

# VMware AirWatch Email Notification Service Installation Guide

Providing real-time email notifications to iOS devices with AirWatch  
Inbox and VMware Boxer

Workspace ONE UEM v9.7

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# Chapter 1:

## Introduction to Email Notification Service

The Email Notification Service (ENS) adds Apple Push Notification support to Exchange. On iOS, this means the VMware Boxer and VMware Workspace ONE UEM Inbox email apps can get notifications utilizing either Apple's background app refresh or Apple Push Notification Service (APNs) technologies. Background app refresh is used by default, however iOS attempts to balance the needs of all apps and the system itself. This means that each app may provide notifications at irregular periods using this method. To provide notifications quickly and consistently, Apple also provides APNs. This allows a remote server to send notifications to the user for that application, however Exchange does not natively support this. ENS adds APNs support to your deployment to allow quick and consistent notifications about new items in your end users' email inboxes.

### Requirements for ENS

This section explains the requirements for using the Email Notification Service (ENS) with Workspace ONE.

#### Email Server Integration

##### Versions Supported

- Email Client - iOS Inbox v2.4+ or iOS VMware Boxer 3.0+
- Email Server - Exchange 2010 SP3, Exchange 2013 SP1, Exchange 2016, or Office 365

Office 365 implementations are subject to Microsoft throttling policies. With Office 365, one service account can have up to 5000 subscriptions. If the usage exceeds 5000 subscriptions, then multiple service accounts can be added. For information on creating service accounts, see [Create Multiple Exchange Servers and Service Accounts on page 21](#).

##### Account Credentials

- A Service account with an impersonation role. For information on how to configure impersonation roles, see [Email Notification Service Setup on page 10](#).

##### Admin Access

- The admin must have the edit permissions to download and install the ENS installer.

## Console Requirements

- Minimum AirWatch Console version 8.3.7

## Hardware Requirements

CPU Core	RAM	Hard Disk Storage	Notes
2 (Intel processor)	4 GB	10 GB	Per 20,000 users.

**Note:** To help the Exchange server handle the load, it is recommended to have an additional 4 GB RAM on Mailbox Server and an additional 2 CPU Core on the CAS Servers, for every 20,000 users.

## Software Requirements

If the Workspace ONE UEM console is part of a Software as a Service (SaaS) deployment, certificates may already be installed. Contact Workspace ONE Support to determine the configurations of your deployment.

Requirement	Notes
Windows Server 2008 R2 or Windows Server 2012 R2	
CNS Certificate	Using the pinned CNS certificate, ENS successfully completes the SSL handshake with the CNS server. The CNS certificate is uploaded through the UEM console and delivered by the ENS Installer. For information on uploading the CNS certificate, see <a href="#">Download the Email Notification Service on page 11</a>
Secure Channel Certificate	This certificate authenticates the communication between the ENS and the CNS servers. The Secure Channel certificate is packaged in the ENS installer and you must install this certificate on the CNS server.

## Network Requirements

Network Requirements				
Source Component	Destination Component	Protocol	Port	Description
ENS	Exchange Web Services (EWS) endpoint	HTTPS	443	
ENS	API Server	HTTPS	443	

Network Requirements				
Source Component	Destination Component	Protocol	Port	Description
ENS	Cloud Notification Service	HTTPS	443	
Mailbox servers	ENS	HTTP or HTTPS	80 or 443	The inbound access is required only when push notification functionality is used. If using 'HTTPS', bind the SSL certificate of the ENS server with the ENS service. For information on how to bind the SSL certificate, see <a href="#">Install the Email Notification Service on page 15</a> .

## Email Notification Service Architecture

Email Notification Service (ENS) is available for customers using the UEM console with both SaaS and on-premises deployments. In standard configuration, you always install the ENS on premises, while Workspace ONE hosts the Cloud Notification Service (CNS). The service account credentials are stored on the ENS server and not in a Workspace ONE database.

ENS and the Exchange server interact with one another based on the message notification functionality of the Exchange server. Depending on the notification functionality, the interaction method between the ENS and Exchange differs, but the basic architecture of the ENS remains the same.

For more information on the notification functions of the Exchange server, see [Notification Mechanism on page 8](#).

