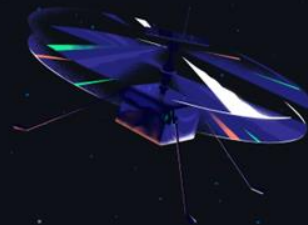




GitHub Copilot Administration & Security

Andrew Scoppa



AGENDA



Introductions



Policies and settings



Telemetry



Data privacy



Troubleshooting



Integrations



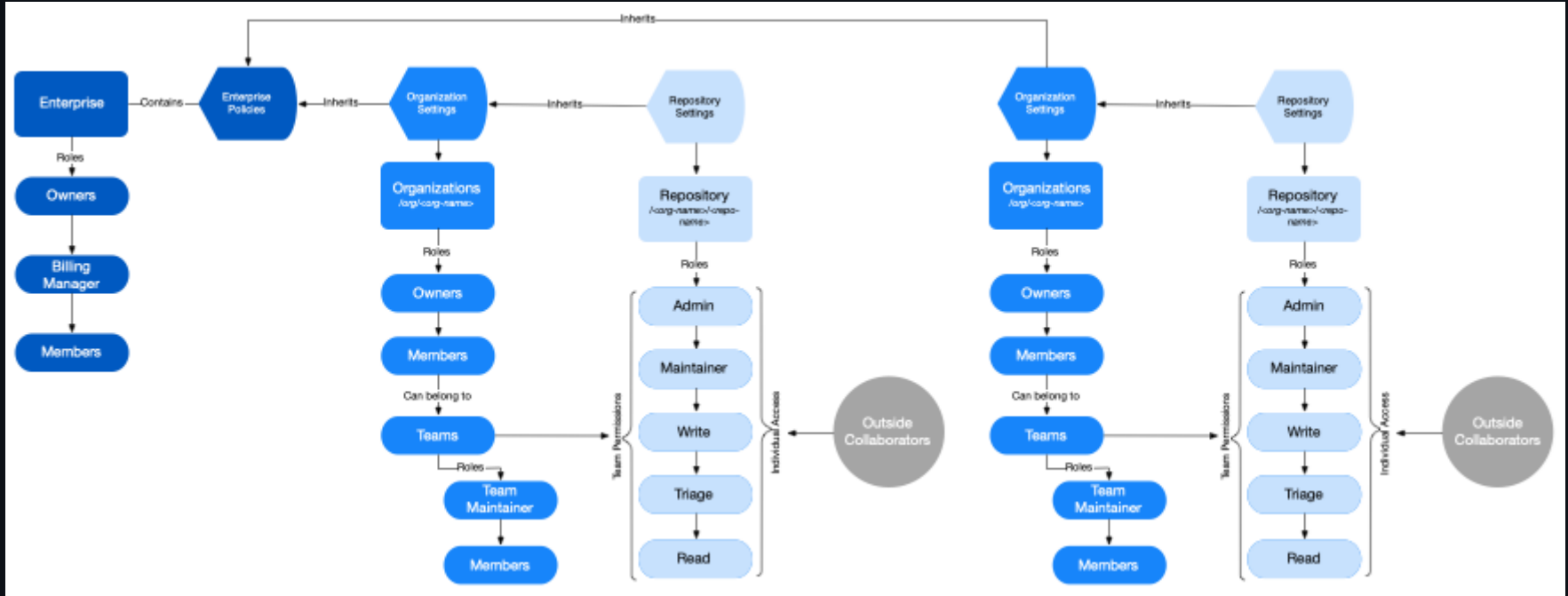
Q & A



Policies and settings

Govern the usage of GitHub Copilot in your Enterprise

Flow of policies and permissions



Enterprise Admin Policies

Control whether suggestions matching public code is allowed or blocked


- Blocked
- Allow
- No Policy

Manage organization access to GitHub Copilot.

- Disabled
- Allow for all organizations
- Allow for specific organizations

Manage Copilot Chat access.

- No Policy
- Enabled
- Disabled

 **Fabrikam EMU**
Computer Company in Seattle, Washington
<https://fabrikam.com>

Organizations
People
Identity provider
Policies

Repositories
Codespaces
Copilot
Actions
Projects
Teams
Code security and analysis
Personal access tokens Beta
Sponsors

GitHub Connect
Code Security

GitHub Copilot

Access and policies
Beta features

Suggestions matching public code

GitHub Copilot can allow or block suggestions matching public code. See [the GitHub Copilot documentation](#) to learn more.

