

# Applications Guide for NHSmail

Version 8  
August 2018

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## Introduction

This document provides guidance on how to configure local mail-enabled applications to work with NHSmail. The document provides information on connection settings over various types of network, considerations that must be taken into account when setting up an application, and examples and frequently asked questions.

It details the APIs that can be used, and the functionality offered by each. This guidance focuses only on native Microsoft APIs for Exchange and Skype for Business, which are currently the only published NHSmail APIs.

## About NHSmail

NHSmail is a national secure collaboration service for health and social care, designed to enable the secure exchange of information by email and other methods such as Skype for Business. The NHSmail service is available through two primary networks:

- The Transition Network (TN) (which was formerly referred to as N3) / Health and Social Care Network (HSCN).
- The internet.

Please note; if an automated system is connected to NHSmail over the internet, or if an automated system's behaviour threatens the service, the accounts may be disabled without notification.

The following protocols are available for use over both the internet and HSCN / TN;

- SMTP
- POP
- IMAP

If your application needs to send from the internet, you will need to contact your Local Administrator within your organisation to enable these protocols locally.

## Considerations

There are certain considerations that must be noted when setting up your application to work with NHSmail. These are listed below.

### Authentication policy

All protocols require an authenticated connection using the full NHSmail email address (as the username) and the accompanying NHSmail password. Additionally, the 'from' address of all sent emails must match the email address of the sending account.

If your application:

- does not support authentication
- is on the HSCN/TN
- can send using an nhs.uk address

then NHSmail provides a solution that will allow your application to transmit the email through a relay server. A mail relay server uses the SMTP protocol to forward emails from another server or application to its destination.

NHSmail hosted relay service can be used by any NHS organisation on the HSCN/TN network with a nhs.uk email domain. When sending email through the relay server it must use the valid nhs.uk domain for the organisation sending the email. If the 'from' address is spoofed the mail will be marked as spoofed and will either be delivered to the 'Junk' email folder or may not be delivered at all. Further information about how NHSmail guards against spoofing can be found in the [NHSmail Spoofing Guide](#).

**Please note, emails containing any patient or confidential data must be sent via NHSmail only. Non-patient and non-confidential data, such as alerts, can be sent through the relay service. Emails sent through the relay service and NHSmail will be virus and spam checked.**

Please refer to the [connection details](#) section in this document for more information on setting up a connection to the relay server.

For further help please contact the relay helpdesk on 0333 200 4333, or by email at: [relayhelpdesk@nhs.net](mailto:relayhelpdesk@nhs.net).

## Changing your NHSmail account to an 'application account'

You can request, via [feedback@nhs.net](mailto:feedback@nhs.net), to change the account that your application is using from a normal user to an application account type. There are a number of key differences between user and application account types:

- A longer password expiry period – password must be reset every year instead of every 90 days.
- A more complex password – as the password only needs resetting every year, the length of the password increases.

Reduced email retention – as these accounts are high sending accounts, we have removed the 180-day email retention (please refer to the [Data Retention Policy](#) for more information).

## Password policy

NHSmail has been designed as a secure service and as such passwords must be kept secure and not shared<sup>1</sup>. If your application is configured to store an NHSmail password, access to the application must be strictly controlled and audited to prevent unauthorised access to the NHSmail account, which could have patient / sensitive data within it. If the application is used to exchange patient data it must be treated as a clinical system with the appropriate controls / security mechanisms in place, as per your local governance and clinical safety policies.

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<sup>1</sup> See section 3.1.5 of the NHSmail Acceptable Use Policy at <https://portal.nhs.net/Home/AcceptablePolicy>

Caching or 'banking' the passwords of multiple NHSmail accounts is strictly forbidden. If multiple NHSmail passwords are stored in a single application and that application becomes compromised, the security and integrity of many NHSmail accounts will be put at risk.

The NHSmail email account used by your application must adhere to the NHSmail password policy (a standard active directory complex password policy):

- Password must NOT include your username (pre-fix of your email address).
- It must contain a mix of three, out of the following four, character types:
  - Uppercase letters (A-Z).
  - Lowercase letters (a-z).
  - Numbers (0-9).
  - Symbols (!"£\$%^&\*)
- It must be eight or more characters long.
- It cannot be any of your four previous passwords.
- It must be changed every 90 days.