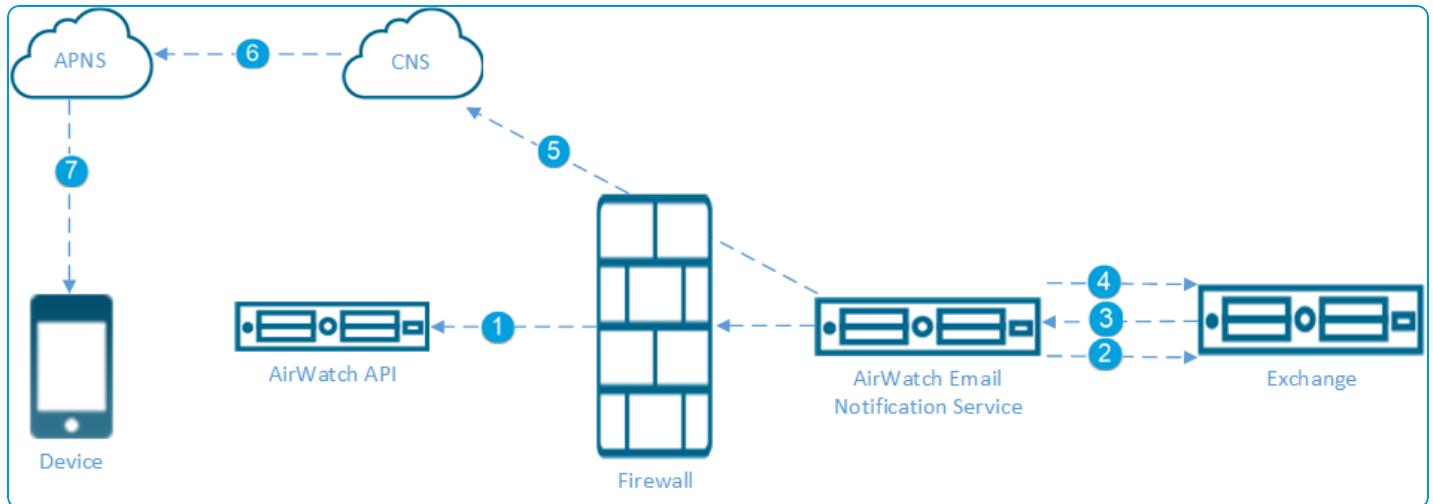
**Note:** ENS is not available for Android devices with AirWatch Inbox or VMware Boxer.

### Push Notification Model

The push model does not have an open connection between the ENS and the email server. The ENS provides real-time notifications when a new message arrives.

## Email Notification Service (ENS) with On-premises Exchange server

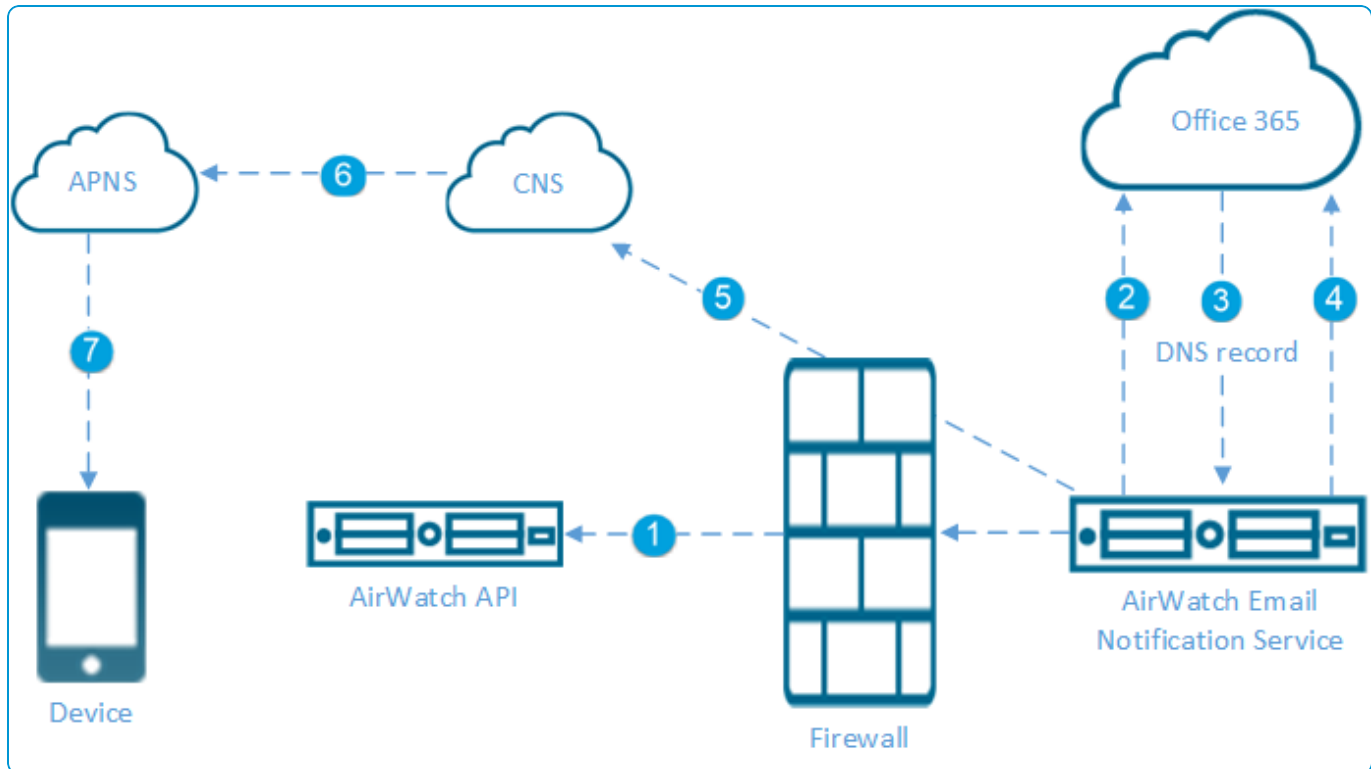
The interactions between the ENS and the on-premises Exchange server to push the email notifications to the AirWatch Inbox or VMware Boxer installed devices is shown.



