

Microsoft Exchange Online Functions for IBM Resilient

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Release Notes

v1.3.0

- Support attaching incident attachments to a message.

v1.2.0

- Minor performance improvement when query "all" user mailboxes.
- Continue querying "all" users if there is an error returned from a single call to the \$batch endpoint.

v1.1.0

The 1.1.0 release addresses performance issues when querying messages of all Exchange Online users of a tenant.

- Added batching of multiple message query requests into a single Microsoft Graph API request call using the /\$batch endpoint. The maximum number of requests that Microsoft Graph currently supports in the batch endpoint is 20 requests. Should Microsoft change this value, the `max_batch_requests` parameter should be updated in the app.config file.
- Added "max retries" capability to Microsoft Graph API requests. When making many Microsoft Graph API calls, the Microsoft Graph server may throttle the client and return 503 (server unavailable) or 429 (too many requests) status codes. When this happens, the server may send back a "Retry-After" response header indicating to the client how long to wait and retry sending the request. If this header is not sent to the client, parameters can be set to indicate how long to wait and retry sending the request again. These parameters are settable in the app.config file:
 - `max_retries_total`
 - `max_retries_backoff_factor`
- Added capability to specify a subset of email addresses to search. When querying messages of `all` tenant email addresses, the user can specify a subset of all user mailboxes to search. For example, enter `all:r` in the `Email Address` select field of the `Example: Exchange Online Query Messages` activity popup menu to specify searching all users with PrincipalUserName starting with the letter "r". Enter `all:mc` to search all users starting with "mc".
- The `Example: Exchange Online Query Messages` and `Example: Exchange Online Delete Messages from Query Results` menu item rules and workflows allow the user to multi-select where query results are displayed:
 - Exchange Online data table
 - Incident note
 - Incident attachment
- Fixed bug in query messages function which resulted in the search not completing when the queried message subject or message body contained single quote, hashtag or ampersand characters.
- Removed Exchange Online Web Link to Outlook message from the Exchange Online Message Query Results data table when the message is deleted or not found.

NOTE Existing users running Exchange Online functions on an integration server, should save the [fn_exchange_online] section of their app.config file to another file and delete that section from the app.config file before installing the new version, as this section has changed. After installation, run the following command to obtain the new configuration:

```
$ resilient-circuits config -u -l fn-exchange-online
```

Edit the required configuration setting as described in the [Integration Server](#) section.

v1.0.0

- Initial Release

Overview

Microsoft Exchange Online Functions for IBM Resilient provides the capability to access and manipulate Microsoft Exchange Online messages from the IBM Resilient SOAR Platform. The integration uses Microsoft Graph API to access the data in Microsoft 365. Included in the integration are the following capabilities:

- Get the user profile of the specified email address in JSON format.
- Get a specified message and return the results in JSON format.
- Get a specified message in .eml format and write as an incident attachment.
- Move a message to a specified "Well-known" Outlook folder.
- Send a message from the specified email address to the specified recipients with specified message subject and body text.
- Query messages of a single user, a list of users, or the whole tenant and return a list of messages matching the criteria:
 - message sender
 - messages from a specific Well-known folder
 - message received date
 - text contained in the message subject or the message body
 - whether the message has attachments.

Detailed results are returned in the Exchange Online Query Message Results data table. Total messages found in each mailbox and the total query time are written to an incident note or attachment.

- Delete a single specified message from a specified email address.
- Delete a list of messages that are the results of a message query. The messages deleted are written to the Exchange Online Query Messages data table.
- Create a meeting event in the organizer's Outlook calendar and send a calendar event message to meeting participants inviting them to the meeting.

The integration contains the following functions:

The screenshot shows the IBM Resilient SOAR Platform interface. At the top, there is a navigation bar with links for Dashboards, Inbox, Incidents, Create, Search, and Resilient Sysadmin. Below the navigation bar, the title 'Customization Settings' is displayed. Under 'Customization Settings', there is a sub-navigation bar with links for Layouts, Rules, Scripts, Workflows, Functions (which is underlined to indicate it is the active tab), Message Destinations, Phases & Tasks, Incident Types, Breach, and Artifacts. The main content area is titled 'Functions'. At the top of this section is a search bar labeled 'Search...' and a 'New Function' button. Below the search bar is a table listing ten Exchange Online functions, each with a description and an edit icon. The functions listed are: Exchange Online: Create Meeting, Exchange Online: Delete Message, Exchange Online: Delete Messages From Query Results, Exchange Online: Get Message, Exchange Online: Get User Profile, Exchange Online: Move Message to Folder, Exchange Online: Query Messages, Exchange Online: Send Message, and Exchange Online: Write Message as Attachment.

