

Printer Profile Manager Enterprise (PPME)

Preparation for Installation and Setup

About This Document

When installing and using any server-based application, some preparation in advance is required. This document provides Best Practices to ensure a successful installation.

This document is intended to complement the PPME Installation Guide. Both documents should be reviewed prior to the installation and setup of PPME.

The information in this document relates to the PPME On-Premise version v3.2.x and later.




Who Should Use This Document






This document is intended for use by:



- any person who needs to perform the installation and setup of PPME
- any person who will use the features within PPME

Your Information Technology team, specifically members responsible for Network and Security, should review these documents and understand the requirements prior to installation.




STEP 1: Prepare for Installation




System and Network Requirements		
Before starting the installation, check the following system and network requirements.		Done
Requirements	Consider	
Supported Operating Systems: <ul style="list-style-type: none"> • Windows® 2012, 64-bit processor • Windows Server 2016, 64-bit processor • Windows Server 2019, 64-bit processor • Windows Server® 10, 64-bit processor 	PPME can be installed on servers running these listed operating systems whether physical or virtualized. In general terms, if the physical or virtualized server can run the operating system, it can run PPME.	<input type="checkbox"/>
Supported Browsers: <ul style="list-style-type: none"> • Chrome Browser version 76 or higher 	The requirement is for a Chromium-based browser. Zebra tests on Chrome. To be clear, other Chromium-based browsers can be used, however, reported issues will be validated using Chrome.	<input type="checkbox"/>
Server Requirements: <ul style="list-style-type: none"> • CPU cores: <ul style="list-style-type: none"> ○ 4 (minimum) ○ 8 (recommended) • Memory (RAM): 16GB • Minimum: 50GB available drive space • Using the printer analytics or battery management functions will require up to 1TB of disk space. 	Using the recommended specification will maximize performance, especially when performing operations on a higher number of printers.  Best Practice: Zebra recommends that PPME is installed on a physical or virtual server that complies with Microsoft Windows security baselines . Local access to the server should only be by an administrator for software updates, maintenance, and backup. It should not be used as a workstation.	<input type="checkbox"/>
 Internet access is required to complete the installation and to use PPME.		
Network Port Requirements: Internet Access <ul style="list-style-type: none"> • The PPME server requires outgoing port 443 to be open to the internet for the license system and certificate signing. • Proxy details if they are required for internet access. 	PPME is a network-based software product. It requires both local network connectivity and internet access to install and operate. Please carefully review the Network Port Requirements to ensure that the app's connectivity needs are supported by the installation and use environment.  PPME needs proxy details to be set independently to those set in Windows.	<input type="checkbox"/>

<ul style="list-style-type: none"> • Access to my.nalpeiron.com is required by the licensing system. • Access to acs.zebra.com is required for certificate signing. 	<ul style="list-style-type: none">  Internet access is required as PPME contacts the license server every 24 hours and is necessary for both the 30-day Trial and licensed versions of PPME.  Access to acs.zebra.com is required when choosing the Basic (SHA1) connection between the printer and PPME. Printers running Link-OS v4 and earlier <u>require</u> this type of connection. Access to acs.zebra.com is needed during installation and when updating the Basic Printer Connection & Certificates from the PPME Admin configuration page. If all printers are running Link-OS v5 or later, Zebra recommends choosing the Advanced connection.  Choosing the Basic or Advanced connection type determines whether SHA1 or SHA256 certificates are used for the secure connection between printers and PPME. Choosing Advanced will result in certificates being deployed to the printer. (Basic and Advanced pertain to connection types only; they do not determine available features in PPME.)  Best Practice Use a PPME Demo installation to validate the product features work as expected before moving into a live production environment. Additionally, if a test environment is used to preview and test the installation and use of PPME, the production environment will require the same capabilities for successful installation and use. <p>The Installation Guide contains many more details on installing PPME. Please review it as a key step in your installation process.</p>	
<p>Network Port Requirements: Internal Network - Outgoing Ports</p> <ul style="list-style-type: none"> • Discovery of printers utilizes UDP on port 4201. • Is Multicast supported on your network for printer discovery? • Initial printer configuration may use TCP ports 9100, 9200, or 6101. • If using LDAP, additional ports may need to be opened. 	<p>After installation you will need to add printers to PPME, which is done by discovering and configuring printers on your network. Specific ports are required for the discovery and sending of the configuration settings to the printer.</p> <ul style="list-style-type: none">  <i>Consider if LDAP will be used to authenticate PPME users.</i> 	□

<p>Network Port Requirements: <i>Internal Network - Incoming Ports</i></p> <ul style="list-style-type: none"> • The server firewall should be configured to only allow the following incoming ports: <ul style="list-style-type: none"> – Port 8443: printer connections – Port 443: client connections 		<input type="checkbox"/>
<p>Installation folder: The default installation folder is: C:\Program Files\Zebra Technologies\Printer Profile Manager Enterprise</p>	<p>The person installing the software must have Administrative privileges on the server where PPME is being installed.</p> <p> <i>Consider if you need to install the product somewhere other than the default location.</i></p>	<input type="checkbox"/>
<p>Local user account: The user account that will be used to install PPME.</p>	<p> <i>Consider the user account that will be used to install PPME. Additional files will be installed at this location:</i> %SYSTEMDRIVE%\Users\<<username>\.PPME</p>	<input type="checkbox"/>