1. ENS server makes an API call periodically to Workspace ONE to check and fetch the user and device details from Workspace ONE. These details are cached and refreshed periodically or on demand. Manual refresh can be done by restarting the ENS.
2. ENS server subscribes the user to Exchange.
3. Exchange pushes the message event to ENS when a new message arrives.
4. ENS fetches the mail details from Exchange using the subscription details upon receiving the message event.
5. ENS server checks if the device is email-compliant and then sends the notification to CNS.
6. CNS forwards the notification to Apple Push Notification Service (APNs).
7. The APNs pushes the email notification to AirWatch Inbox or VMware Boxer on the device.

## Email Notification Service (ENS) with Office 365

The interaction between the ENS and the Office 365 to push the email notifications to the AirWatch Inbox or VMware Boxer installed devices is shown.



1. ENS server makes an API call periodically to Workspace ONE to check and fetch the user and device details from Workspace ONE. These details are cached and refreshed periodically or on demand. Manual refresh can be done by restarting the ENS.
2. ENS server subscribes the user to Office 365.
3. Office 365 pushes the message event to the ENS when a new message arrives. Since Office 365 is on cloud and ENS in on premises, when using the push model a DNS record is required for the message events to reach the ENS server. This is the only aspect where push model differs from the streaming model.
4. ENS fetches the mail details from Office 365 using the subscription details upon receiving the message event.
5. ENS server checks if the device is email-compliant and then sends the notification to CNS.
6. CNS forwards the notification to Apple Push Notification Service (APNs).
7. The APNs pushes the email notification to AirWatch Inbox or VMware Boxer on the device.

The email notifications from ENS for the AirWatch Inbox or VMware Boxer are displayed on the iOS devices when the apps are running in the background. The notifications appear even when these apps are force quit by the user. However, notifications do not appear when these apps are in foreground.

## Notification Mechanism

The Exchange server provides message notifications to Email Notification Service (ENS) by pushing the notifications.

After the Email Notification Service (ENS) fetches the device and user details from Workspace ONE, it subscribes these device users to the Exchange endpoint through the Exchange Web Service (EWS). To subscribe these device users, ENS uses a service account with an impersonation role assigned to it. This subscription creates a connection between the ENS and Exchange server.

### Push Notifications

For push notifications, there is no open connection created between the ENS and the Exchange server after ENS subscribes the users to the Exchange. For a new message, Exchange pushes the message event to ENS and ENS then fetches the mail details from the Exchange. Exchange provides near real-time notifications and therefore polling of the Exchange server is not required.



## Exchange Web Service (EWS) Throttling Policies

The Exchange Web Service (EWS) throttling policies ensures the reliable functioning and uptime of the Exchange Server with the help of values defined in the throttling policies.

The applications that use the EWS functions as per the values defined by these policies. If the applications exceed the defined values, then the EWS generates errors.

### Subscriptions Parameter

The throttling policy parameters that affect the applications that use the EWS are many. The EWSThrottlingPolicy is one such throttling policy parameter that affects the ENS application.

This parameter defines the maximum number of subscriptions for a service account.

**Note:** You can alter the default subscription value for Exchange Server 2010 and 2013 but not for Office 365.

On the ENS configuration file, `maxSubscriptionsPerConnection="200" maxConnectionsPerUser="10"` are the two throttling policy parameters that match the default value of the EWSThrottlingPolicy parameter on the Exchange.

When the ENS makes an API call to Workspace ONE to fetch the user details and if the number of users fetched is greater than the values defined in the parameters, then the ENS generates the error *"Insufficient service users in domain to monitor mailbox xyz@test.com"*.

To avoid such errors, depending on the Exchange server type you can either increase the number of subscriptions for the service account or add more service accounts.

- Office 365 - You can add more service accounts using the ENS Config Tool. For information on configuring multiple service accounts, see [Create Multiple Exchange Servers and Service Accounts on page 21](#).
- Exchange 2010 and 2013 - You can set a higher value for 'EWSThrottlingPolicy' using PowerShell commands. Every time you set the subscription value on the Exchange, you must also set the value for the throttling policy parameter 'maxConnectionsPerUser' on the ENS.