No policy ▾

Manage organization access to GitHub Copilot

Assign which organizations will have access to GitHub Copilot inside your enterprise. Admins of an organization with approved access will receive an email with setup instructions.

☐ **Disabled**
Disable GitHub Copilot access for my organizations

☒ **Allow for all organizations**
Allow access to GitHub Copilot for all organizations, including any created in the future

☐ **Allow for specific organizations (433 organizations enabled)**
Only specifically-selected organizations may use GitHub Copilot

Your enterprise's use of GitHub Copilot is governed by the [GitHub Copilot Product Specific Terms](#).

Save



Organization Settings

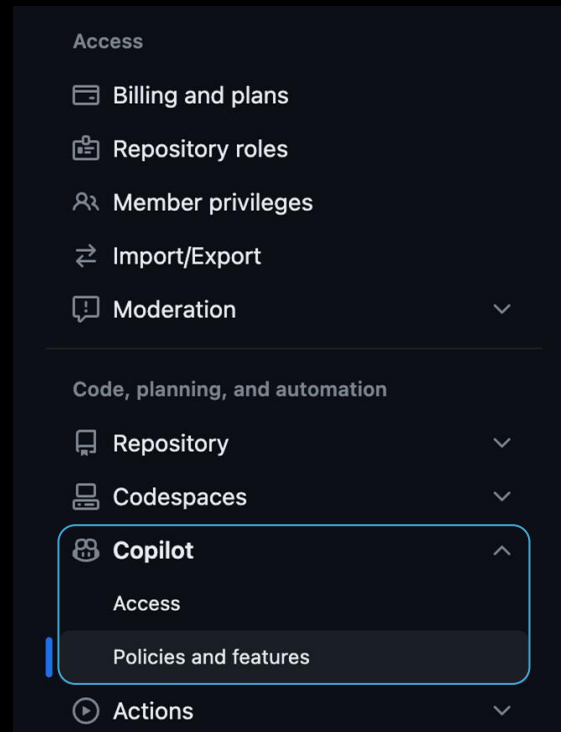
Categorization of Copilot Organization settings

Access

Manage, control and audit the users Copilot interaction

Policies and features

Regulate Copilot functionality and feature enablement



Organization Settings

Manage & Control Access

Access Settings

- View Number of Copilot license utilized
- Estimated cost of Copilot Usage within the Org
- Policy to enable Copilot for all members in the org or selective members
- Extract report of Copilot activity per user

GitHub Copilot

Copilot seats


831 seats

Number of purchased seats in this organization.
[Learn more on licenses.](#)

Estimated monthly cost

\$15,789.00

Each purchased seat is \$19 USD/month.
[Review billing details.](#)

 **Copilot in your organization**

Control which users or teams will have access to GitHub Copilot inside your organization. Invited users with approved access will receive an email with setup instructions. [Organization settings documentation.](#)


Enabled for: All members of the organization ▾

Access management

☰

831 members with access to Copilot

⌵ ↑ Sort ▾

 @abhi-dutta

Last active 2 days ago

📄

Get report

7

Organization Settings

Access - Copilot user activity report (sample)

octodemo-seat-usage-1696435416

| Login | Status | Team | Last Activity Date | Last Editor Used |
|---------|--------|---------|--------------------|---|
| Abc | Active | No team | 2023-10-04 | vscode/1.83.0-insider/copilot-chat/0.8.2023092902 |
| Lakes | Active | No team | 2023-09-13 | vscode/1.82.0/copilot-chat/0.7.2023090101 |
| Chaos | Active | No team | 2023-10-04 | vscode/1.82.1/copilot/1.111.404 |
| Akjsda | Active | No team | 2023-10-04 | vscode/1.82.2/copilot-chat/0.7.1 |
| Sbdkajs | Active | No team | 2023-10-04 | vscode/1.82.3/copilot-chat/0.7.1 |
| Asa | Active | No team | 2023-05-26 | vscode/1.78.2/copilot/1.86.82 |
| Baksjdb | Active | No team | 2023-10-04 | vscode/1.82.3/copilot-chat/0.7.2023090101 |
| Jshbda | Active | No team | 2023-10-04 | / |

Organization Settings

Policies & Features

- Policies and features settings allow an org owner to define policies which will be applicable to all the users that have been onboarded to GitHub Copilot under the org
- Allows org owners to define whether “public code” matching is allowed in suggestions
- Can users use Copilot Chat (beta) feature in the supported IDE's

GitHub Copilot policies and features

Policies

Suggestions matching public code

Copilot can allow or block suggestions matching public code.