Name	Description
Exchange Online: Create Meeting	This function creates a meeting event in the organizer's Outlook calendar and sends a calendar event mail message to the meeting participants inviting them to the meeting.
Exchange Online: Delete Message	Delete a message in the specified user's email address mailbox. The email address of the mailbox and the message id are required input parameters. The mail folder is an optional parameter.
Exchange Online: Delete Messages From Query Results	This Exchange Online function deletes a list of messages returned from the Query Message function. The input to the function is a string containing the JSON results from the Query Results function.
Exchange Online: Get Message	This function returns the contents of an Exchange Online message in JSON format.
Exchange Online: Get User Profile	This function gets Exchange Online user profile for a given email address.
Exchange Online: Move Message to Folder	This function moves an Exchange Online message to the specified folder in the users mailbox.
Exchange Online: Query Messages	This function queries Exchange Online to find messages matching the specified input parameters. A list of messages is returned from the function.
Exchange Online: Send Message	This function creates a message and sends it to the specified recipients.
Exchange Online: Write Message as Attachment	This function gets the mime content of an Exchange Online message and writes it as an incident attachment.

Requirements

This app supports the IBM Resilient SOAR Platform and the IBM Cloud Pak for Security.

Resilient platform

The Resilient platform supports two app deployment mechanisms, App Host and integration server.

If deploying to a Resilient platform with an App Host, the requirements are:

- Resilient platform >= [37.1](#).
- The app is in a container-based format (available from the AppExchange as a [zip](#) file).

If deploying to a Resilient platform with an integration server, the requirements are:

- Resilient platform >= [v35.0.0](#)
- If not using an App Host, an integration server running:
 - [resilient_circuits>=31.0.0](#)
 - [resilient_lib>=35.0.0](#)
- The minimum set of Resilient API permissions for this integration if using an API key account:
 - Org Data.Edit
 - Incidents.Read
 - Incidents.Edit.Fields
 - Incidents.Edit.Notes
 - Functions.Read
 - Functions.Edit
 - Layouts.Read
 - Other.ReadIncidentsActionInvocations
 - Scripts.Create
 - Scripts.Edit
 - Workflows.Create
 - Workflow.Edit

The following Resilient platform guides provide additional information:

- *App Host Deployment Guide*: provides installation, configuration, and troubleshooting information, including proxy server settings.
- *Integration Server Guide*: provides installation, configuration, and troubleshooting information, including proxy server settings.
- *System Administrator Guide*: provides the procedure to install, configure and deploy apps.

The above guides are available on the IBM Knowledge Center at [ibm.biz/resilient-docs](#). On this web page, select your Resilient platform version. On the follow-on page, you can find the *App Host Deployment Guide* or *Integration Server Guide* by expanding **Resilient Apps** in the Table of Contents pane. The System Administrator Guide is available by expanding **System Administrator**.

Cloud Pak for Security

If you are deploying to IBM Cloud Pak for Security, the requirements are:

- IBM Cloud Pak for Security >= 1.4.
- Cloud Pak is configured with an App Host.
- The app is in a container-based format (available from the AppExchange as a [zip](#) file).

The following Cloud Pak guides provide additional information:

- *App Host Deployment Guide*: provides installation, configuration, and troubleshooting information, including proxy server settings. From the Table of Contents, select Case Management and Orchestration & Automation > **Orchestration and Automation Apps**.
- *System Administrator Guide*: provides information to install, configure, and deploy apps. From the IBM Cloud Pak for Security Knowledge Center table of contents, select Case Management and Orchestration & Automation > **System administrator**.

These guides are available on the IBM Knowledge Center at [ibm.biz/cp4s-docs](#). From this web page, select your IBM Cloud Pak for Security version. From the version-specific Knowledge Center page, select Case Management and Orchestration & Automation.