# Chapter 2:

## Email Notification Service Setup

### Assign an Impersonation Role

An Impersonation role is assigned to a service account when a service application needs access to multiple mailboxes and acts as the mailbox owner.

The Email Notification Service (ENS) must have a service account configured and an impersonation role assigned to the service account. With impersonation, the configured service account for ENS has the permission to access every mailbox in the database. When the ENS uses impersonation to send a message, the message appears to be sent from the mailbox owner.

You can configure impersonation roles for all users either by using the PowerShell command or the Exchange Admin Center (EAC).

**Note:** To configure the impersonation role for a specific user or specific groups of users, refer [https://msdn.microsoft.com/en-us/library/office/dn722376\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/dn722376(v=exchg.150).aspx)

When creating the service account in Active Directory, the 'Password never expires' option must be enabled to avoid communication failure between ENS and Exchange due to password expiry.

### Configure using PowerShell

To configure impersonation for all users using PowerShell:

1. Open the Exchange Management Shell.
2. Run the **New-ManagementRoleAssignment** cmdlet to add the impersonation permission to the specified user.

The following example shows how to configure impersonation to enable a service account to impersonate all other users in an organization.

```
New-ManagementRoleAssignment -name: ENSApplicationimpersonation -Role:
ApplicationImpersonation -User:<ServiceAccount>
```

## Configure using Exchange Admin Center (EAC)

To configure impersonation for all users using EAC:

1. Open the EAC and navigate to **Permissions > admin roles**.
2. Select the "+" icon to add a role.
3. Enter the details.

Settings	Descriptions
<b>Name</b>	Enter the name for the role.
<b>Description</b>	Enter the description for the role.
<b>Write Scope</b>	Select <b>Default</b> from the drop-down menu.
<b>Roles</b>	Add <b>ApplicationImpersonation</b> as the role.
<b>Members</b>	Add the user for whom you want to create the impersonation role.

4. **Save** the settings.

**Note:** Configuring impersonation using EAC is available only on Exchange 2013 and Office 365.

## Download the Email Notification Service

Email Notification Service (ENS) provides real-time notifications to AirWatch Inbox and VMware Boxer on the users' devices. You must finish the ENS installation using the ENS installer and the ENS configuration file. After you download the ENS installer, install ENS as an on-premises component on the same domain as the Exchange server.

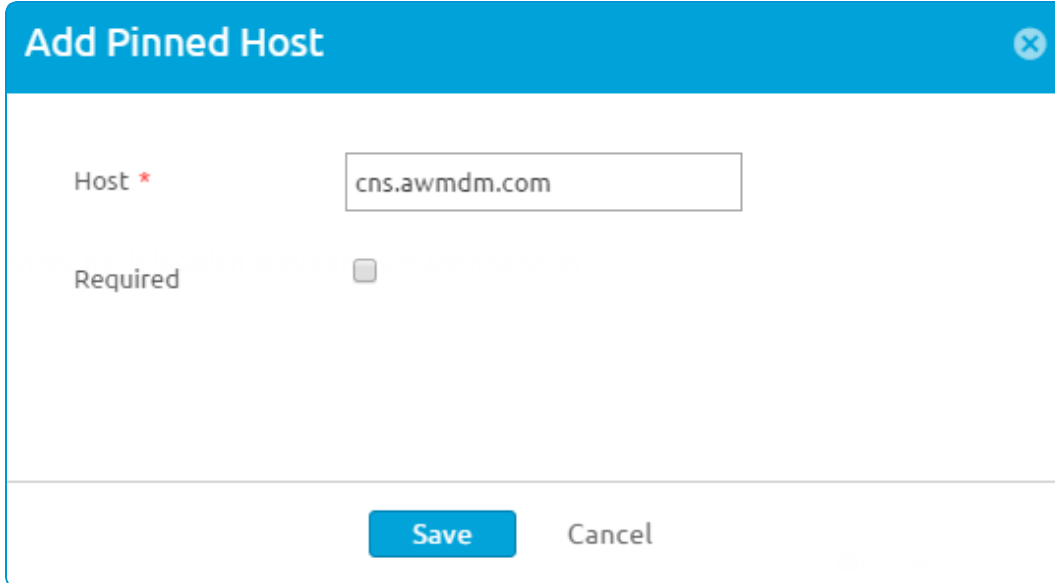
### Procedure:

- Note:**
- a. The CNS certificate can be obtained on the AW Resource Portal (<https://resources.airwatch.com/view/2hjxzvgkxyf8n738hy7x/en>)
  - b. For the CNS hosted by AirWatch, the CNS URL is <https://cns.awmdm.com>.