Allowed ▾

Technical preview

Enable or disable limited public beta access for members of your organization with access to GitHub Copilot. Note that users from other organizations may gain access if permitted by their administrators.

Features

GitHub Copilot Chat Beta

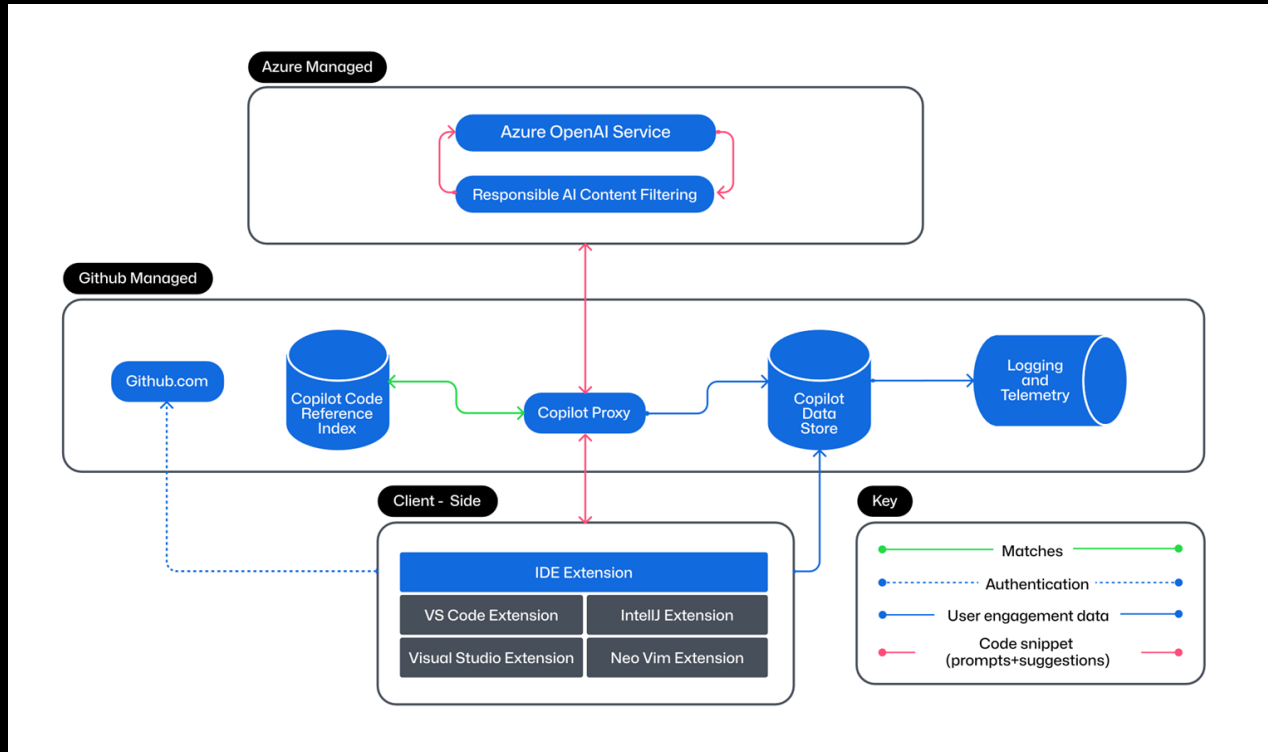
GitHub Copilot to explain a piece of code, propose bug fixes, or generate unit tests in a chat interface from your editor. If enabled, you agree to [pre-release terms](#).