STEP 2: Run the Setup Wizard




Gather the following information before you begin the installation and setup. APPENDIX A – SETUP WIZARD SCREENS shows the screens displayed during the Setup Wizard.		
The following information is required to complete the Setup Wizard.		Done
Requirements	Additional Details	
Administrator and additional User account information: <ul style="list-style-type: none"> • Full Name • Username • Email Address • Password 	<p>A PPME administrator account must be created. When creating the Administrator account or adding additional PPME users, you must have the details shown in the left pane.</p> <p>When a new user accepts an email invitation to join the system, they will need to establish a password. Refer to the PPME Installation Guide for password requirements.</p>	<input type="checkbox"/>
PPME Server FQDN: <ul style="list-style-type: none"> • Fully Qualified Domain Name (FQDN) 	<p>The FQDN will be used in the certificate generation and connections may fail if this is incorrect. The Setup Wizard can attempt to detect the server's FQDN.</p>	<input type="checkbox"/>
PPME License Number: <ul style="list-style-type: none"> • Your 18-digit license number • 30-Day Trial/Demo does not require a license number. 	<p>PPME can be downloaded and installed in Trial/Demo mode as fully functional and will support up to 7K printers for 30 days. As noted in the previous section, internet access is required for a license or the trial/demo to work.</p>	<input type="checkbox"/>
Network IP Addressing: <ul style="list-style-type: none"> • DHCP or Static/Permanent IP addressing • Your DNS Server List • Your DNS Domain Name 	<p> <i>Consider how your printers will get their IP address.</i></p> <p>The DNS Server List is a space-delimited list of DNS Server IPv4 addresses. The DNS Domain Name must be a valid DNS name (e.g., no white space in the name and no longer than 255 characters). Refer to the PPME Installation Guide for further requirements.</p>	<input type="checkbox"/>
Outgoing Email (SMTP) Server Details: <ul style="list-style-type: none"> • Host Name • Port • From email address • Authentication credentials, if required. • Is SSL required? 	<p> Best Practice During setup, configure PPME to connect to your SMTP server.</p> <p>PPME uses email to invite new users and to recover forgotten login credentials. If the email server configuration is not set up in PPME, it will not be able to support the “Forgot Password” feature.</p> <p> <i>Use the “Send Test Email” option during setup to ensure the email system is working.</i></p>	<input type="checkbox"/>

<p>Certificate Details:</p> <ul style="list-style-type: none"> • Company name • Department • Address • City • State • Country • Postal Code • Email address • Phone number • Server Name (Fully Qualified Domain Name) 	<p>The information in the left pane is required to create certificates for the printer connection to PPME.</p> <p>Spaces or invalid characters in the email address or other fields is a common cause for failure when generating certificates.</p>	<input type="checkbox"/>
<p>SSL Certificate Type for Printer Connection:</p> <ul style="list-style-type: none"> • Basic (SHA-1) • Advanced (SHA-2) • Both 	<p> Best Practice</p> <p>It is a best practice to use the Advanced Printer Connection (SHA-2) option for the connection between printers and PPME.</p> <p>To use the Advanced (SHA-2) option, printers are <u>required</u> to run Link-OS v5 or later.</p> <p>The setup process will create signed certificates.</p> <p> <i>Consider if you need to configure printers manually and, if necessary, download the configuration file during the setup process.</i></p> <p> After the setup process is complete, customer supplied certificates signed by a CA can be added and used via the Admin configuration page.</p>	<input type="checkbox"/>
<p>Backup Configuration Files:</p> <ul style="list-style-type: none"> • Make note of the Backup Archive Password. 	<p>At the end of the setup process, back up the configuration files and certificates created by the setup wizard.</p>	<input type="checkbox"/>

STEP 3: Setup and Usage

<p>The following attributes require setup and configuration after you log in to PPME. Use the PPME Demo installation to pre-validate these attributes work as expected before moving into a live production environment.</p>	
Attributes	Additional Details
<p>Connecting Printers to PPME:</p> <ul style="list-style-type: none"> • How many printers will be connected? • How many different locations contain printers? • How many different subnets are there? • How will you need to group/tag printers? 	<p>PPME can “find” your networked Link-OS printers. It sends discovery requests over your network and only Link-OS printers respond. Those printers will appear in the PPME discovery dialog where you can select them to be connected to PPME.</p> <p>PPME sends the discovery traffic over UDP port 4201. Refer to <u>SYSTEM AND NETWORK REQUIREMENTS</u>.</p> <p>PPME supports discovering and adding printers using the following methods:</p> <ul style="list-style-type: none"> • Multicast search by specifying the number of hops • Subnet discovery using wildcards or cidr format