If you set your NHSmail account to an 'application account' as per the previous section of this document then you will need to adhere to the above password policy, with the exception of the below:

- It must be at least 20 characters long.
- It must be changed every 12 calendar months.

## Lockout policy

You must be aware of the constraints of the NHSmail lockout policy when integrating your application:

- The account must be active and in an unlocked state, to work with your application.
- If the account is locked or disabled, then you will need to contact your Local Administrator (LA) to have the account unlocked.
- You have 12 attempts to enter the password correctly, before the account is locked.

## Spam policy

NHSmail checks all email handled by the system, in an effort to limit the amount of spam that reaches users' mailboxes. There are multiple layers of checking and defence to give the best protection possible.

More information can be found in the [NHSmail Cyber Security Guide](#) and the [NHSmail Spoofing Guide](#).

## Support

The NHSmail helpdesk is available, to support clients recommended for use with NHSmail, 24 hours a day, 365 days a year, by calling 0333 200 1133 or by emailing [helpdesk@nhs.net](mailto:helpdesk@nhs.net). Information about supported clients can be found in the [NHSmail Desktop Configuration Guide](#).

Support for a self-coded application will not be provided by the NHSmail helpdesk. Advice will be given around connection types, but application / coding issues will need to be diagnosed by your local support team.

## Sending automated email

It is possible to create an application that integrates with NHSmail, to send automatic email messages.

Certain criteria must be followed to ensure that the application works seamlessly with NHSmail, as listed in the following sections.

### Connection details

To successfully connect your application to NHSmail, you must use the following settings with a valid NHSmail account:

Protocol	Purpose	Hostname	Port	Encryption	Authentication required?
IMAP	Receiving email	imap.nhs.net	993	SSL	Yes
POP	Receiving email	pop.nhs.net	995	SSL	Yes
SMTP	Sending	send.nhs.net	587	TLS	Yes

**Note:** for SMTP, POP and IMAP to work you may need to make changes locally via your Local Administrator, as well as requesting the protocols to be enabled for the application account being used on NHSmail.

Connection via the above protocols is the preferred option. However, if your application does not support these protocols, you may choose to transmit your email through our relay server on the HSCN / TN network using a valid nhs.uk domain name; using an nhs.net address will result in the email being marked as spoofed and it may not be delivered. The connection details are:

<b>Server name</b>	relay.nhs.uk
<b>Server IP addresses</b>	155.231.210.221, 155.231.210.253
<b>Port number</b>	25
<b>Authentication type</b>	Anonymous access

You must ensure that the firewall rules on your SMTP server allow outbound traffic through the IP address and port numbers above.

The IP address of your server must be registered on the HSCN / TN, as our relay service carries out a reverse lookup when transmitting email messages. If you do not register the IP address, the relay will check that a Domain Name System (DNS) record exists on the HSCN / TN when carrying out its reverse lookup. If the IP address of the relay requestor is not registered, the relay request will be refused and the email will not be routed to its destination.

To ensure a resilient service, best practice approach should be implemented; **do not use hardcoded IPs, but instead use the DNS name - relay.nhs.uk.**

**Note:** you only need to register your IP address with the DNS team if you are sending via relay.nhs.uk with no authentication. Other connection methods (IMAP, POP etc.) do **not** require you to register your server with the DNS team.

To register the IP address of your server on the HSCN / TN, contact the DNS team at [dnsteam@nhs.net](mailto:dnsteam@nhs.net).

Further information is available on how to use the [NHS relay service](#).