Enabled ▾



Client Side Settings

Copilot Architecture



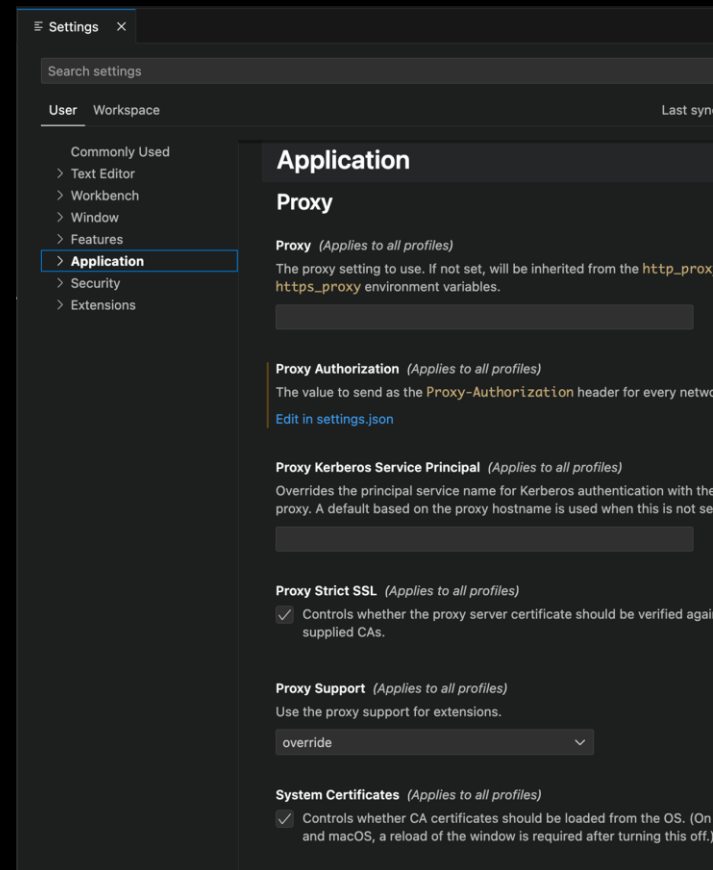
Network Settings

Proxy Settings

- GitHub Copilot supports basic HTTP proxy setups. If you need to authenticate to a proxy, GitHub Copilot supports basic authentication or Kerberos. If the proxy URL starts with `https://`, the proxy is not currently supported.
- If you don't configure a proxy directly in your editor, GitHub Copilot checks if a proxy URL is set in any of the following environment variables, from highest to lowest priority.
 - `HTTPS_PROXY`
 - `https_proxy`
 - `HTTP_PROXY`
 - `http_proxy`

Authentication Modes

- Basic Authentication
- Kerberos Authentication



Firewall Settings

If you or your organization employs security measures like a firewall, it may be beneficial to include certain domain URLs in an "allowlist" and open specific ports and protocols.

| Domain and/or URL | Purpose |
|--|-------------------------------------|
| <code>https://github.com/login/*</code> | Authentication |
| <code>https://api.github.com/user</code> | User Management |
| <code>https://api.github.com/copilot_internal/*</code> | User Management |
| <code>https://copilot-telemetry.githubusercontent.com/telemetry</code> | Telemetry |
| <code>https://default.exp-tas.com/</code> | Telemetry |
| <code>https://copilot-proxy.githubusercontent.com/</code> | API service for Copilot suggestions |
| <code>https://origin-tracker.githubusercontent.com</code> | API service for Copilot suggestions |
| <code>https://*.githubcopilot.com</code> | API service for Copilot suggestions |



IDE Advanced Settings

Supported IDEs



Visual Studio



Visual Studio
Code



Jet Brains



Vim/Neovim



Azure Data
Studio

Enable non-programming Meta Files

In `settings.json`, add

```
"github.copilot.enable":  
{  
  "*": true,  
  "yaml": true,  
  "plaintext": false,  
  "markdown": true  
}
```



```
{ settings.json •  
Users > bryantson > Library > Application Support > Code > User > {} settings.json > ...  
1 {  
2   "editor.inlineSuggest.enabled": true,  
3   "github.copilot.enable": {  
4     "*": true,  
5     "yaml": true,  
6     "plaintext": false,  
7     "markdown": true  
8   },  
9   "[python]": {  
10     "editor.formatOnType": true  
11   },  
12   "github.copilot.advanced": {  
13  
14   },  
15   "editor.inlineSuggest.showToolbar": "always",  
16   "window.zoomLevel": 1,  
17   "appService.connections": []  
18 }  
19 }
```