Proxy Server

The app supports a proxy server.

-
- The following Microsoft Graph API "Application permissions" for this integration:

- o Calendars.ReadWrite
- o Mail.ReadWrite
- o Mail.Send
- o MailboxSettings.Read
- o User.Read.All

NOTE: Not all permissions are needed for each function, as explained in the Exchange Online Integration User Guide.

To set up Microsoft Azure permissions see section, [Microsoft Azure App Configuration](#).

Installation

Install

- To install or uninstall an App or Integration on the *Resilient platform*, see the documentation at [ibm.biz/resilient-docs](#).
- To install or uninstall an App on *IBM Cloud Pak for Security*, see the documentation at [ibm.biz/cp4s-docs](#) and follow the instructions above to navigate to Orchestration and Automation.

App Configuration

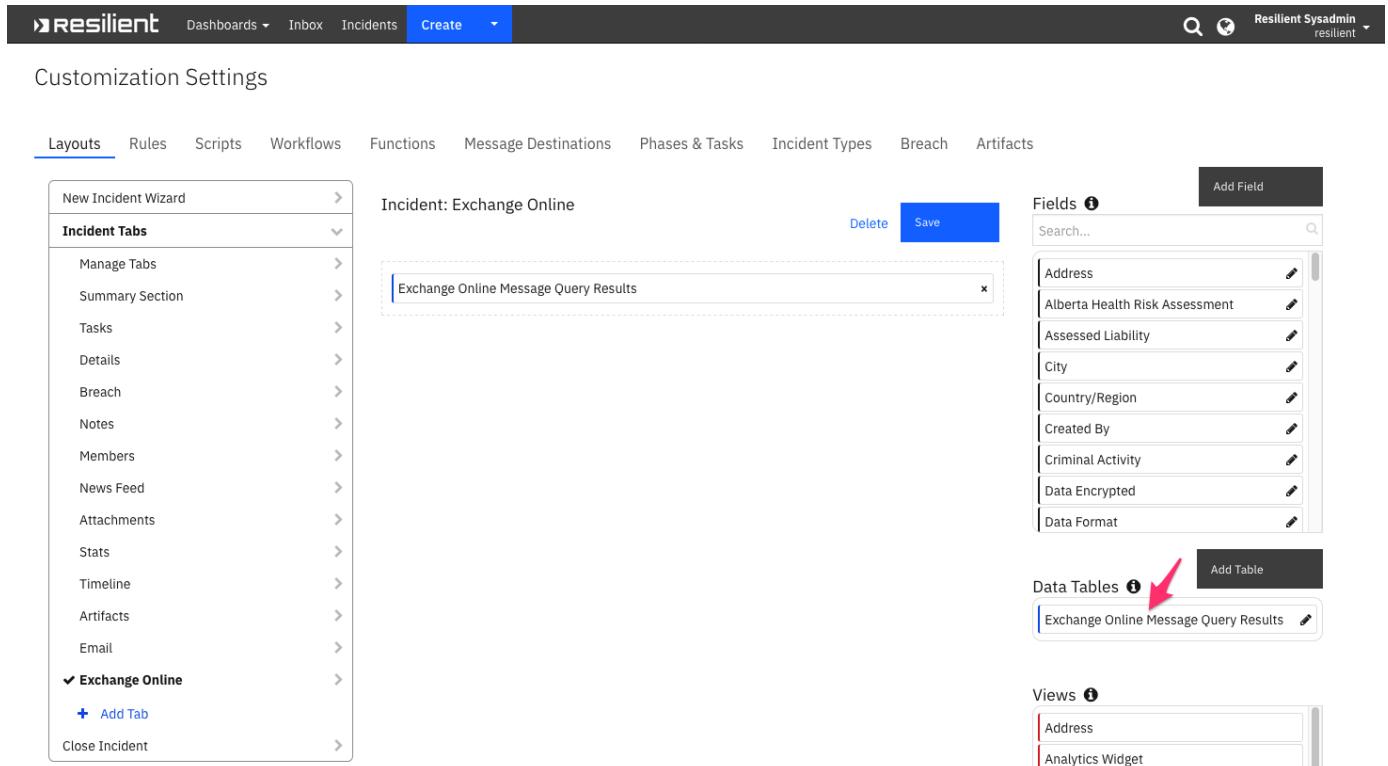
The following table describes the settings you need to configure in the app.config file. If using App Host, see the Resilient System Administrator Guide. If using the integration server, see the Integration Server Guide.