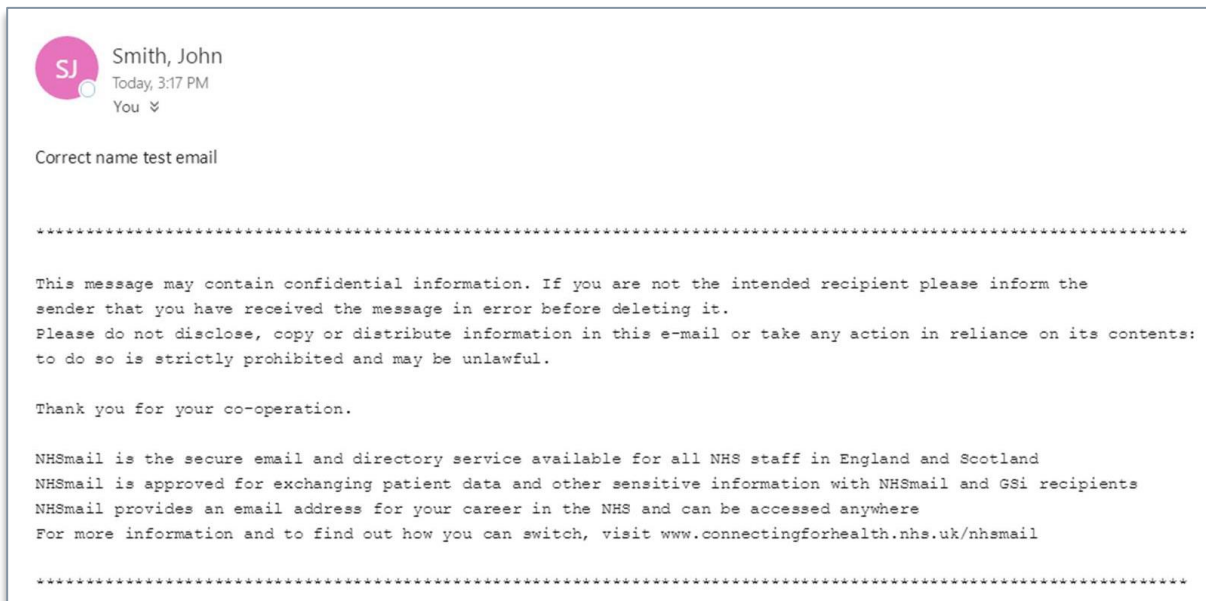
### **To send email using your application:**

- Where the connection must be authenticated, the full email address of the NHSmail account must be entered as the username (for example, [test@nhs.net](mailto:test@nhs.net)).
- Outbound (SMTP) connections must use TLS and not SSL.
- The 'from' field must match the email address that you are using to send from. If a different 'from' address is used, the message may be rejected as spam.
- IMAP is recommended, rather than POP, for receiving email as it is a more feature rich / robust protocol.
- The mailbox must be within quota. If the mailbox is over quota then any emails will not be sent.
- The mailbox size must be managed in the same way as a regular user mailbox. If you are sending large volumes, then you should regularly check the status of the account to ensure it is within quota.
- Individual messages must not exceed 35mb in size.
- Emails can't be sent to more than 5000 recipients in a single email, unless an NHSmail distribution list is used.
- When sending to distribution lists, the application should be configured to send at a minimum of 30-minute intervals.
- You must use a separate, application email account for your application. This will make it easier to manage the account in terms of keeping it under quota, monitoring replies and setting permissions.
- The reply to email address must be valid. Non-delivery addresses, such as [noreply@nhs.net](mailto:noreply@nhs.net), must not be used. Applications found using non-delivery addresses may be blocked from NHSmail.
- You must ensure the system has an in-built error messaging capability to highlight any messages that are not delivered using the application. This is to protect your business process and to ensure any errors are highlighted to the sender, in order for the error to be fixed as soon as possible.

### **IMAP and POP display name field**

If you configure an NHSmail account using POP or IMAP with an application, you must ensure that the display name field is populated correctly. This applies to any configured application, be it Outlook or a coded application. For example, in Outlook the field is called 'your name'. When sending to a non-NHSmail address, this is the name that will show in the recipient's mailbox. The name must be entered as Lastname, Firstname (ORGANISATION NAME).

In the example below, an NHSmail account has been configured using POP and 'Smith, John' has been entered in the 'your name' field. An email has been sent to a non-NHSmail email address and the recipient's mailbox shows the following:



## Application Programme Interface (APIs)

The NHSmail APIs are native Microsoft APIs that provide a bridge to make it possible for you to connect your local, regional or national applications or services to NHSmail, in a self-service manner. This will allow your organisation to increase the benefits of using the platform.

Through APIs, NHSmail is enabling functionality in an open but controlled and secure manner, to enable collaboration in a way that is immediately accessible for in-house innovation within local health and social care organisations, as well as third parties.

