Migrating to GitHub Enterprise

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UNIVERSE23

Tips for migrations to GitHub Enterprise

GitHub Enterprise

GitHub Enterprise Server(GHES): on-premise

GitHub Enterprise Cloud (GHEC): SaaS

Migration paths

To **GitHub Enterprise Cloud** (including EMU)	
Self-serve	Services required
Azure DevOps Services (aka. Cloud)	GitLab
Bitbucket Data Center	
Bitbucket Server	
GitHub Enterprise Server	

To **GitHub Enterprise Server**	
Self-serve	Services required
GitHub Enterprise Cloud	Bitbucket Data Center
GitHub Enterprise Server	Bitbucket Server
	GitLab

GitHub Enterprise Importer

To **GitHub Enterprise Cloud** (including EMU)	
Self-serve	Services required
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Bitbucket Data Center	
Bitbucket Server	
GitHub Enterprise Server	

ghe-migrator

To **GitHub Enterprise Server**	
Self-serve	Services required
GitHub Enterprise Cloud	Bitbucket Data Center
GitHub Enterprise Server	Bitbucket Server
	GitLab

GitHub Enterprise Importer

To **GitHub Enterprise Cloud**
(including EMU)

- **GEI CLI** is an extension of GitHub CLI and open sourced
- (GraphQL API)
- Launched on June 12st, 2023

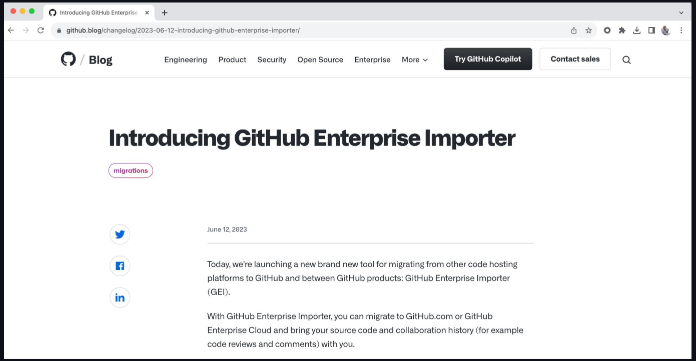
https://github.com/github/gh-gei

ghe-migrator

To **GitHub Enterprise Server**

- **ghe-migrator** command is contained in GitHub Enterprise Server
- Launched on August 15th, 2015 (GHES 2.3.0 or newer)

GitHub Enterprise Importer launched on June 12th but already well used.



Introducing GitHub Enterprise
github.blog/changelog/2023-06-12-introducing-github-enterprise-importer/
Blog
Engineering
Product
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Enterprise
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Introducing GitHub Enterprise Importer

migrations

June 12, 2023

Today, we're launching a new brand new tool for migrating from other code hosting platforms to GitHub and between GitHub products: GitHub Enterprise Importer (GEI).

With GitHub Enterprise Importer, you can migrate to GitHub.com or GitHub Enterprise Cloud and bring your source code and collaboration history (for example code reviews and comments) with you.

Customer repositories migrated

804,000

Customers runned migrations

1,207

https://github.blog/changelog/2023-06-12-introducing-github-enterprise-importer/

What data you can migrate

- Repositories
- Metadata
  (e.g. issues, pull requests)

What metadata you can migrate depends on your source/target environment.

To GHEC;
https://docs.github.com/en/enterprise-cloud@latest/migrations/using-github-enterprise-importer/understanding-github-enterprise-importer/migration-support-for-github-enterprise-importer

To GHES;
https://docs.github.com/en/enterprise-server@latest/migrations/using-ghe-migrator/about-ghe-migrator#migrated-data

Limitation on target

GitHub Enterprise Cloud

- Network
- 2GB per a commit
- 100MB size limit for a file

→ It's possible to increase the limitation temporarily for migrations.