Config	Required	Example	Description
microsoft_graph_token_url	Yes	<code>https://login.microsoftonline.com/{tenant}/oauth2/v2.0/token</code>	Microsoft Graph URL endpoint for acquiring access token
microsoft_graph_url	Yes	<code>https://graph.microsoft.com/v1.0</code>	Microsoft Graph base URL
tenant_id	Yes	XXX	Microsoft Azure Tenant ID
client_id	Yes	XXX	Microsoft Azure Client ID (Application ID)
client_secret	Yes	XXX	Microsoft Azure Client Secret
max_batched_requests	Yes	20	Maximum number of requests to send MS Graph API \$batch endpoint in single call
max_messages	Yes	100	Maximum number of messages that a query returns

Config	Required	Example	Description
max_users	Yes	2000	Maximum number of users searched in a query
max_retries_total	Yes	10	Maximum number of retries for MS Graph API request
max_retries_backoff_factor	Yes	5	Backoff factor used to determine time to sleep between requests

Custom Layouts

Create an Exchange Online custom incident tab and drag the Exchange Online Message Query Results data table on to the layout as shown in the following screenshot. When done, click Save.



The screenshot shows the Resilient platform's customization interface. On the left, there's a sidebar with a tree view of incident tabs: New Incident Wizard, Incident Tabs (selected), Manage Tabs, Summary Section, Tasks, Details, Breach, Notes, Members, News Feed, Attachments, Stats, Timeline, Artifacts, Email, Exchange Online (which is checked), and Close Incident. The main area shows an 'Incident: Exchange Online' layout with a 'Delete' and 'Save' button. A data table titled 'Exchange Online Message Query Results' is placed on the layout. To the right, there are three panels: 'Fields' (with a search bar and a list of fields like Address, Alberta Health Risk Assessment, etc.), 'Data Tables' (with a list of tables like Exchange Online Message Query Results, highlighted with a red arrow), and 'Views' (with a list of views like Address, Analytics Widget).

The results of any Exchange Online message query are displayed in this data table on the Exchange Online custom incident tab.

Exchange Online Message Query Results


[Print](#)
[Export](#)

Query Date	Received Date	Queried Email Address	Sender Email	Message Subject	Has Attachments	Web Link	Status	Message ID
There is no data for this table								

Showing 0 to 0 of 0 entries

Microsoft Azure App Configuration

To run the Resilient Exchange Online integration, you must first register the application on Microsoft Azure portal. The tenant ID, client ID and the client secret that are defined in the fn_exchange_online section of the app.config are assigned by Azure when the application is registered.

App Registration

To register the Resilient integration, click "App registrations" in Manage section of your Azure Active Directory domain account. Then click the "New Registration" button as depicted in the image below.

The screenshot shows the Microsoft Azure portal interface. The left sidebar is titled 'Microsoft Azure' and includes sections for Home, securitypocdemos - App registrations, Overview, Getting started, Diagnose and solve problems, Manage (Users, Groups, Organizational relationships, Roles and administrators, Enterprise applications, Devices), App registrations (selected), Identity Governance, Application proxy, Licenses, Azure AD Connect, Custom domain names, Mobility (MDM and MAM), Password reset, and Company branding. The main content area is titled 'securitypocdemos - App registrations' under 'Azure Active Directory'. It features a search bar, a navigation bar with 'New registration', 'Endpoints', 'Troubleshooting', 'App registrations (Legacy)', and 'Got feedback?', and a message about the new improved App registrations. Below this is a table with columns 'Display name', 'Application (client) ID', 'Created On', and 'Certificates & secrets'. Two entries are listed: 'My Python App' (client ID: 73e3...; created 7/3/2019) and 'resilient-integration' (client ID: 1234...; created 7/2/2019). A red arrow points to the '+ New registration' button.