Telemetry

Insights about GitHub Copilot acceptance in your enterprise



Telemetry - GitHub REST API



Get Copilot for Business seat information and settings for an organization

Note: You must authenticate using an access token with the ***manage_billing:copilot*** scope

GET /orgs/{org}/copilot/billing

cURL

```
curl -L \  
  -H "Accept: application/vnd.github+json" \  
  -H "Authorization: Bearer <YOUR-TOKEN>" \  
  -H "X-GitHub-API-Version: 2022-11-28" \  
  https://api.github.com/orgs/ORG/copilot/billing
```

Example response

Status: 200

```
{  
  "seat_breakdown": {  
    "total": 12,  
    "added_this_cycle": 9,  
    "pending_invitation": 0,  
    "pending_cancellation": 0,  
    "active_this_cycle": 12,  
    "inactive_this_cycle": 11  
  },  
  "seat_management_setting": "assign_selected",  
  "public_code_suggestions": "block"  
}
```

Telemetry - GitHub Audit Logs



Copilot for Business users will now be able to review updates and changes to their Copilot settings through the **audit log**.

In large organizations or enterprises, tracking setting updates and purchases is crucial.

Our goal is to empower organization and enterprise admins to investigate changes to their Copilot for Business account and settings independently, eliminating the need to rely on support.



Audit log

Events Log streaming Settings

Filters

☐ Clear current search query

Events matching search query



dhruvg20 – copilot.cfb_seat_added

Copilot for Business seat was added for dhruv-gupta-live in the [redacted] organization because they were added to the organization
Unknown location | Unknown IP address | 2 weeks ago | ...



jschanfung – copilot.cfb_org_settings_changed

Copilot Chat setting changed from unconfigured to enabled for the [redacted] organization
Australia | 120.158.194.167 | 2 weeks ago | ...



dhruvg20 – copilot.cfb_seat_added

Copilot for Business seat was added for jschanfung in the [redacted] organization because they were added to the organization
Unknown location | Unknown IP address | on Sep 1 | ...



dhruvg20 – copilot.cfb_seat_added

Copilot for Business seat was added for dhruv-gupta-live in the [redacted] organization
India | 101.0.62.219 | on Jun 14 | ...



Data privacy

How GitHub protects your data

GitHub Copilot Trust Center

As GitHub's Chief Legal Officer, I understand the nuanced challenges of enabling company-wide AI adoption, especially in an evolving regulatory landscape. GitHub Copilot is enterprise-ready, but organizations need to clearly understand how the tool meets their compliance, security, and accessibility requirements.

Our aim is to bring you that clarity with the **GitHub Copilot Trust Center**.



<https://resources.github.com/copilot-trust-center/>

What Personal Data is Collected & How?

- User Engagement Data
 - Events generated with an IDE
 - Personal Data such as pseudonymous identifiers
- Prompts
 - Collection of code & contextual information to generate suggestions
 - User using a designated keyboard shortcut or pauses typing to request a suggestion
- Suggestions
 - One or more lines of proposed code and other output returned

Personal Data

- Uses the **source code** in IDE only to generate a suggestion.
- Performs several scans to identify and remove certain **information** within a prompt.
- **Prompts** are only transmitted to the AI model to generate suggestions in real-time
- Deleted once the **suggestions** are generated.
- **User engagement data** is used to improve the performance of the Copilot Service; specifically, it's used to
 - a. Evaluating GitHub Copilot
 - b. Sort algorithms
 - c. Detecting potential abuse of GitHub Copilot
- Copilot for Business does not use your code to train the Azure OpenAI model

Under the hood - Responding to a prompt

- Suggestions are not copied and pasted from any code database.
- Uses probabilistic reasoning to generate suggestions.
- GitHub Copilot sends a prompt to its AI model, which makes a probabilistic determination of what is likely to come next in your coding sequence and provides suggestions.

Aiding Secure Development

GitHub Copilot leverages a variety of security measures

- Remove sensitive information in code
- Block insecure coding patterns *
- Detect vulnerable patterns in incomplete fragments of code.

Throughout the SDLC, including code scanning, secret scanning, and dependency management.