1. Navigate to **Groups and Settings > All Settings > System > Advanced > API > REST API**. Select **Enabled** to **Enable the API Access**.
2. For SSL Pinning:
  - a. If the UEM console is hosted on SaaS and if the CNS certificate is present (\*.awmdm.com), then no further action is required. Go to [step 5](#). If the certificate is not present, contact Workspace ONE Support for assistance in

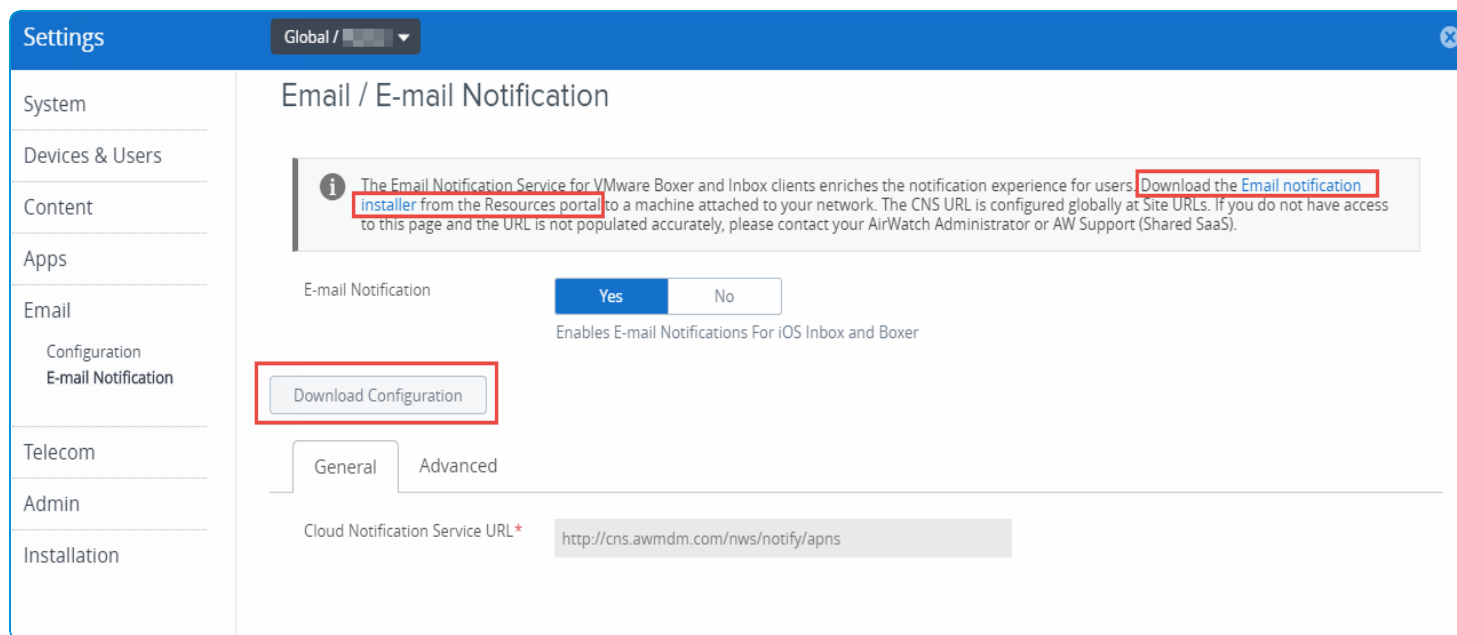
uploading the CNS certificate.

- b. If the UEM console is deployed on premises, then you must upload the CNS certificate.
  - i. Navigate to **System > Security > SSL Pinning**.
  - i. Select **ADD HOST**. In the **Add Pinned Host** window, enter the host as *cns.awmdm.com*. Do not select the **Required** check box. Select **Save**.

