Github 中 Webhooks 的应用

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`Webhooks` 是 `Github` 为我们提供的一种订阅某些时间的功能。当这些事件被触发时，`Github` 会将信息以 `POST` 方式发送到我们指定的 `URL`。通过 `Webhooks` 我们可以记录更新，触发 `CI构建`、更新备份镜像，甚至服务器的自动部署等等我们能够想到的各个地方。

`Github` 上对于每个账号或者项目上的每个事件最多可以创建 20 个 `Webhooks`。

事件

配置 `Webhook` 时，我们可以自定义具体的事件。只有定义定义的这些事件才会触发对指定的 `URL` 的请求。默认，`webhooks` 只订阅 `push` 事件，不过我们也可通过 `API` 或者 `UI` 来更改订阅事件的列表。

每个事件对应于可能发生在我们组织或 `Repository` 中的一组特定操作。 例如，如果订阅 `issues` 事件，则每次打开，关闭，标记 `issues` 时，我们都会收到详细的有效内容。

可用事件有:

事件名称	描述
`*`	任何时间触发任何事件（通配符事件）。
`commit_comment`	每次提交被注释时。
`create`	每次分支或标记被创建时。
`delete`	每次分支或标记被删除时。
`deployment`	每次 `Repository` 被部署。
`deployment_status`	任何时候，Repository 的部署有来自 API 的状态更新时。
`fork`	每次 `Repository` 被 `fork` 时。
`gollum`	每次 `Wiki Page` 被更新时。
`issue_comment`	每次 `Issue` 中的评论被添加、编辑、或删除时。
`issues`	每次 `issue` 被分配、未分配，标记，未标记，打开，编辑，重大事件，拆除，关闭或重新打开时。
`label`	每次标签被创建、编辑、或删除时。
`member`	每次添加或删除一个协作者用户，或者更改他们的权限时。
`membership`	任何时候添加或删除团队中用户。（仅组织钩子）
`milestone`	每次创建、关闭、打开、编辑或删除 `milestone`（里程碑）时。
`organization`	任何时候添加，删除或邀请用户加入组织。 仅组织钩子。

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事件名称	描述
page_build	每次页面网站建立时。
project_card	项目卡片创建，更新或删除。
project_column	项目 column 创建，更新，移动或删除时。
project	项目创建、编辑、或删除时。
public	Repository 从 private 更改为 public 时。
pull_request_review_comment	每次 pull 请求被创建，编辑或删除差异注释时。
pull_request_review	每次提交 Pull 请求审核时。
pull_request	每次 pull 请求被打开，关闭，重新打开，编辑，分配，未分配，请求审核，审核请求已移除，已标记，未标记或已同步时。
push	每次 push 时（默认事件）