GitHub Enterprise Server

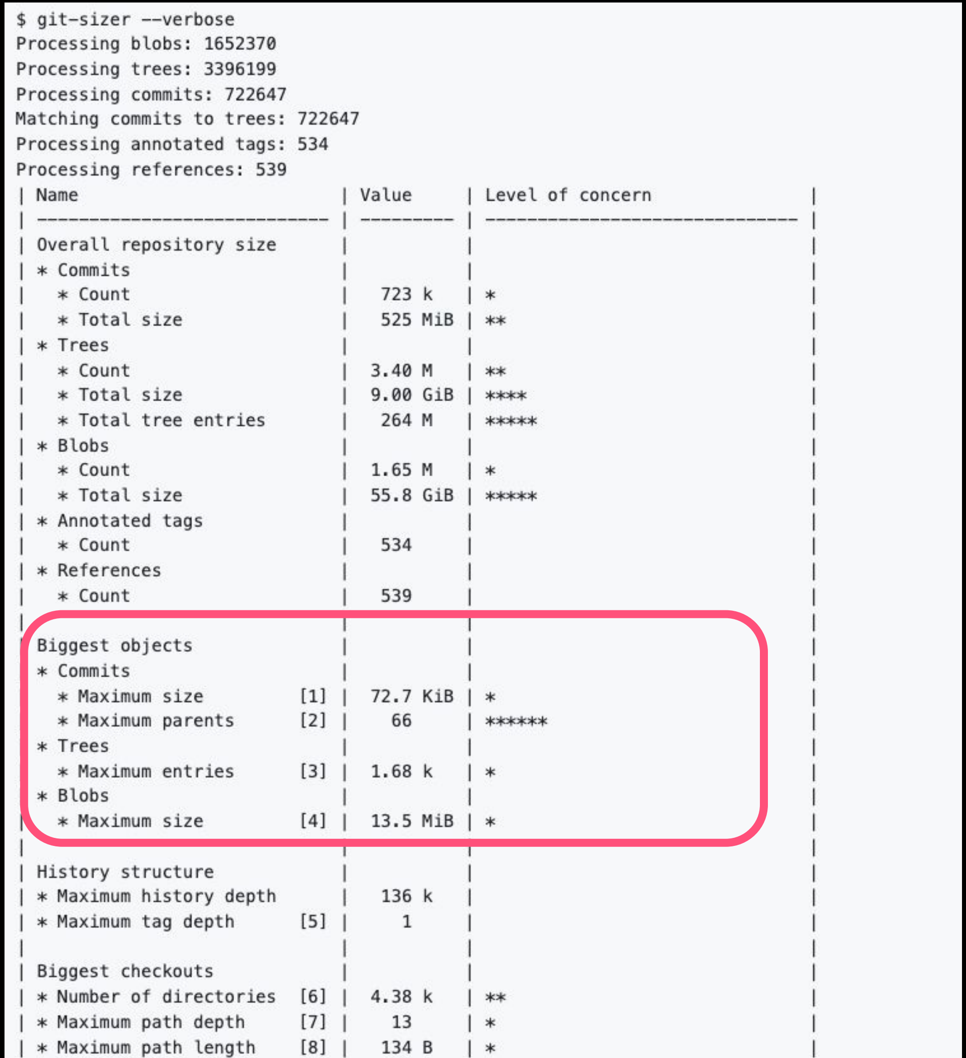
- Disk usage
- Network
- Workload
- Customized Size limit for a file (100MB by default)

How much data do you have?

Commit/File size limits don’t just apply to your repo as it is today - they also apply to its history:

- **100MB per file:** Run `git-sizer --verbose` on each repo and take a look at `Biggest objects -> Blobs -> Maximum size.`
- **2GB per commit:** Run `git-sizer --verbose` on each repo and take a look at `Biggest objects -> Commits -> Maximum size.`

https://github.com/github/git-sizer



```
$ git-sizer --verbose
Processing blobs: 1652370
Processing trees: 3396199
Processing commits: 722647
Matching commits to trees: 722647
Processing annotated tags: 534
Processing references: 539
| Name                         | Value     | Level of concern               |
| ---------------------------- | --------- | ------------------------------ |
| Overall repository size      |           |                                |
| * Commits                    |           |                                |
|   * Count                    |   723 k   | *                              |
|   * Total size               |   525 MiB | **                             |
| * Trees                      |           |                                |
|   * Count                    |  3.40 M   | **                             |
|   * Total size               |  9.00 GiB | ****                           |
|   * Total tree entries       |   264 M   | *****                          |
| * Blobs                      |           |                                |
|   * Count                    |  1.65 M   | *                              |
|   * Total size               |  55.8 GiB | *****                          |
| * Annotated tags             |           |                                |
|   * Count                    |   534     |                                |
| * References                 |           |                                |
|   * Count                    |   539     |                                |
|                              |           |                                |
| Biggest objects              |           |                                |
| * Commits                    |           |                                |
|   * Maximum size         [1] |  72.7 KiB | *                              |
|   * Maximum parents      [2] |    66     | ******                         |
| * Trees                      |           |                                |
|   * Maximum entries      [3] |  1.68 k   | *                              |
| * Blobs                      |           |                                |
|   * Maximum size         [4] |  13.5 MiB | *                              |
|                              |           |                                |
| History structure            |           |                                |
| * Maximum history depth      |   136 k   |                                |
| * Maximum tag depth      [5] |     1     |                                |
|                              |           |                                |
| Biggest checkouts            |           |                                |
| * Number of directories  [6] |  4.38 k   | **                             |
| * Maximum path depth     [7] |    13     | *                              |
| * Maximum path length    [8] |   134 B   | *                              |
```

Larger files than 100MB should be removed from a repository or moved to Git LFS:

- Removing larger file:
  ```
  git filter-repo --invert-paths --strip-blobs-bigger-than  100M
  ```
- Moving to Git LFS:
  ```
  git lfs migrate import –include=”*.png” –everything
  ```
  (Git LFS 2.2.0 or newer)

Tutorial:
https://github.com/git-lfs/git-lfs/wiki/Tutorial#migrating-existing-repository-data-to-lfs

How much data do you have?