APIs are not just technical products – they are powerful business tools for developing an ecosystem around the NHSmail platform, however they do require local technical skills to implement. We have provided links to further Microsoft technical information for the APIs that can be used with the NHSmail service, throughout this guidance document. The NHSmail management team reserves the right to restrict users’ access to specific APIs, if they are being utilised in a way that is impacting performance of the platform.

When referring to the ‘NHSmail APIs’ throughout this document, this includes Microsoft Exchange and Skype for Business APIs. The NHSmail Exchange and Skype for Business APIs are open-source, although an NHSmail account is needed to access the APIs. NHSmail uses native Microsoft APIs that are transferrable to other Exchange or Skype for Business instances. Several web-based platforms and SDKs (Software Development Kits) are available, which make it easy to access the APIs and understand how to use them.

See below for high level supporting notes on the recommended APIs that are currently available for NHSmail, as well as links to further information.

## Exchange APIs

Exchange Web Services (EWS) has a variety of available APIs that provide access to email and calendar-related functionality that can be integrated into other apps, web-services and programmes.



## Exchange Web Service (EWS) Managed API 2.0

The EWS Managed API is the recommended interface for developing client applications that use EWS and Autodiscover, to communicate with Exchange. EWS Managed API is an open-source, simple and full-featured interface that can be used to work with email messages, calendar, task and contact information and to allow programmatic access to mailboxes. Client applications implementing 'Managed' EWS will be compatible with later versions of Exchange including Office365.

For more information on the EWS Managed API, refer to:

[https://msdn.microsoft.com/en-us/library/office/jj220535\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/jj220535(v=exchg.150).aspx)

## Exchange Web Service (EWS) API

EWS provides a set of operations that client applications use to access and manage Exchange store items. Just like the EWS Managed API, EWS can be used to work with email messages, calendar, task and contact information and to allow programmatic access to mailboxes, public folders and public folder mailboxes. Data is sent to and from the Exchange server by means of XML that is based on a schema definition. Client applications implementing basic EWS may not necessarily be compatible with future releases of Exchange including Office365.

For more information on the EWS API, refer to:

[https://msdn.microsoft.com/en-us/library/office/bb204119\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/bb204119(v=exchg.150).aspx)

The correct URL for EWS will change depending on the mailbox being accessed or if the mailbox is moved within the service. It is recommended that the Autodiscover service is used, to return the correct endpoint.

For further information on how to use this within your code, refer to:

[https://msdn.microsoft.com/en-us/library/office/jj900155\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/jj900155(v=exchg.150).aspx)

## SOAP Autodiscover

The SOAP Autodiscover service was introduced in Exchange 2010. We recommend that you use the SOAP Autodiscover service to get client configuration data from Exchange. The legacy POX Autodiscover service should not be used.

For more information, refer to:

[https://msdn.microsoft.com/en-us/library/office/dd899340\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/dd899340(v=exchg.150).aspx).

## Enterprise Directory (LDAP)

The Enterprise Directory (ED) is an implementation of a Lightweight Directory Access Protocol (LDAP) service, containing full details of the organisations, departments, sites and people registered in the NHSmail service. It can be used by any NHSmail subscriber to integrate identity data from the service into local applications and services.

## Skype for Business APIs

Skype for Business has two APIs available that provide support for multiple core collaboration services such as Presence, Chat, Audio and Video.

### Skype UCWA 2.0

UCWA (Microsoft's Unified Communications Web API) is a REST API that exposes Skype for Business Server 2015 Instant Messaging and Presence capabilities, as well as Audio & Video capabilities. UCWA is language-agnostic - you can choose any programming language to code against it.

For more information, refer to:

<https://ucwa.skype.com/>

### Skype Web SDK

The Skype Developer Platform for Web (Skype Web SDK) is a set of JavaScript Web APIs and HTML controls that enable integration of Skype's collaboration services with other web-services or applications.

For more information, refer to:

<https://msdn.microsoft.com/en-us/skype/websdk/docs/skypewebsdk>

## Acceptable use of NHSmail APIs

The NHSmail platform and APIs have a number of safeguards to protect against inappropriate use. NHS Digital encourages appropriate use of the NHSmail APIs. The APIs have rate limiting controls that will prevent inappropriate use. The NHSmail management team reserves the right to restrict users' access to specific APIs, if they are being utilised in a way that is impacting performance of the platform.

## System updates & changes

Updates to the NHSmail system will occur as needed and not on a set schedule. Forewarning of these changes will be posted onto the [NHSmail Service Status pages](#).