repository | 每次 Repository 被创建、删除、公开或 私有化时。

release | 每次 release 被发布到 Repository 中时

status | 每次从 API 中更新版本库状态时。

team | 任何时候创建，删除，修改 Repository 的团队。 仅组织钩子

team_add | 每次添加或修改 Repository 中的 team 成员时。

watch | 每次用户对 Repository 加星标时。

有效载荷

每个事件类型具有特定的有效载荷格式以及相关的事件信息。 即，不同的事件被触发发送到我们配置的 URL 的 POST 数据格式和内容也会不同。

例如，一个 commit_comment 事件如果被触发，将会向 URL 发送类似下面的内容。

```
1  {
2    "action": "created",
3    "comment": {
4      "url": "https://api.github.com/repos/baxterthehacker/public-repo/comments/11056394",
5      "html_url": "https://github.com/baxterthehacker/public-repo/commit/9049f1265b7d61be4a8904a9a27
6      "id": 11056394,
7      "user": {
8        "login": "baxterthehacker",
9        "id": 6752317,
10       "avatar_url": "https://avatars.githubusercontent.com/u/6752317?v=3",
11       "gravatar_id": "",
12       "url": "https://api.github.com/users/baxterthehacker",
13       "html_url": "https://github.com/baxterthehacker",
14       "followers_url": "https://api.github.com/users/baxterthehacker/followers",
15       "following_url": "https://api.github.com/users/baxterthehacker/following{/other_user}",
16       "gists_url": "https://api.github.com/users/baxterthehacker/gists{/gist_id}",
17       "starred_url": "https://api.github.com/users/baxterthehacker/starred{/owner}{/repo}",
18       "subscriptions_url": "https://api.github.com/users/baxterthehacker/subscriptions",
19       "organizations_url": "https://api.github.com/users/baxterthehacker/orgs",
20       "repos_url": "https://api.github.com/users/baxterthehacker/repos",
21       "events_url": "https://api.github.com/users/baxterthehacker/events{/privacy}",
22       "received_events_url": "https://api.github.com/users/baxterthehacker/received_events",
23       "type": "User",
```

```
24          "site_admin": false
25        },
26        "position": null,
27        "line": null,
28        "path": null,
29        "commit_id": "9049f1265b7d61be4a8904a9a27120d2064dab3b",
30        "created_at": "2015-05-05T23:40:29Z",
31        "updated_at": "2015-05-05T23:40:29Z",
32        "body": "This is a really good change! :+1:"
33      },
34      "repository": {
35        "id": 35129377,
36        "name": "public-repo",
37        "full_name": "baxterthehacker/public-repo",
38        "owner": {
39          "login": "baxterthehacker",
40          "id": 6752317,
41          "avatar_url": "https://avatars.githubusercontent.com/u/6752317?v=3",
42          "gravatar_id": "",
43          "url": "https://api.github.com/users/baxterthehacker",
44          "html_url": "https://github.com/baxterthehacker",
45          "followers_url": "https://api.github.com/users/baxterthehacker/followers",
46          "following_url": "https://api.github.com/users/baxterthehacker/following{/other_user}",
47          "gists_url": "https://api.github.com/users/baxterthehacker/gists{/gist_id}",
48          "starred_url": "https://api.github.com/users/baxterthehacker/starred{/owner}{/repo}",
49          "subscriptions_url": "https://api.github.com/users/baxterthehacker/subscriptions",
50          "organizations_url": "https://api.github.com/users/baxterthehacker/orgs",
51          "repos_url": "https://api.github.com/users/baxterthehacker/repos",
52          "events_url": "https://api.github.com/users/baxterthehacker/events{/privacy}",
53          "received_events_url": "https://api.github.com/users/baxterthehacker/received_events",
54          "type": "User",
55          "site_admin": false
56        },
57        "private": false,
58        "html_url": "https://github.com/baxterthehacker/public-repo",
59        "description": "",
60        "fork": false,
61        "url": "https://api.github.com/repos/baxterthehacker/public-repo",
62        "forks_url": "https://api.github.com/repos/baxterthehacker/public-repo/forks",
63        "keys_url": "https://api.github.com/repos/baxterthehacker/public-repo/keys{/key_id}",
64        "collaborators_url": "https://api.github.com/repos/baxterthehacker/public-repo/collaborators{/
65        "teams_url": "https://api.github.com/repos/baxterthehacker/public-repo/teams",
66        "hooks_url": "https://api.github.com/repos/baxterthehacker/public-repo/hooks",
67        "issue_events_url": "https://api.github.com/repos/baxterthehacker/public-repo/issues/events{/
68        "events_url": "https://api.github.com/repos/baxterthehacker/public-repo/events",
69        "assignees_url": "https://api.github.com/repos/baxterthehacker/public-repo/assignees{/user}",
70        "branches_url": "https://api.github.com/repos/baxterthehacker/public-repo/branches{/branch}",
71        "tags_url": "https://api.github.com/repos/baxterthehacker/public-repo/tags",
72        "blobs_url": "https://api.github.com/repos/baxterthehacker/public-repo/git/blobs{/sha}",
73        "git_tags_url": "https://api.github.com/repos/baxterthehacker/public-repo/git/tags{/sha}",
74        "git_refs_url": "https://api.github.com/repos/baxterthehacker/public-repo/git/refs{/sha}",
75        "trees_url": "https://api.github.com/repos/baxterthehacker/public-repo/git/trees{/sha}",
76        "statuses_url": "https://api.github.com/repos/baxterthehacker/public-repo/statuses/{sha}",
77        "languages_url": "https://api.github.com/repos/baxterthehacker/public-repo/languages",
78        "stargazers_url": "https://api.github.com/repos/baxterthehacker/public-repo/stargazers",
79        "contributors_url": "https://api.github.com/repos/baxterthehacker/public-repo/contributors",
80        "subscribers_url": "https://api.github.com/repos/baxterthehacker/public-repo/subscribers",
81        "subscription_url": "https://api.github.com/repos/baxterthehacker/public-repo/subscription",
82        "commits_url": "https://api.github.com/repos/baxterthehacker/public-repo/commits{/sha}",
83        "git_commits_url": "https://api.github.com/repos/baxterthehacker/public-repo/git/commits{/sha}
84        "comments_url": "https://api.github.com/repos/baxterthehacker/public-repo/comments{/number}",
85        "issue_comment_url": "https://api.github.com/repos/baxterthehacker/public-repo/issues/comments
86        "contents_url": "https://api.github.com/repos/baxterthehacker/public-repo/contents/{+path}",
```

```
 87        "compare_url": "https://api.github.com/repos/baxterthehacker/public-repo/compare/{base}...{hea
 88        "merges_url": "https://api.github.com/repos/baxterthehacker/public-repo/merges",
 89        "archive_url": "https://api.github.com/repos/baxterthehacker/public-repo/{archive_format}{/ref
 90        "downloads_url": "https://api.github.com/repos/baxterthehacker/public-repo/downloads",
 91        "issues_url": "https://api.github.com/repos/baxterthehacker/public-repo/issues{/number}",
 92        "pulls_url": "https://api.github.com/repos/baxterthehacker/public-repo/pulls{/number}",
 93        "milestones_url": "https://api.github.com/repos/baxterthehacker/public-repo/milestones{/number
 94        "notifications_url": "https://api.github.com/repos/baxterthehacker/public-repo/notifications{?
 95        "labels_url": "https://api.github.com/repos/baxterthehacker/public-repo/labels{/name}",
 96        "releases_url": "https://api.github.com/repos/baxterthehacker/public-repo/releases{/id}",
 97        "created_at": "2015-05-05T23:40:12Z",
 98        "updated_at": "2015-05-05T23:40:12Z",
 99        "pushed_at": "2015-05-05T23:40:27Z",
100        "git_url": "git://github.com/baxterthehacker/public-repo.git",
101        "ssh_url": "git@github.com:baxterthehacker/public-repo.git",
102        "clone_url": "https://github.com/baxterthehacker/public-repo.git",
103        "svn_url": "https://github.com/baxterthehacker/public-repo",
104        "homepage": null,
105        "size": 0,
106        "stargazers_count": 0,
107        "watchers_count": 0,
108        "language": null,
109        "has_issues": true,
110        "has_downloads": true,
111        "has_wiki": true,
112        "has_pages": true,
113        "forks_count": 0,
114        "mirror_url": null,
115        "open_issues_count": 2,
116        "forks": 0,
117        "open_issues": 2,
118        "watchers": 0,
119        "default_branch": "master"
120      },
121      "sender": {
122        "login": "baxterthehacker",
123        "id": 6752317,
124        "avatar_url": "https://avatars.githubusercontent.com/u/6752317?v=3",
125        "gravatar_id": "",
126        "url": "https://api.github.com/users/baxterthehacker",
127        "html_url": "https://github.com/baxterthehacker",
128        "followers_url": "https://api.github.com/users/baxterthehacker/followers",
129        "following_url": "https://api.github.com/users/baxterthehacker/following{/other_user}",
130        "gists_url": "https://api.github.com/users/baxterthehacker/gists{/gist_id}",
131        "starred_url": "https://api.github.com/users/baxterthehacker/starred{/owner}{/repo}",
132        "subscriptions_url": "https://api.github.com/users/baxterthehacker/subscriptions",
133        "organizations_url": "https://api.github.com/users/baxterthehacker/orgs",
134        "repos_url": "https://api.github.com/users/baxterthehacker/repos",
135        "events_url": "https://api.github.com/users/baxterthehacker/events{/privacy}",
136        "received_events_url": "https://api.github.com/users/baxterthehacker/received_events",
137        "type": "User",
138        "site_admin": false
139      }
140    }
```