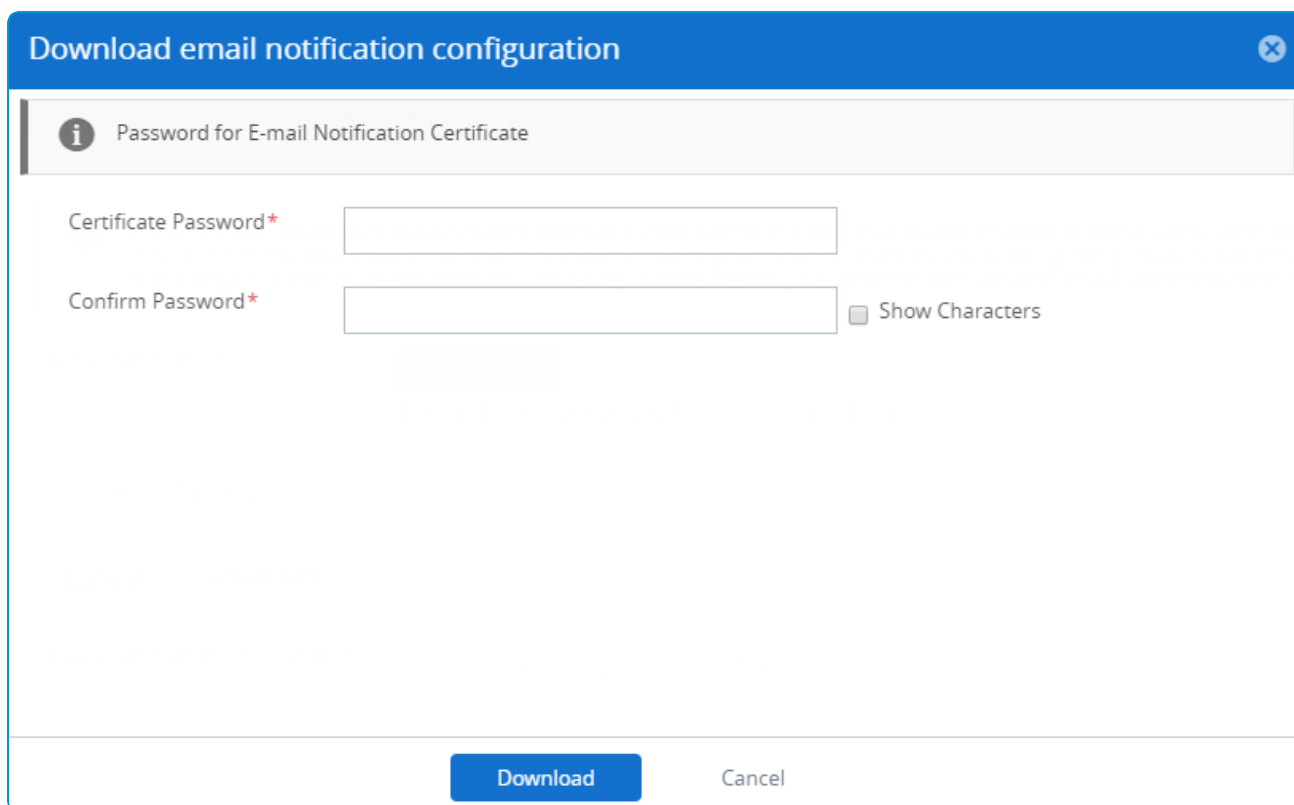


- ii. Select **Upload** to upload the CNS certificate after the host record is created.

3. Install Secure Channel certificate on the CNS server.
  - a. If the UEM console is hosted on SaaS, skip this step.
  - b. If the UEM console is on premises, navigate to **System >Advanced > Secure Channel Certificate** and select **Download CNS Secure Channel Certificate Installer**. Next, request the VMware Support Team to install the certificate on the CNS server.
4. Navigate to **System > Advanced > Site URLs** and verify that the Cloud Notification Service URL is *https://cns.awmdm.com/nws/notify/apns*.
5. Navigate to **Email > Email Settings > Email Notification**.
  - a. Select **Yes** to enable **Email Notification**.
  - b. Select **Save**.
6. Select the **Email Notification Installer** link. You are redirected to the VMware AirWatch Resources Portal to download the ENS installer.

7. Select **Download Configuration**.

8. In the **Download email notification configuration** window, create a password for the ENS certificate, and then select **Download**. The ENS configuration file downloads to your local computer.



Under the **Advanced** tab, select the **User Attribute** from the drop-down menu that contains the email address value.

You can also view the generated certificates and the API key under the **Advanced** tab.

If necessary, you can generate a new certificate or a key using the **Regenerate** or the **Regenerate API Key**.

You must download and install the installer again after regenerating the certificate or key.

### Email / E-mail Notification

**i** The Email Notification Service for VMware Boxer and Inbox clients enriches the notification experience for users. Download the [Email notification installer](#) from the Resources portal to a machine attached to your network. The CNS URL is configured globally at Site URLs. If you do not have access to this page and the URL is not populated accurately, please contact your AirWatch Administrator or AW Support (Shared SaaS).

E-mail Notification  Yes  No  
Enables E-mail Notifications For iOS Inbox and Boxer

[Download Configuration](#)

General **Advanced**

User Attribute \*  ⓘ

---

Authentication

<h4>CNS Certificate</h4> <p><b>Thumbprint</b> FCSA0CDBBE4C76599CB82C6B5FED13470EE2398C</p> <p><b>Expires on :</b> 3/23/2037</p>	<h4>AirWatch Certificate</h4> <p><b>Thumbprint</b> 661A05CF4663C8F7A97946B7B3E781B26EE9F0A3</p> <p><b>Expires on :</b> 3/23/2037</p>
---	--

[Regenerate](#)

**!** Generating new certificates will require you to rerun the installer.

---

API Key

**API Key** rpZPZE65HuSspu1BTdrO1Ya/eLrfpLEcX03wbbIF9GU=

[Regenerate API Key](#)

**!** Generating new API key will require you to rerun the installer

## Install the Email Notification Service

After you download the ENS installer, install ENS as an on-premises component on the same domain as the Exchange server. During the installation, you must select the Microsoft Exchange version, notification type, and enter all the required email server and proxy details.