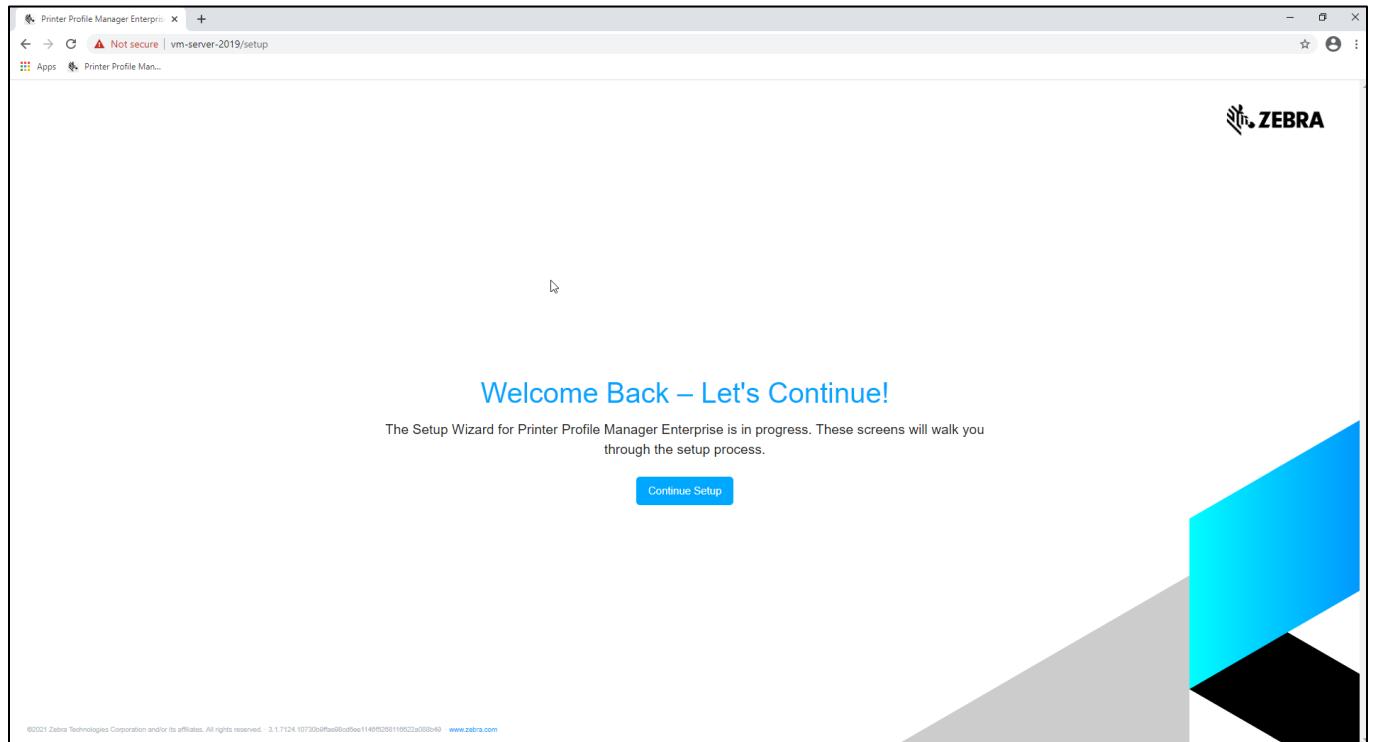
	<ul style="list-style-type: none"> ○ Up to cidr block a.b.0.0/16 (max. 65K addresses) • Adding printers individually <p>Examples of acceptable subnet searches include:</p> <ul style="list-style-type: none"> • Wildcards (e.g., 10.80.4.* or 10.80.*.*) • Ranges (e.g., 10.80.4.1-100 or 10.80.1-100.*) • "cidr" (e.g., 10.80.4.1/21) <p>A TCP connection using port 9200 is used to configure the printer to connect to PPME.</p> <p>If the network does not allow either the UDP or Multicast traffic to be used, the printers will have to be configured in another way to allow them to connect to PPME. Zebra recommends that UDP port 4201 is open to allow discovery.</p> <p> It may be necessary to perform multiple discoveries to find and add all your printers.</p> <p> Consider setting up auto-tags before adding printers.</p>
<p>Updating the Printer OS: Consider the effects of updating the OS on your printers.</p> <ul style="list-style-type: none"> • The printer OS range from 20 MB to 52 MB in size. • The printer is not available for printing during the update and resets as the last step of the OS update. • Increase in your network traffic. • When is the best time to perform the OS update on some or all your printers? 	<p>PPME makes updating the printer's OS easy, either one printer at a time or for many printers.</p> <p> Best Practice Schedule OS updates when they are not disruptive to production activities.</p>
<p>Automated Updating of Wi-Fi Certificates: CA Server Setup</p> <ul style="list-style-type: none"> • Printers must be running Link-OS version 6 or later to use this feature in PPME. • URL of your CA server. • Username/Password and/or certificate details to access your CA server. • How often PPME should check the CA for a signed certificate (polling timeout). • Will you setup more than one CA server? • For an NDES type CA, will the challenge type be static or dynamic? 	<p>PPME can automate the process of updating Wi-Fi certificates on your printers. PPME supports the following Certificate Authority (CA) server types for certificate signing:</p> <ul style="list-style-type: none"> • Microsoft ADCS: Microsoft Certification Authority 10.0 • Microsoft ADCS NDES 2019: Microsoft Certification Authority 10.0 • EJBCA-SCEP: EJBCA 7.1.0 Enterprise <p>At this time, these are the only certificate authorities that are supported. Others may be added in the future.</p> <p>The items in the left pane will help you gather the information required to configure the connection to your CA server(s) and may require assistance from the Administrator of the CA server.</p> <p> Best Practice Test this feature on a small number of printers in a test environment before moving the solution into a production environment. Doing this may involve working with different IT administrators than those that review/approve the installation of the PPME app.</p>