* The Copilot prompt needs to be specific in it's request



FAQ

- How long the collected personal data will be retained?
 - User Engagement Data - 24 Months
 - Prompts - Discarded once a suggestion is returned
 - Suggestions - Not Retained
- Can the users control the sharing & use of their data?
 - User engagement data is required for the use of GitHub Copilot
 - General usage data
 - Pseudonymous identifiers

FAQ

- How does our collected data gets processed by GitHub?
 - Billing & Account Management
 - Produce Aggregated Reports
 - capacity planining, product development, regulatory financial reports
- How's our collected data used?
 - To measure the impact it has on the user
 - Fine Tune ranking & Sorting Algorithms and Prompt Crafting
 - Detect violation of Acceptable Use Policies.
 - Developers and their use of developer tools and services.

FAQ

- Is Telemetry available?
 - No, Telemetry is not available for Copilot for Business
- Organization-wide policy management
 - Yes, Policy settings can be implemented at an Organization level.
- Audit Logs?
 - Yes, Audit Logs are available along with Copilot specific events
- Http Proxy Support
 - Yes, HTTP proxy support via custom certificates available



Troubleshooting

Common issues and where to look

Common Issues

- GitHub's [Status Page](#)
- Update GitHub Copilot Extension
- Error: "GitHub Copilot could not connect to server. Extension activation failed"
- Open [Discussions on Copilot Community](#) with relevant files

Viewing Logs for GitHub Copilot

Supported IDEs



Visual Studio



Visual Studio
Code

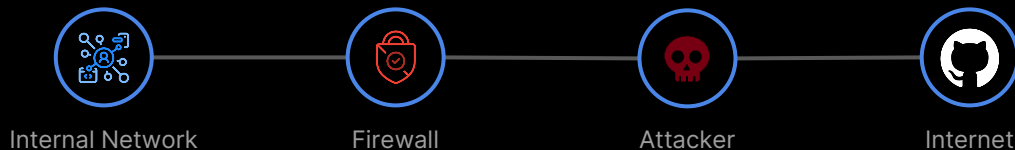


Vim/Neovim



Jet Brains

Firewall settings



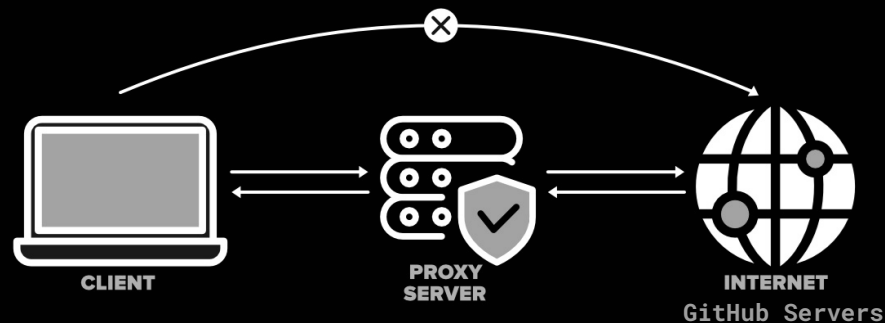
GitHub Copilot's requires connectivity to these domain URLs

- Organization employs security measures like a firewall or proxy server
- Allowlist domain URLs, specific ports & protocols
- Interaction with Remote Learning Model
- Trusted domain URLs

| Domain and/or URL | Purpose |
|--|-------------------------------------|
| <code>https://github.com/login/*</code> | Authentication |
| <code>https://api.github.com/user</code> | User Management |
| <code>https://api.github.com/copilot_internal/*</code> | User Management |
| <code>https://copilot-telemetry.githubusercontent.com/telemetry</code> | Telemetry |
| <code>https://default.exp-tas.com/</code> | Telemetry |
| <code>https://copilot-proxy.githubusercontent.com/</code> | API service for Copilot suggestions |
| <code>https://origin-tracker.githubusercontent.com</code> | API service for Copilot suggestions |
| <code>https://*.githubcopilot.com</code> | API service for Copilot suggestions |

Network Proxy setup

- Company Equipment or Corporate Network
- Connecting to Internet via VPN or HTTP Proxy server
- Prevent connecting to GitHub' Servers