## Testing

NHS Digital does not provide an environment for development testing. It is the responsibility of the developer to perform testing. The production NHSmail system must not be used for development testing. All developers are advised to create their own safe environment for application testing and to use an iterative approach for development.

## Cisco Jabber technical guidance

The Cisco Instant Messaging (IM) and Presence service supports interdomain federation, which can enable both Skype for Business and NHSmail to federate with your locally hosted Cisco Jabber server via Expressway in a business to business configuration.

In this deployment, Expressway sits between the two systems and relays traffic between the two. Expressway operates with a pair of servers: Expressway-C sits within the enterprise network and connects to the IM and Presence service and Expressway-E sits at the edge of the enterprise domain and communicates with the Skype for Business domain.

Note that this above scenario will only work where your organisational Jabber instance is hosted locally and not an on-premise solution.

### High level steps

If your organisation has never federated before, you will have to:

- deploy a Cisco Expressway-E which is reachable from the internet using a Fully Qualified Domain Name (FQDN), and an Expressway-C which resides on your LAN
- install a publicly issued certificate on the Cisco Expressway-E ([https://www.cisco.com/c/dam/en/us/td/docs/voice\\_ip\\_comm/expressway/config\\_guide/X8-10/Cisco-Expressway-Certificate-Creation-and-Use-Deployment-Guide-X8-10.pdf](https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/expressway/config_guide/X8-10/Cisco-Expressway-Certificate-Creation-and-Use-Deployment-Guide-X8-10.pdf))
- configure your network, routing and firewalls as well as DNS (covered in the above two links and summarised below) and provide the information asked for above
- ensure the reader consults the Cisco deployment guidance for Skype for Business Federation for detail ([https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/cucm/im\\_presence/interdomain\\_federation/11\\_5\\_1\\_SU2/cup0\\_b\\_interdomain-federation-guide-imp-1151su2/cup0\\_b\\_interdomain-federation-guide-imp-1151su2\\_chapter\\_0111.pdf](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/im_presence/interdomain_federation/11_5_1_SU2/cup0_b_interdomain-federation-guide-imp-1151su2/cup0_b_interdomain-federation-guide-imp-1151su2_chapter_0111.pdf)).

The summary of network configuration information, below, will help with planning and impact assessments before starting the work.

### External DNS information

The records listed below must be publicly accessible and point to addresses accessible from the internet. Replace <sip-domain> with your domain.

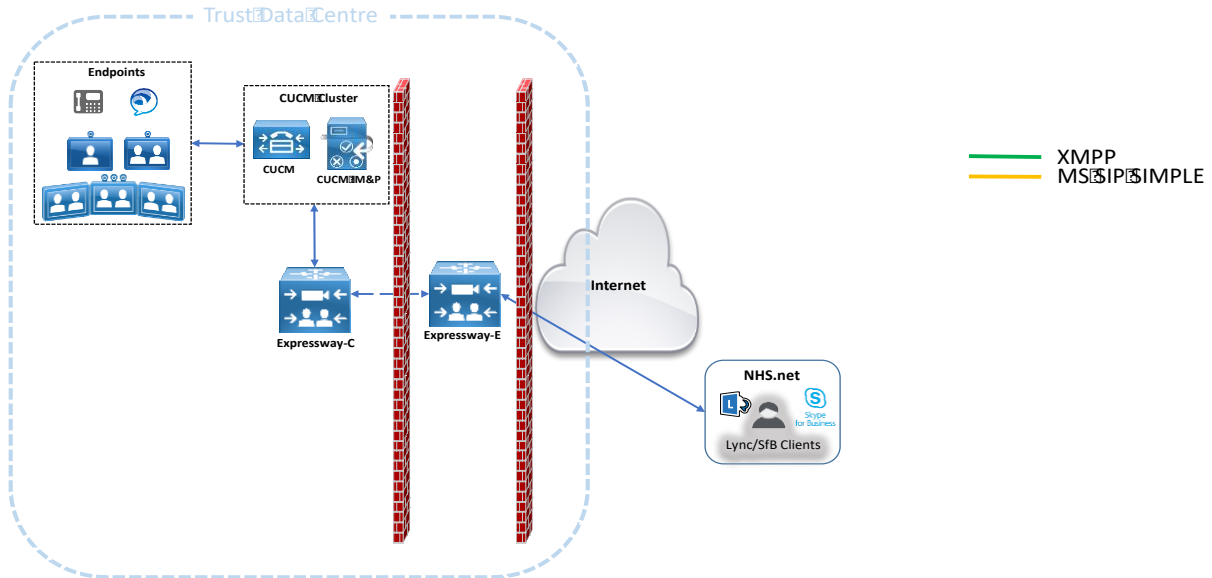
DNS Type	Value	Resolution	Purpose
SRV	_sipfederationtls._tcp.<sip-domain>	Expressway-E FQDN	Federation and public IM connectivity
SRV	_xmpp-server._tcp.<sip-domain>	Expressway-E FQDN	XMPP federation
A	Expressway-E FQDN	Expressway-E Public IP Address	Expressway-E