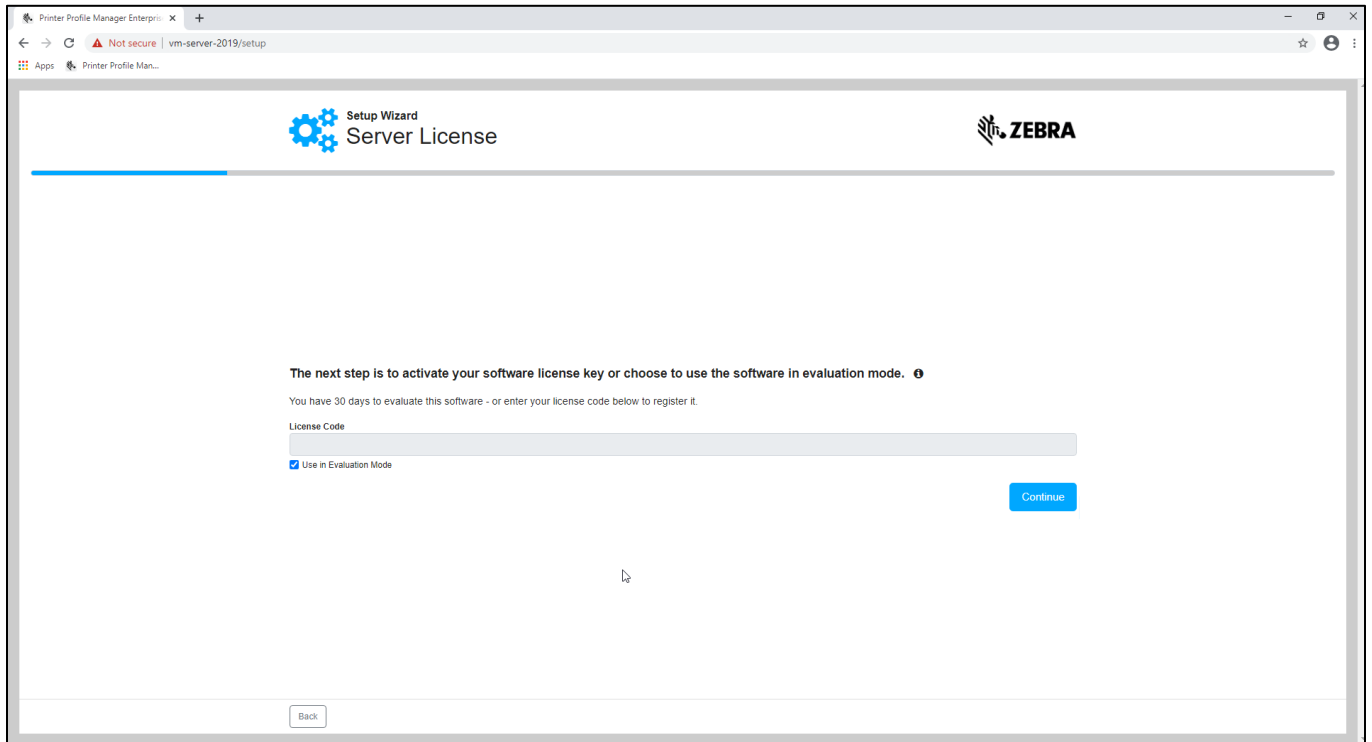
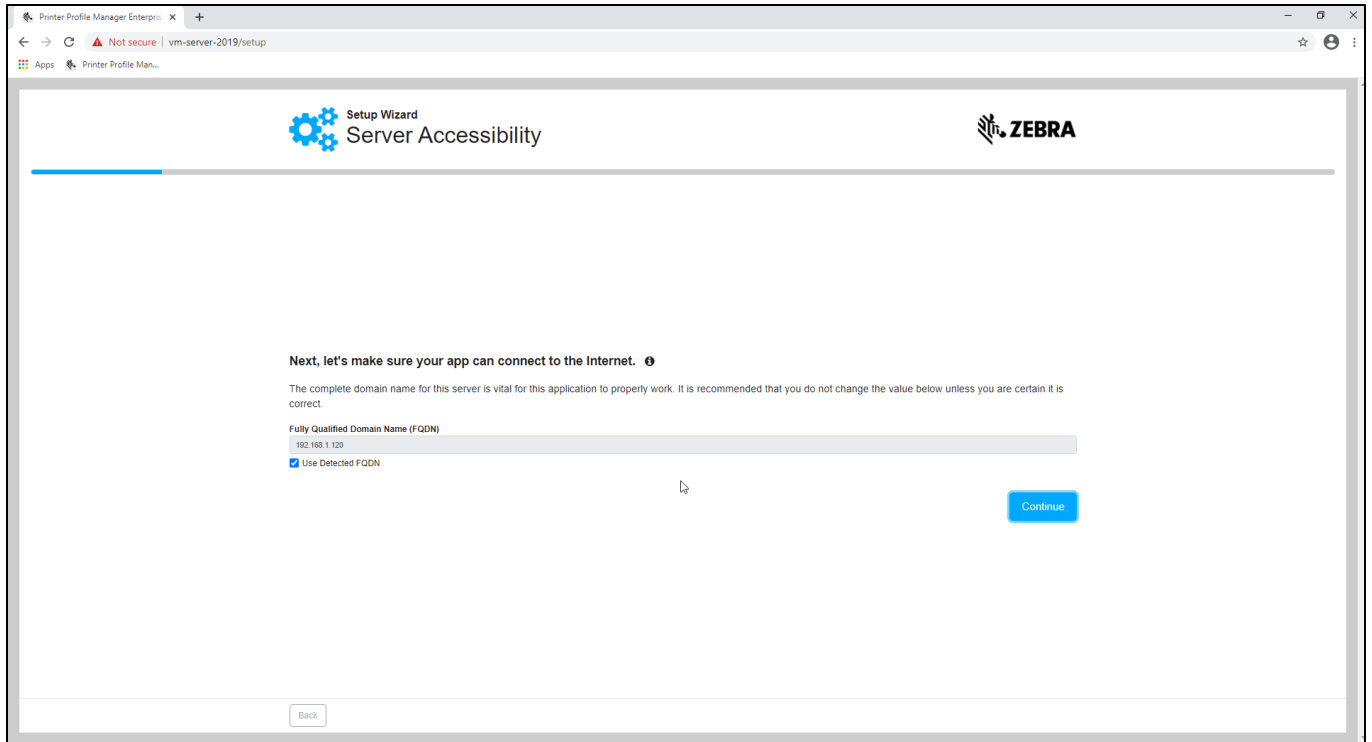
	<p>Since the supported CAs have different connection requirements, refer to the PPME User Guide for the steps to add a CA server.</p>
<p>Automated Updating of Wi-Fi Certificates Certificate Management Item (CMI)</p> <ul style="list-style-type: none"> • Challenge password • Message digest type • Encryption algorithm, key size. • When to renew the certificate (number of days before certificate expiration) • Certificate request fields: <ul style="list-style-type: none"> ○ Common Name ○ Organization ○ Organization Unit ○ City ○ State ○ Country ○ Email address ○ Alternative name (optional) 	<p>You must configure a CA server before you can add one or more CMIs. A CMI defines the certificate request details and which CA server will be used in the automated certificate signing process. You will need the information listed in the left pane to configure a CMI.</p> <p> Best Practice As a best practice, PPME generates unique certificates for each printer. For the COMMON NAME in the certificate request, PPME supports a choice of MAC ADDRESS or IP ADDRESS.</p> <ul style="list-style-type: none"> • Message Digest options are: SHA256, SHA384, SHA512 • Key Sizes: RSA (2048, 3072, 4096), ECDSA (256, 384, 521) • ECDSA curve: secp256k1, secp384r1, secp521r1, prime256v1 <p>The renew window can be between 3 and 365 days. If you are uncertain about which to use, please consult with your system administrators.</p>