Display name	Application (client) ID	Created On	Certificates & secrets
My Python App	73e3...@securitypocdemos.onmicrosoft.com	7/3/2019	Current
resilient-integration	1234...@securitypocdemos.onmicrosoft.com	7/2/2019	Current

Enter a name for the integration. In this example, the name is "resilient-integration". Then press the "Register" button.

Microsoft Azure | Search resources, services, and docs (G+/)

Home > securitypocdemos - App registrations > Register an application

Register an application

* Name
The user-facing display name for this application (this can be changed later).
 

Supported account types
Who can use this application or access this API?
 Accounts in this organizational directory only (securitypocdemos only - Single tenant)
 Accounts in any organizational directory (Any Azure AD directory - Multitenant)
 Accounts in any organizational directory (Any Azure AD directory - Multitenant) and personal Microsoft accounts (e.g. Skype, Xbox)
[Help me choose...](#)

Redirect URI (optional)
We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.
  e.g. https://myapp.com/auth

By proceeding, you agree to the Microsoft Platform Policies [View policies](#)

 **Register**

Click on the newly created application. A page appears that is similar to the screenshot below. Get the tenant and client IDs for the application, which are parameters in the app.config file:

Microsoft Azure | Search resources, services, and docs (G+/)

Home > securitypocdemos - App registrations > resilient-integration

resilient-integration

Overview  Endpoints

Got a second? We would love your feedback on Microsoft identity platform (previously Azure AD for developer). →

Display name : resilient-integration	Supported account types : My organization only
Application (client) ID : [REDACTED]	Redirect URLs : Add a Redirect URI
Directory (tenant) ID : [REDACTED]	Application ID URI : api://[REDACTED]
Object ID : [REDACTED]	Managed application in ... : resilient-integration

Welcome to the new and improved App registrations. Looking to learn how it's changed from App registrations (Legacy)? [Learn more](#)

Call APIs 
Build more powerful apps with rich user and business data from Microsoft services and your own company's data sources.
[View API permissions](#)

Documentation
[Microsoft identity platform](#)
[Authentication scenarios](#)
[Authentication libraries](#)
[Code samples](#)
[Microsoft Graph](#)
[Glossary](#)
[Help and Support](#)

Next, click on the left menu item, "Certificates & secrets" and create a secret, which is another application credential in the app.config.

Credentials enable applications to identify themselves to the authentication service when receiving tokens at a web addressable location (using an HTTPS scheme). For a higher level of assurance, we recommend using a certificate (instead of a client secret) as a credential.

Certificates

Certificates can be used as secrets to prove the application's identity when requesting a token. Also can be referred to as public keys.

Upload certificate

No certificates have been added for this application.

Thumbprint	Start Date	Expires

Client secrets

A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password.

Description	Expires	Value
Password uploaded on Tue Jan 14 2020	12/31/2299	XbQ*****
Res-Integration	12/31/2299	j+3*****

API Permissions

For the Resilient integration app to access data in Microsoft Graph, an administrator must grant it the correct permissions via a consent process. Click on "API permissions" on the left menu and then "+ Add a Permission".

Configured permissions

Applications are authorized to call APIs when they are granted permissions by users/admins as part of the consent process. The list of configured permissions should include all the permissions the application needs. [Learn more about permissions and consent](#)

API / Permissions name	Type	Description	Admin Consent Requir...	Status
Calendars.ReadWrite	Application	Read and write calendars in all mailboxes	Yes	Granted for securitypoc...
Mail.ReadWrite	Application	Read and write mail in all mailboxes	Yes	Granted for securitypoc...
Mail.Send	Application	Send mail as any user	Yes	Granted for securitypoc...
MailboxSettings.Read	Application	Read all user mailbox settings	Yes	Granted for securitypoc...
User.Read.All	Application	Read all users' full profiles	Yes	Granted for securitypoc...