### Port requirements

The ports listed, unless others specified, are for the Expressway-E Server to the internet. Restrictions can be imposed by only opening the route to the IP address of the NHSmail Access

Edge Server. This is not recommended as the IP address of the server may change without notice.

Feature / Service	Inbound	Outbound
IM / Presence	TCP:5061	TCP:5061



## Further guidance and contact information

Further information about the NHSmail APIs, and developing apps for the NHS more generally, can be found on the health developer network webpages: <https://developer.nhs.uk/>. You can also contact the [health developer network](#), if required.

If you are intending to create an app to connect with NHSmail, please contact us at [feedback@nhs.net](mailto:feedback@nhs.net).

## Frequently asked questions

### **Can my application be run from the Internet?**

Yes. However, if you require the use of SMTP over the internet you will need to speak with your Local Administrator who can enable this protocol to work over the internet.

### **Can I connect my own email system directly to NHSmail, to securely exchange information from my local email service?**

Systems accredited to the [DCB1596 secure email standard](#) will be provisioned for direct secure communication to NHSmail. Systems not accredited to DCB1596 will be able to exchange non-sensitive email via the relay service (where sensitive information needs to be exchanged, additional protection should be applied).

### **I am not an employee of an NHS organisation. How do I get an NHSmail account to integrate my application with the NHSmail APIs?**

To gain third-party access to NHSmail, please visit the [joining NHSmail section](#) of the Portal help pages and follow the instructions for 'registering a commissioned / independent organisation providing or supporting publicly funded health and social care'.

### **Who is the best person to speak to from a technical perspective, if I am wishing to develop an interface with an API?**

There are a large number of Microsoft resources, and information from other sources, on the internet around developing against the native Exchange and Skype for Business APIs. You should work with your local developer resources in the first instance, using the online information.

If your developers experience any difficulty connecting to the APIs, or the responses are not as expected, then please contact [feedback@nhs.net](mailto:feedback@nhs.net) detailing the issue.

### **Do I need to seek any approvals to use an API on the NHSmail platform?**

There are no approvals to use any of the APIs but developers should follow the guidance contained within this document.

### **What happens if the APIs change centrally - how will I be informed?**

APIs do change over time, but it is the Microsoft standard APIs that are available, so will be well documented and as with Microsoft normal policies they usually give good notice of change. Where possible we will cascade known change communications to the Local Administrator community and ensure it is published on the NHSmail Portal help pages, for all users to read. Developers are encouraged to subscribe to TechNet and monitor Microsoft streams of work.

### **What policies should I consider when interfacing an API to an existing system?**

Guidance in this document should be adhered to but it is important to consider local information governance policies and those relating to clinical safety, for example, [DCB0129](#).

### **When the NHSmail platform comes up for refresh, will all the API functionality be supported?**

API availability will be available throughout the lifetime of the contract however, we cannot guarantee that all existing API functionality will be made available if we have a complete platform refresh. API development will factor in future choices of platform.

### **Can I use Autodiscover for EWS?**

The correct URL for EWS will change depending on the mailbox being accessed or if the mailbox is moved within the service. It is recommended that the Autodiscover service is used to return the correct endpoint.

For further information on how to use this within your code, refer to:

[https://msdn.microsoft.com/en-us/library/office/jj900155\(v=exchg.150\).aspx](https://msdn.microsoft.com/en-us/library/office/jj900155(v=exchg.150).aspx)