1. Run the installer and select **Next** in the **AirWatch Email Notification Service - InstallShield Wizard** window.
2. Accept the **End User License Agreement** and click **Next**.
3. Click **Next** to install ENS to the default folder, C:\AirWatch\.
4. Click **Browse** and select the ENS configuration file.
5. Enter the certificate password that you entered earlier in the UEM console to download the ENS configuration file. Select **Next**. For information about downloading the ENS configuration file, see [Download the Email Notification Service on page 11](#)
6. Enter the email server details and then select **Next**.

Settings	Descriptions
Email Server URL	The URL of the email server.
Domain	The domain on the service account.
Service Account Name	The service account name that impersonates the users of a specified domain to receive email notifications from the Exchange.
Password	The password for the service account.

7. Select the version of the Microsoft Exchange and Notification Type, and then select **Next**.

If you select	Available notification types
Exchange 2010	<ul style="list-style-type: none"> <li>• Default Notification</li> <li>• Sender and Subject</li> </ul>
Exchange 2013/2016/O365	<ul style="list-style-type: none"> <li>• Default Notification</li> <li>• Sender and Subject</li> <li>• Preview</li> </ul>

- a. If you select the Exchange version as Exchange 2010, 2013, or 2016, then enter the ENS server details. Click **Next**.

Settings	Descriptions
<b>Internal</b>	
Host Name	The internal host name or IP address of the ENS server.
Port	Port number
<b>External</b>	
Hostname	The external host name or IP address of the ENS server. The Exchange server must reach this IP address on the specified port. The external host when configured forwards the requests from the Exchange server to the ENS server.
Port	Port number

- b. If the internal and the external details of the ENS server are the same, then select the **External Not Applicable** check box. The internal details that you have entered appears in the external fields.
- c. If the external host is different, then deselect the **External Not Applicable** check box and enter the external details.
- d. The URL prefixes can be either http or https. If the URL prefix is 'https', then bind the AW.Mail.Notification.Service with the SSL certificate of the ENS server by using the command:

```
netsh http add sslcert ipport=IP address of ENS server:443 certhash=Certificate  
Thumbprint of ENS serverappid={448c5ce7-85b3-4a97-9d94-ba8899594bea}
```

- e. If you select the Exchange version as Office 365, then select the **Subscription Type**.
- f. If you select Streaming Notifications, click **Next** and proceed with Step 8. Workspace ONE supports Streaming notification model only with Office 365 and not with on-premises Exchange servers.
- g. If you select Push Notifications, click **Next**, enter the ENS server details, and then proceed with Step 8. Workspace ONE supports Push notification model with on-premises Exchange 2010, Exchange 2013, Exchange 2016 and Office 365.
- For more information on the streaming and push notification functionality, see [Notification Mechanism on page 8](#)
8. If a proxy is required for communication between the ENS server and the Cloud Notification Service (CNS), select the **Enable CNS Proxy** check box, enter the CNS Proxy details, and then select **Next**.

Settings	Descriptions
Hostname / IP Address	IP address of the CNS proxy server.



Proxy Port	The proxy port number.
Authentication Type	The type of authentication: Anonymous or Basic/Windows If you select Basic/Windows, enter the user name and password or the Windows credentials, to access the server.
User Name	User name to access the server.
Password	Password to access the server.

9. If a proxy is required for communication from the ENS server to the API endpoint, select the **Enable API Proxy** check box, enter the API Proxy details, and then select **Next**.

Settings	Descriptions
Hostname / IP Address	IP address of the API proxy server.
Proxy Port	The proxy port number.
Authentication Type	The type of authentication: Anonymous or Basic/Windows If you select Basic/Windows, enter the user name and password or the Windows credentials, to access the server.
User Name	User name to access the server.
Password	Password to access the server.

10. If an outbound proxy is required to configure the outbound traffic from ENS to the Exchange server, select **Enable Exchange Proxy**. Enter the Exchange Proxy details and then select **Next**.

Settings	Descriptions
Hostname / IP Address	IP address of the Exchange proxy server.
Proxy Port	The proxy port number.
Authentication Type	The type of authentication: Anonymous or Basic/Windows If you select Basic/Windows, enter the user name and password or the Windows credentials to access the server.
User Name	User name to access the server.
Password	Password to access the server.