Click on Microsoft Graph:

Microsoft Azure Search resources, services, and docs (G+)

Home > resilient-integration - API permissions

resilient-integration - API permissions

Search (Cmd+/) Refresh

Configured permissions

Applications are authorized to call APIs when they are granted all the permissions the application needs. [Learn more about permissions](#)

Add a permission Grant admin consent for

API / Permissions name	Type
Calendars.ReadWrite	Application
Mail.ReadWrite	Application
Mail.Send	Application
MailboxSettings.Read	Application
User.Read.All	Application

Select an API

[Microsoft APIs](#) [APIs my organization uses](#) [My APIs](#)

Commonly used Microsoft APIs

Microsoft Graph  Take advantage of the tremendous amount of data in Office 365, Enterprise Mobility + Security, and Windows 10. Access Azure AD, Excel, Intune, Outlook/Exchange, OneDrive, OneNote, SharePoint, Planner, and more through a single endpoint.

Azure Rights Management Services  Allow validated users to read and write protected content

Azure Service Management  Programmatic access to much of the functionality available through the Azure portal

Data Export Service for Microsoft Dynamics 365  Export data from Microsoft Dynamics CRM organization to an external destination

Dynamics 365 Business Central  Programmatic access to data and functionality in Dynamics 365 Business Central

Dynamics CRM  Access the capabilities of CRM business software and ERP systems

Flow Service  Embed flow templates and manage flows

Intune  Programmatic access to Intune data

Office 365 Management APIs  Retrieve information about user, admin, system, and policy actions and events from Office 365 and Azure AD activity

OneNote  Create and manage notes, lists, pictures, files, and more in OneNote notebooks

Power BI Service 

SharePoint 

Skype for Business 

Select Application permissions (not Delegated permissions):

Microsoft Azure Search resources, services, and docs (G+)

Home > resilient-integration - API permissions

resilient-integration - API permissions

Search (Cmd+/) Refresh

Configured permissions

Applications are authorized to call APIs when they are granted all the permissions the application needs. [Learn more about permissions](#)

Add a permission Grant admin consent

API / Permissions name	Type
Calendars.ReadWrite	Application
Mail.ReadWrite	Application
Mail.Send	Application
MailboxSettings.Read	Application
User.Read.All	Application

Request API permissions

[All APIs](#) **Microsoft Graph** <https://graph.microsoft.com/> [Docs](#)

What type of permissions does your application require?

Delegated permissions Your application needs to access the API as the signed-in user.	Application permissions Your application runs as a background service or daemon without a signed-in user.
---	---

Check each of the following Microsoft Graph API "Application permissions":

- Calendar.ReadWrite
- Mail.ReadWrite
- Mail.Send
- MailboxSetting.Read
- User.Read.All

The screenshot shows the 'Request API permissions' section of the Azure portal. Under 'MailboxSettings (1)', the 'MailboxSettings.Read' permission is selected (indicated by a red arrow). Under 'Mail (2)', the 'Mail.Read', 'Mail.ReadBasic', 'Mail.ReadBasic.All', 'Mail.ReadWrite', and 'Mail.Send' permissions are listed, with 'Mail.Send' being selected (indicated by a red arrow). A third red arrow points to the 'Mail.Send' permission under 'Mail'.