<p>Creating and Sending Printer Profiles:</p> <ul style="list-style-type: none"> • Network configuration • Objects to store (graphics, templates, fonts, etc.) • Objects to process (configuration settings file) • Commands • Firmware • Virtual Device/Emulation 	<p>A profile is a snapshot of a printer's settings, network configurations, objects, firmware, etc. PPME can retrieve the profile from any printer and store it for later distribution to other models of the same series. Or, you can create a profile from within PPME to be distributed to printers.</p> <p>The items listed in the left pane may be included in a profile. Profiles can include the printer's settings, selected stored objects (such as fonts, label templates, ZBI programs), emulations, and customer defined commands. The printer's OS is not retrievable from the printer, yet an OS update file can be included when the Profile is sent to other printers. Network Configurations present a unique challenge in that static addresses may be used on printers. These are typically unique to one printer, which means they cannot be used on additional printers. For this reason, PPME allows the Network Configuration to be stored as a separate entity.</p> <p> Best Practice Carefully consider when choosing to include or exclude Network Configurations in Profiles.</p> <p> For security reasons PPME will not retrieve certificate files or passwords when creating a profile from a printer. These will need to be set independently using a Resource file or by including commands with the profile when it is sent to printers (where appropriate).</p>
<p>Using LDAP for PPME User Accounts:</p>	<p>PPME can use your LDAP directory to control User access to PPME. This can simplify the User management instead of needing to use the built-in User management system.</p>