11. Select **Install** to install the service in the selected destination folder. While the installation is in progress, the **ENS Config Tool** shortcut icon is automatically created on the desktop.
12. Select the **Select to configure multiple Exchange Servers OR multiple Service accounts** check box to add multiple service account or multiple exchange details or select **Finish** to exit the **AirWatch Email Notification Service - InstallShield Wizard**.  
For information on configuring multiple service accounts or exchange servers, see [Create Multiple Exchange Servers and Service Accounts on page 21](#).

**Note:** You can change the logging level from 'Error' to 'Verbose' in the app config (AW.Mail.Notification.Service.Config) file located in your installation folder.

## Renew SSL Certificate

The Email Notification Service (ENS) uses the Cloud Notification Service (CNS) certificate to complete the SSL handshake with the CNS server. You must renew the CNS certificate based on its expiration date. If the certificate is not renewed, email notifications do not appear for AirWatch Inbox or VMware Boxer installed devices.

To renew the SSL certificate:

1. Double-click the **ENS Config Tool** shortcut icon on the desktop.
2. Select **Upload SSL Pinning Certificate**.
3. Select **Upload Certificate**.
4. Select the certificate that you want to upload and then select **Submit**.

Supported certificate file extensions are .cer, .crt, .der, .pem, .p7b.

Once you upload the SSL pinning certificate on ENS, the ENS config tool adds the public key of the certificate to the ENS config file and restarts the ENS service. Thereafter, when ENS posts the payload to CNS, certificate validation is done against the newly added certificate public key.

## Troubleshoot the Email Notification Service

Some errors can disrupt the functioning of the Email Notification Service (ENS). The scenarios during which these errors are seen and the workaround to overcome these errors are listed in this section.

### When the users' accounts are on different Exchange servers and the Exchange Web Service (EWS) urls are different, ENS server is unable to subscribe all the users successfully

When the ENS subscribes the users to Exchange and if the mailboxes are present on another Exchange server, an error is generated.

```
2017/04/10 16:19:29.032 DCAIRWENSP01 4f99428c-01d8-4882-95b7-78b6f8a2ea70
[0000000-0000000] (36) Warn
AW.Mail.Notification.BusinessImpl.ExchangeStreamingNotificationSubscriber._
SubscribeUsers Subscription Error MailBox {MailBox Address}, Error
Microsoft.Exchange.WebServices.Data.ServiceResponseException: One or more
subscriptions in the request reside on another Client Access server.
GetStreamingEvents won't proxy in the event of a batch request.
```

To restore the notification functionality of the ENS server, perform the following steps:

1. Navigate to the ENS installation folder and open the AW.Mail.Notification.Service.Config file.
2. Find the 'autoDiscoverEnabled' and 'autoDiscoverUrl' parameters.
3. Set autoDiscoverEnabled parameter value to 'true' and provide the autoDiscoverUrl in the following format, *https://autodiscover.domainname/Autodiscover/Autodiscover.svc*

**Note:** You must set the autoDiscoverEnabled to 'true' and provide the autoDiscoverUrl regardless of whether you are using the streaming model or push model.

If all the users' have the same EWS URL, then set the autoDiscoverEnabled parameter value to 'false'.

### When there are multiple Exchange server versions but all the Exchange servers have the same domain, ENS server is unable to complete all the subscriptions correctly

ENS server functionality is interrupted when multiple Exchange server versions are configured with the same domain. You can either create separate domains for different Exchange server versions or install separate instances of ENS that are specific to each domain.

# Chapter 3:

## Create Multiple Exchange Servers and Service Accounts

The configured service account with the impersonation role is used to subscribe to the notifications from the Exchange server. If the subscriptions exceed the defined limit for the account, then you can create additional service accounts and configure multiple Exchange servers.

You can configure multiple service accounts either during the installation process or after installation by using the ENS Config Tool Shortcut icon on your desktop. To configure multiple exchange servers, domains, and service accounts during installation proceed with the following steps:

1. Select the **Select to configure multiple Exchange Servers OR multiple Service accounts** check box in the **AirWatch Email Notification Service - InstallShield Wizard** window. Select **Finish**.
2. The **ENS Config Tool** appears. Select **Configure Service Accounts**.
3. The ENS Service Account Configuration window appears with the exchange server, domains, and service account details that you configured earlier.
4. To add Exchange servers, select the plus (+) symbol next to the required field. If you add Exchange servers, you must select the **Exchange Server Type** and the **HTTP Scheme**, and then enter the **Hostname/I.P. Address**. Select **Add**.
5. The **ENS Service Account Configuration Tool** reappears with the new Hostname/I.P. Address data in the **Exchange Servers** field. Enter the **Domain** and the **Service Accounts** details.

You can also add additional domains and service accounts for the exchange server by selecting the plus (+) symbols next to the domain and service accounts fields.

6. Select **Save ENS Config and Exit**.