Network Proxy Errors

- Error: GitHub Copilot could not connect to server. Extension activation failed: "read ETIMEDOUT" or "read ECONNRESET"
- Configuring network settings for GitHub Copilot
- Proxy Specific errors:
 - Proxy's URL https:// currently not supported by GitHub Copilot
 - Authenticated supported basic authentication or with Kerberos
 - Custom certificates issues

Diagnosing Network Issues

- `curl requests with --verbose`
- `curl --verbose https://copilot-proxy.githubusercontent.com/_ping`
- `curl --verbose -x http://YOUR-PROXY-URL:PORT -i -L https://copilot-proxy.githubusercontent.com/_ping --insecure` -> Certificate related issues
- diagnostic logs from editors

[Diagnosing network issues](#)

Certificate Problems

- Errors: "certificate signature failure", "custom certificate", or "unable to verify the first certificate"
- Github Copilot for Business supports Custom Certificates
- Corporate proxy configurations
- Check GitHub Copilot certificate path
- Ignore Certificate Errors in Proxy settings
Warning: Ignoring certificate errors can cause security issues and is not recommended

[Troubleshooting certificate-related errors](#)





Integrations

Use GitHub Copilot Endpoints and data with Enterprise tools

REST API - Copilot for Business

API Endpoints

- Get Copilot for Business seat information and settings for an organization
- List all Copilot for Business seat assignments for an organization
- Add teams to the Copilot for Business subscription for an organization
- Remove teams from the Copilot for Business subscription for an organization
- Add users to the Copilot for Business subscription for an organization
- Remove users from the Copilot for Business subscription for an organization
- Get Copilot for Business seat assignment details for a user



Audit Logs

Review the configuration actions taken by users at an Organisation & Enterprise level.

- Organization's Copilot settings and policies
 - Changes to the Enablement Policy
 - Org Settings changes
 - Enterprise settings changes
- Addition or removal of seats
 - Seat management changed
 - Seat assignment reused
 - Seat assignment refreshed
- Editor chat Settings
- Code Referencing Settings

[Reviewing your organization or enterprise audit logs for copilot](#)



Audit Log Events

| | |
|---|--|
| cfb_enterprise_settings_changed | copilot.cfb_seat_cancelled |
| copilot.cfb_enterprise_org_enablement_changed | copilot.cfb_seat_assignment_reused |
| clickwrap_save_event | copilot.cfb_seat_assignment_refreshed |
| cfb_org_settings_changed | copilot.cfb_seat_assignment_created |
| copilot.cfb_seat_cancelled_by_staff | copilot.cfb_seat_assignment_unassigned |
| cfb_seat_management_changed | editor_chat_setting |
| copilot.cfb_seat_added | code_referencing_setting |