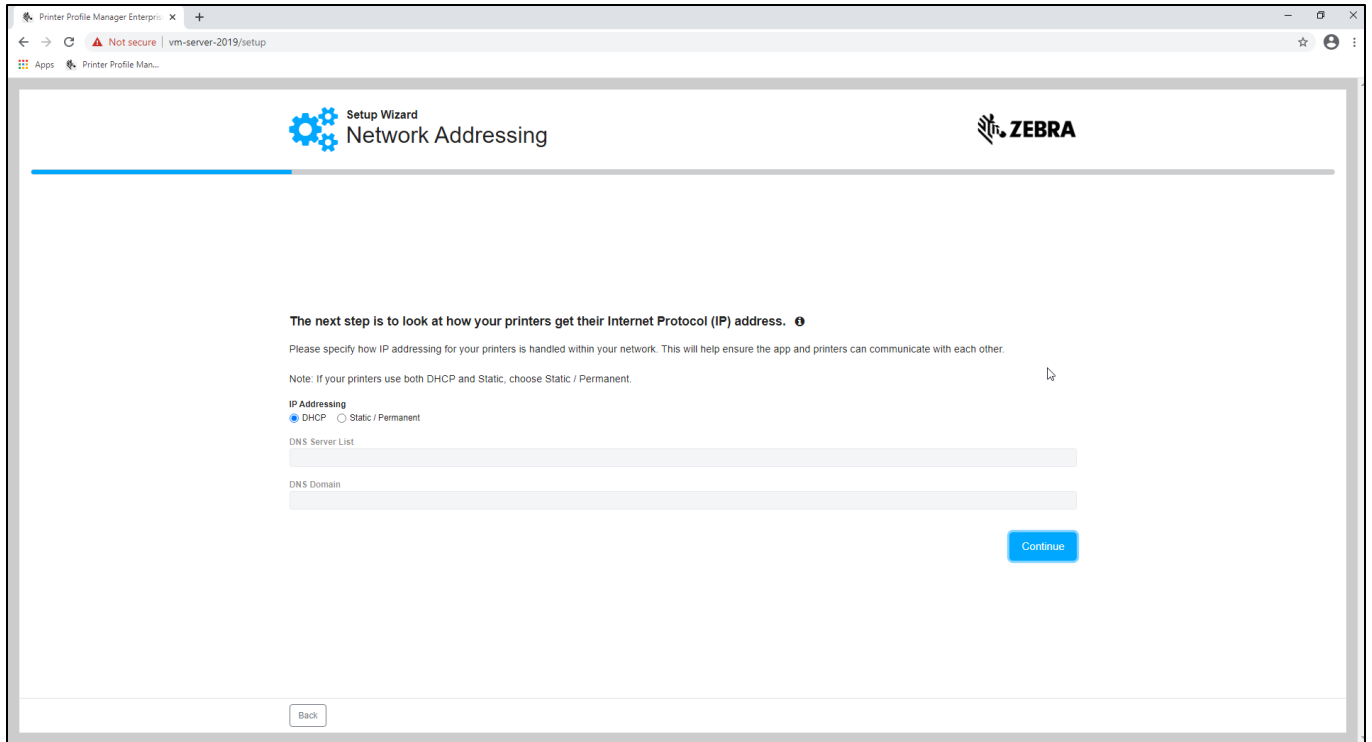
<ul style="list-style-type: none">• Hostname• Port• Server access credentials• LDAP Schema Settings:<ul style="list-style-type: none">○ Base DN○ Additional User DN○ Additional Group DN • User Schema Settings:<ul style="list-style-type: none">○ User name attribute○ User full name attribute○ User email attribute • The predefined PPME user role to be assigned to the LDAP user:<ul style="list-style-type: none">○ Administrator○ Technician○ User	<p>The details in the left pane will be needed to configure PPME to connect to your LDAP directory. Please contact your system administrator to obtain the required settings for your LDAP server.</p> <p>LDAP implementations and schemas can vary. Review the <i>LDAP User Directory Configuration</i> section in the PPME Installation Guide to see which fields are required and examples of field attributes.</p>
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Appendix A – Setup Wizard Screens

