.	**Cause:** The UNC Path option for the Fileshare was not defined. **Resolution:** See section 7.2.2 for editing an existing fileshare.
The scanned file size and saved file size do not match.	**Cause:** After the file is scanned, the number of bytes scanned is compared to size of the file written, and they are not the same. **Resolution:** This typically means the fileshare is full or the user has reached their disk quota. Check the free space / disk quota on the fileshare.
User does not have read access to the file share; unable to verify the file size.	**Cause:** After the file is scanned, the number of bytes scanned is compared to the size of the file written to insure no error occurred. The user does not have read access to the fileshare so the file size cannot be determined. **Resolution:** The user needs to be given read access to the fileshare.
Invalid filename specified.	**Cause:** An invalid character was included as part of the filename provided by the user. **Resolution:** The user cannot include the following characters in the filename: |, <, >, \, /, *, ?, ;, :, or ^.
An error occurred connecting or writing to the File Share.	**Cause:** The UNC Path used the IP address of the file server. **Resolution:** In order to connect to the fileshare using the user's credentials, the hostname of the file server must be used. See section 7.2.2 for editing an existing fileshare. **Cause:** The hostname of the file server could not be resolved to an IP Address.

	Resolution: If the hostname was not a fully qualified domain name, then MFP has to use its domain search order to determine the appropriate domain name to append to the hostname. See section 3.2 item 3. **Cause:** Port 445 is blocked by a firewall. **Resolution:** The MFP uses port 445 to communicate with the file server and transfer the file. This port must be open in order to use Scan to Network.
The network share name does not exist on the specified file server.	**Cause:** The MFP connected to the file server but the share name does not exist. **Resolution:** Verify the share name is correct and that the user has read/write access to that share. **Cause:** The share name is correct but ends in a "$". **Resolution:** Toggle the Remove "$" from fileshare name setting available in the fileshare configuration. See section 7.2.2 for editing an existing fileshare.

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