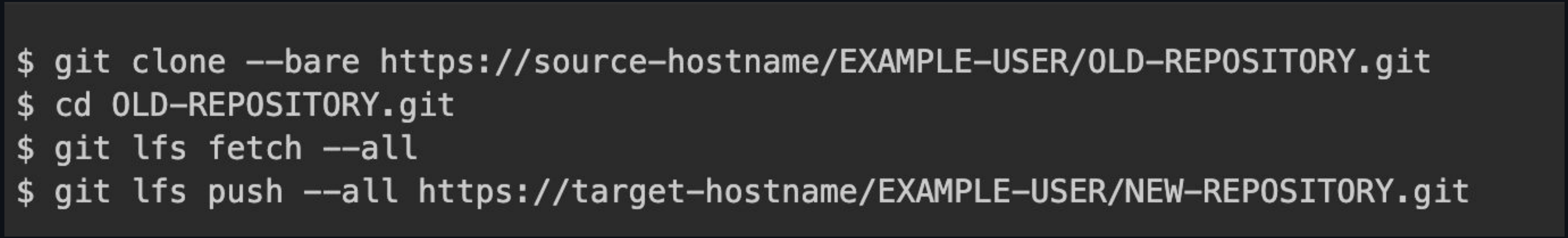
Checking in advance how much data your repository has should be helpful to plan your migrations:

- GitHub Enterprise Cloud or Enterprise Server:
  `gh repo-stats -o <org>`
- Azure DevOps:
  `gh ado2gh inventory-report`
- Bitbucket Server/Data Center:
  `gh bbs2gh inventory-report`

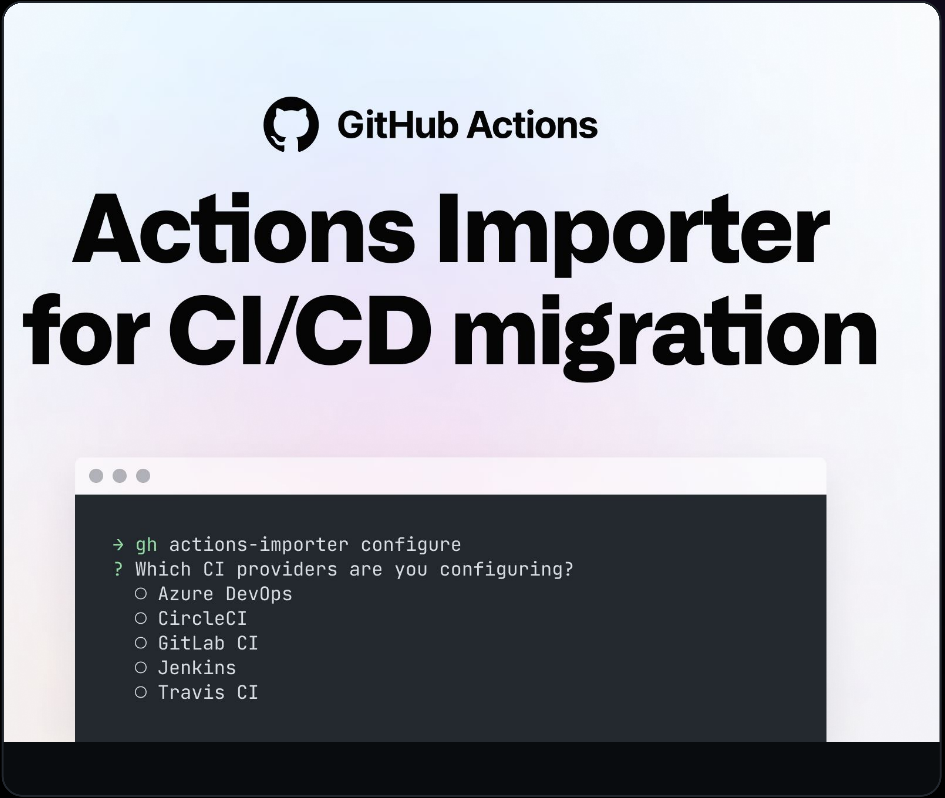
https://github.com/mona-actions/gh-repo-stats/

Post-migration

Migrating LFS objects



```
$ git clone --bare https://source-hostname/EXAMPLE-USER/OLD-REPOSITORY.git
$ cd OLD-REPOSITORY.git
$ git lfs fetch --all
$ git lfs push --all https://target-hostname/EXAMPLE-USER/NEW-REPOSITORY.git
```