This section gives you a preview of the Setup Wizard screens.







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Setup Wizard Network Addressing

The next step is to look at how your printers get their Internet Protocol (IP) address.

Please specify how IP addressing for your printers is handled within your network. This will help ensure the app and printers can communicate with each other.

Note: If your printers use both DHCP and Static, choose Static / Permanent.

IP Addressing

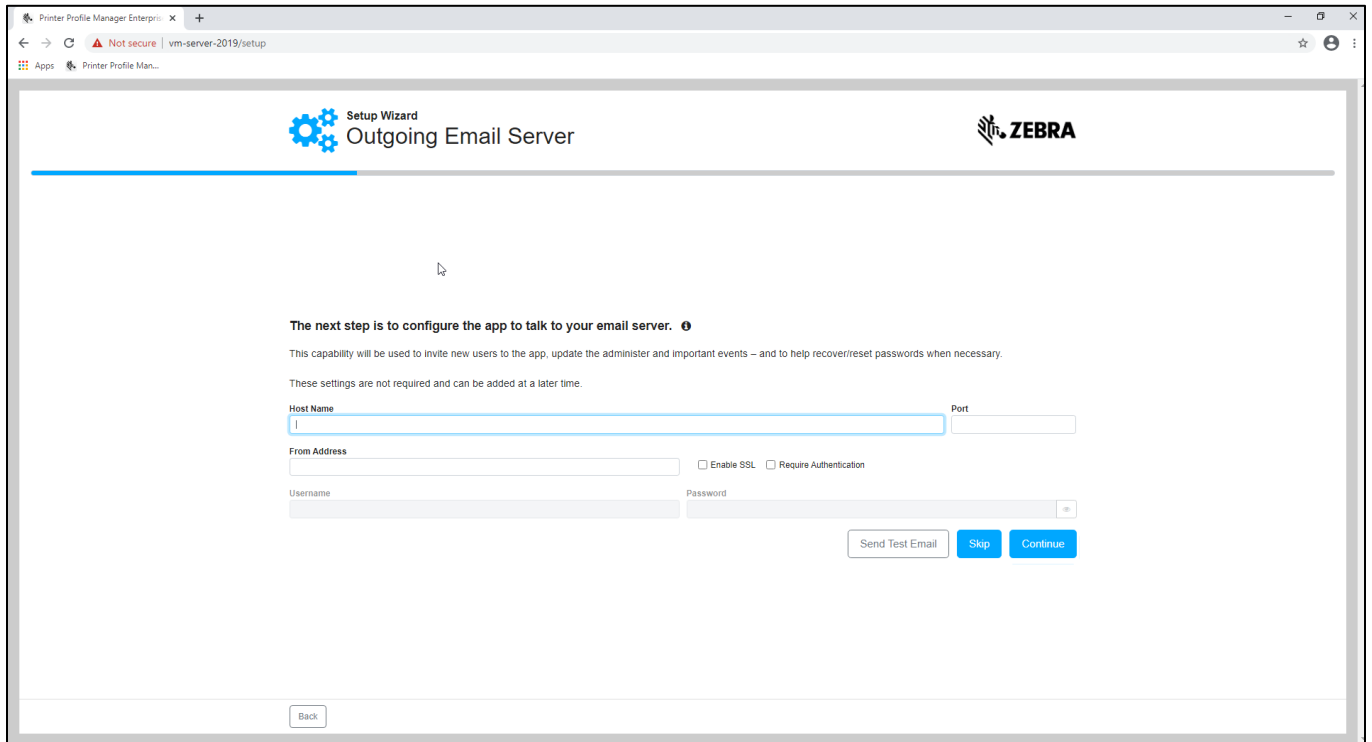
DHCP Static / Permanent

DNS Server List

DNS Domain

Continue

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Setup Wizard Outgoing Email Server

The next step is to configure the app to talk to your email server.

This capability will be used to invite new users to the app, update the administrator and important events – and to help recover/reset passwords when necessary.

These settings are not required and can be added at a later time.