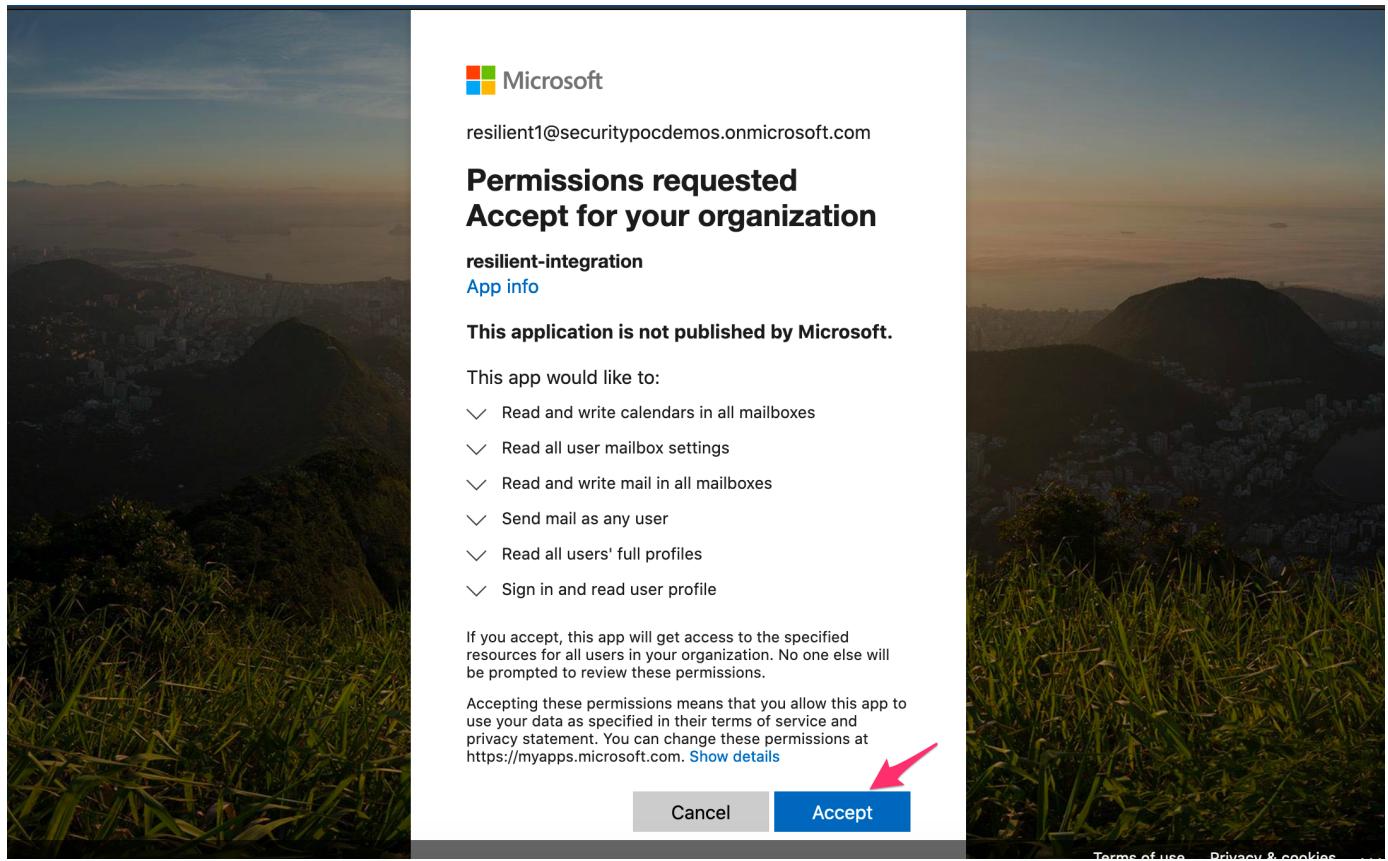
API / Permissions name	Type	Description	Status
MailboxSettings.Read	Application	Read all user mailbox settings	Yes
MailboxSettings.ReadWrite	Application	Read and write all user mailbox settings	Yes
Mail.Read	Application	Read mail in all mailboxes	Yes
Mail.ReadBasic	Application	Read basic mail in all mailboxes	Yes
Mail.ReadBasic.All	Application	Read basic mail in all mailboxes	Yes
Mail.ReadWrite	Application	Read and write mail in all mailboxes	Yes
Mail.Send	Application	Send mail as any user	Yes

Once the API Application permissions are added, click the "Grant admin consent" button for your domain:

The screenshot shows the 'Configured permissions' section of the Azure portal. The 'Grant admin consent for securitypocdemos' button is highlighted with a red arrow. All permissions listed have a green checkmark in the 'Admin Consent Req...' column, indicating they have been granted.

API / Permissions name	Type	Description	Admin Consent Req...	Status
Calendars.ReadWrite	Application	Read and write calendars in all mailboxes	Granted for securitypoc...	...
Mail.ReadWrite	Application	Read and write mail in all mailboxes	Granted for securitypoc...	...
Mail.Send	Application	Send mail as any user	Granted for securitypoc...	...
MailboxSettings.Read	Application	Read all user mailbox settings	Granted for securitypoc...	...
User.Read.All	Application	Read all users' full profiles	Granted for securitypoc...	...

You may need to log in to an admin account to accept the permissions requested on behalf of your organization:



Troubleshooting & Support

Refer to the documentation listed in the Requirements section for troubleshooting information.

For Support

This is an IBM supported app. Please search <https://ibm.com/mysupport> for assistance.