GitHub Actions

Actions Importer for CI/CD migration

```
→ gh actions-importer configure
? Which CI providers are you configuring?
  ○ Azure DevOps
  ○ CircleCI
  ○ GitLab CI
  ○ Jenkins
  ○ Travis CI
```

GitHub Actions Importer

- ✅ Azure Pipelines
- ✅ Bamboo
- ✅ Bitbucket Pipelines
- ✅ CircleCI
- ✅ GitLab
- ✅ Jenkins
- ✅ Travis CI

GitHub Actions Importer

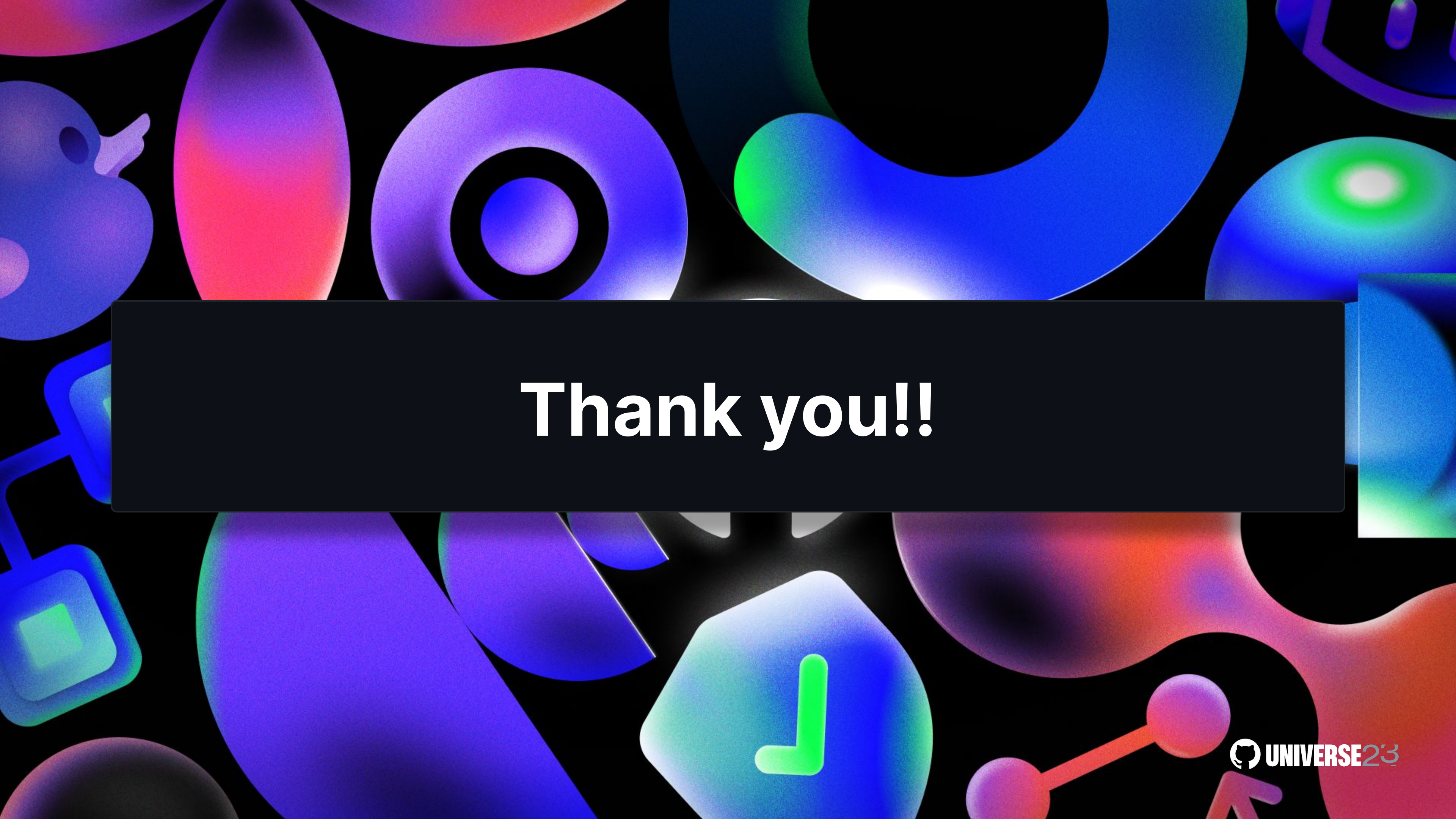
Open source repositories:

- **GitHub CLI extension**
  https://github.com/github/gh-actions-importer

- **Issue-ops templates**
  https://github.com/actions/importer-issue-ops

- **Self-guided exercises**
  https://github.com/actions/importer-labs

Thank you migration team



Thank you!!