其它事件的内容和格式，参考 (https://developer.github.com/v3/activity/events/types/)

注意： 有效负载上限为 `5 MB` 。 如果我们的事件产生一个更大的有效载荷， `webhook` 将不会被触发。 例如，如果同时推送了多个分支或标签，则可能会发生在创建事件上。 所以建议监控我们的有效负载大小以确保 `webhooks` 能够被触发。

请求 Header

对 `Webhook` 配置的 `URL` 端点发出的 `HTTP` 请求将包含几个特殊 `Header` 头：

Header	Description
`X-GitHub-Event`	触发本次请求的事件的名称。
`X-Hub-Signature`	HMAC 对有效负载的十六进制摘要，使用钩子的密钥作为密钥（如果已配置）。
`X-GitHub-Delivery`	本次请求的唯一 ID。

此外，请求的 `User-Agent` 将具有前缀 `GitHub-Hookshot/` 。

请求示例

```
 1   POST /payload HTTP/1.1
 2
 3   Host: localhost:4567
 4   X-Github-Delivery: 72d3162e-cc78-11e3-81ab-4c9367dc0958
 5   User-Agent: GitHub-Hookshot/044aadd
 6   Content-Type: application/json
 7   Content-Length: 6615
 8   X-GitHub-Event: issues
 9
10   {
11     "action": "opened",
12     "issue": {
13       "url": "https://api.github.com/repos/octocat/Hello-World/issues/1347",
14       "number": 1347,
15       ...
16     },
17     "repository" : {
18       "id": 1296269,
19       "full_name": "octocat/Hello-World",
20       "owner": {
21         "login": "octocat",
22         "id": 1,
23         ...
24       },
25       ...
26     },
27     "sender": {
28       "login": "octocat",
29       "id": 1,
30       ...
31     }
32   }
33
```

`Ping` 事件

当我们创建新的 `webhooks` 时，`Github` 会向我们配置的 `URL` 发送一个简单的 `ping` 事件，以检测我们配置的 `URL` 是否正确可用。 该事件未存储，因此无法通过 `Events API` 检索。 可以通过调用 `ping` 端点再次触发 `ping` 。

`Ping` 事件有效负载

键	值
zen	GitHub 产生的随机字符串
hook_id	触发 ping 的 webhook 的 ID
hook	webhook 配置

\# git   \# 版本控制

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