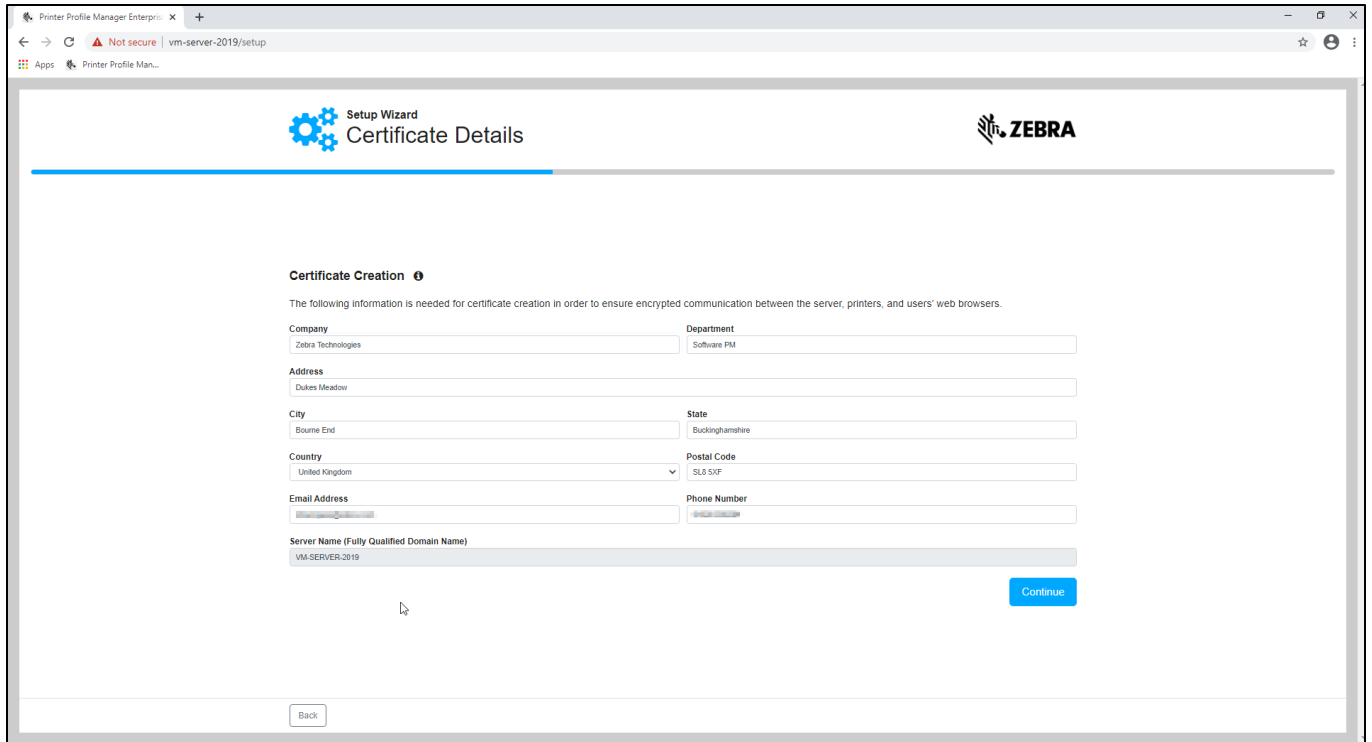
Host Name Port

From Address Enable SSL Require Authentication

Username Password

Send Test Email Skip Continue

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Setup Wizard Certificate Details

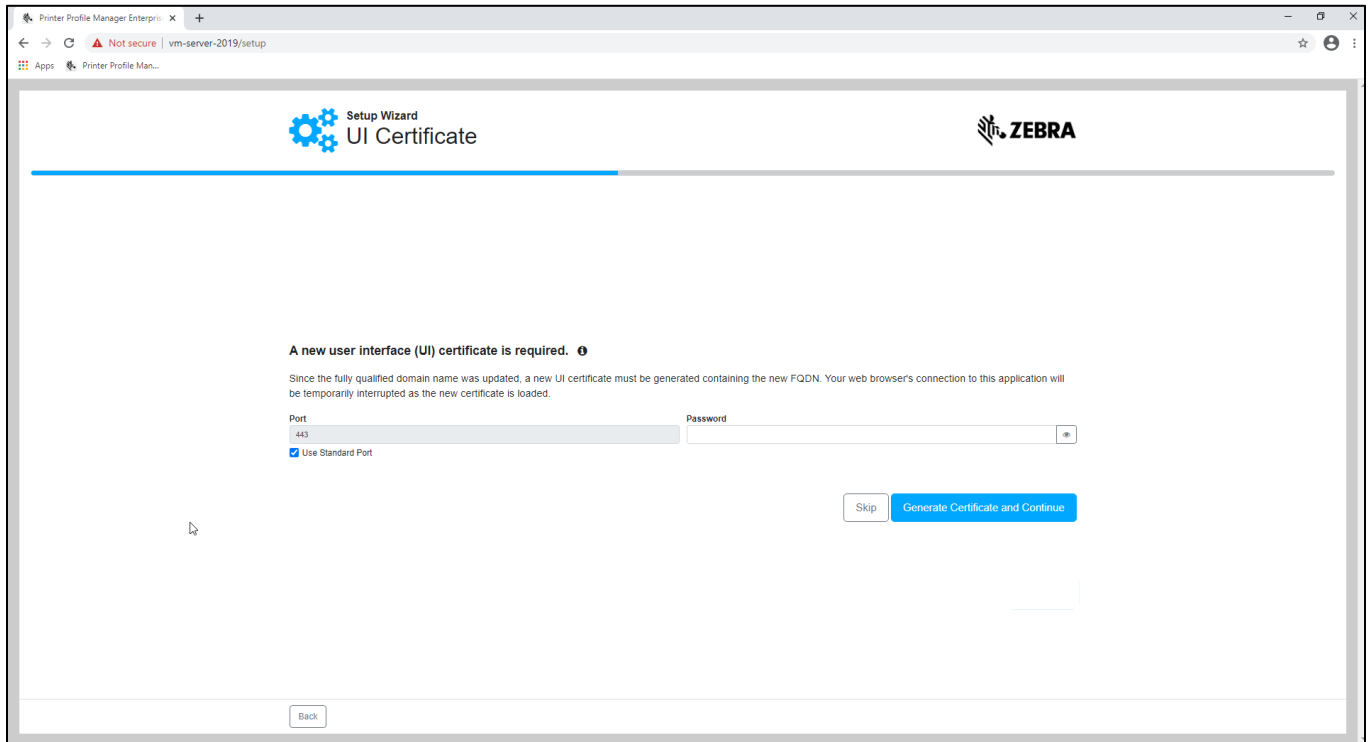
Certificate Creation

The following information is needed for certificate creation in order to ensure encrypted communication between the server, printers, and users' web browsers.

Company Zebra Technologies	Department Software PM
Address Dukes Meadow	
City Boume End	State Buckinghamshire
Country United Kingdom	Postal Code SL8 5XF
Email Address [redacted]	Phone Number [redacted]
Server Name (Fully Qualified Domain Name) VM-SERVER-2019	

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Setup Wizard UI Certificate

A new user interface (UI) certificate is required.

Since the fully qualified domain name was updated, a new UI certificate must be generated containing the new FQDN. Your web browser's connection to this application will be temporarily interrupted as the new certificate is loaded.

Port 443	Password [redacted]
<input checked="" type="checkbox"/> Use Standard Port	

[Skip](#) [Generate Certificate and Continue](#)

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