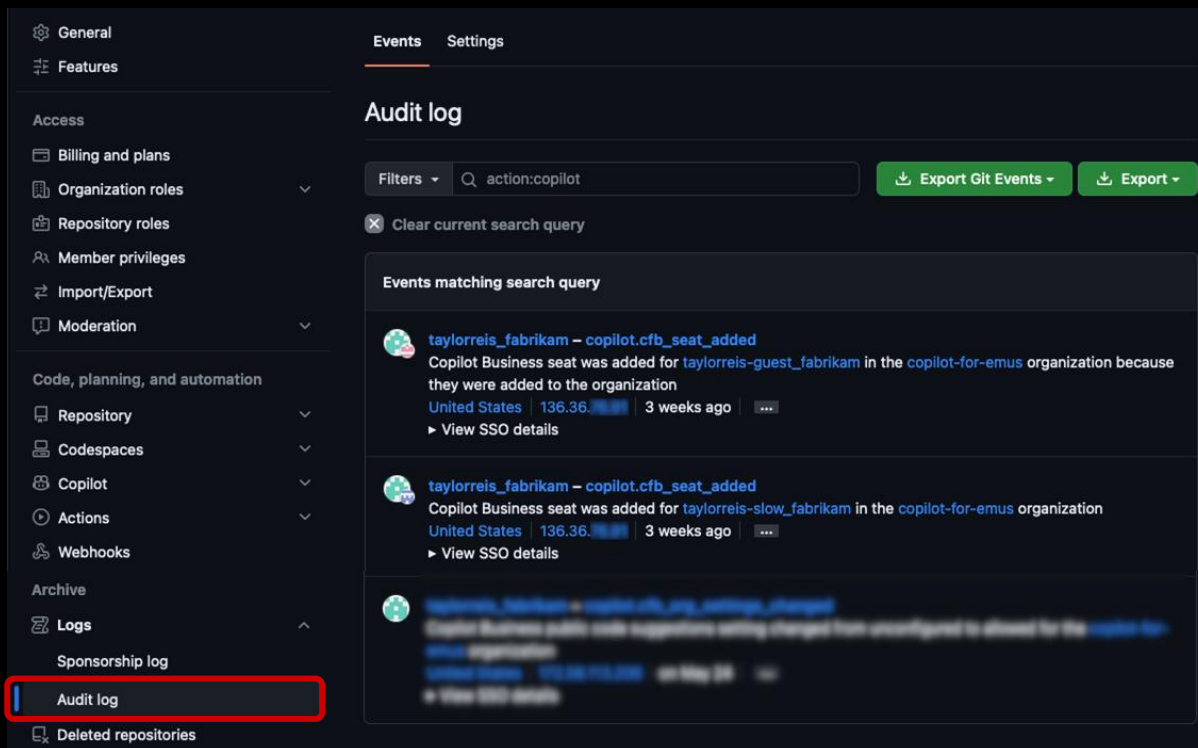
Audit Logs

To review the actions taken by users at an Enterprise level.

The screenshot displays the GitHub Copilot Administration & Security interface for the organization 'Fabrikam EMU'. The left sidebar contains a navigation menu with the following items: Fabrikam EMU (Computer Company in Seattle, Washington, https://fabrikam.com), Organizations, People, Identity provider, Policies, GitHub Connect, Code Security, and Settings. The 'Settings' section is expanded, showing sub-items: Profile, Billing, Enterprise licensing, Authentication security, Code security and analysis, Verified & approved domains, **Audit log** (highlighted with a red box), and Hooks. The main content area is titled 'Audit log' and includes tabs for 'Events', 'Log streaming', and 'Settings'. A search bar contains the query 'action:copilot actor:jefeish_fabrikam'. Below the search bar are buttons for 'Export Git Events' and 'Export'. A 'Clear current search query' link is also present. The 'Events matching search query' section shows a single event: 'jefeish_fabrikam - copilot.cfb_org_settings_changed'. The event description states: 'Copilot Chat setting changed from unconfigured to enabled for the copilot-for-emus organization'. It includes a location 'United States' with a redacted IP address '146.70. [REDACTED]' and a timestamp 'on Sep 27'. A 'View SSO details' link is provided, along with the email address 'jefeish@ghemu.onmicrosoft.com'. At the bottom of the event list, there are 'Newer' and 'Older' navigation links. A 'ProTip!' message at the bottom suggests viewing all events created yesterday with a link to 'created:2023-11-15'.

Audit Logs

To review the actions taken by users at an Organisation level.



The screenshot displays the GitHub Copilot Administration & Security interface. On the left sidebar, the 'Audit log' option is highlighted with a red box. The main content area shows the 'Events' tab selected, with a search filter 'action:copilot' applied. Below the search bar, there are two green buttons: 'Export Git Events' and 'Export'. The 'Events matching search query' section lists three events:

- taylorreis_fabrikam – copilot.cfb_seat_added**
Copilot Business seat was added for [taylorreis-guest_fabrikam](#) in the [copilot-for-emus](#) organization because they were added to the organization
[United States](#) | [136.36.100.100](#) | 3 weeks ago | [...](#)
[View SSO details](#)
- taylorreis_fabrikam – copilot.cfb_seat_added**
Copilot Business seat was added for [taylorreis-slow_fabrikam](#) in the [copilot-for-emus](#) organization
[United States](#) | [136.36.100.100](#) | 3 weeks ago | [...](#)
[View SSO details](#)
- taylorreis_fabrikam – copilot.cfb_org_settings_changed**
Copilot Business public code suggestions setting changed from [unconfigured](#) to [allowed](#) for the [copilot-for-emus](#) organization
[United States](#) | [172.16.17.100](#) | on May 28 | [...](#)
[View SSO details](#)



Q & A



Thank you