

# [GraphQL] Convert monolithic query into a pattern of small queries

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## #15974

Merged

nckslvn merged 52 commits into master from nps-individual-queries on Feb 11

Conversation 21

Commits 52

Checks 4

Files +1,689 -174



nckslvn commented on Feb 8 • edited Member

### Description

This PR conducts an experiment to find out what the GraphQL performance looks like when each node fragment (page type) has its own self-contained `nodeQuery`, instead of combining all of them into the notorious million-line monolithic GraphQL query that we see sometimes taking close to 20 minutes.

Note that these changes are backwards-compatible, meaning that the preview server, the original monolithic GraphQL query, transformers, etc. all continue to function the same way.

Ultimately, what I did here was -

- Go through `GetAllPages.graphql.js` to find each type of top-level node fragment we are using.
- Open each file representing a node fragment. Change its module to export the original plain fragment for backwards-compatibility, and a self-contained `nodeQuery` for this experiment. Each node fragment relied on a set of global paragraph fragments that normally the node fragment has no direct reference to, so I had to also import the paragraph fragments file and add those into the self-contained `nodeQuery` as well.
- Write a new method onto `build/drupal/api.js` that does the "individualized" version of the GraphQL query, where it executes in parallel all of the `nodeQuery` s.
- Call this new method from `metalsmith-drupal` when build type isn't prod.

### Reviewers

- va-vfs-bot
- mpelzsherman
- brangi
- theodur
- kelsonic

### Assignees

No one—assign yourself

### Labels

None yet

### Projects

None yet

### Milestone

No milestone

### Linked issues

Successfully merging this pull request may close these issues.

None yet

7 participants

## Testing done

Sometimes the Drupal GraphQL API (both monolithic and individualized) is "hot" and will serve the entire response in seconds. Seriously, sometimes like 3 seconds. This is likely when Drupal's cache is ready and the content unchanged. The case we are worried about though is when the cache is cold, which was kinda tough to replicate. Here's an example though, where it appears to shave off **12 minutes** .

The output is kind of verbose, but obviously we can wrap it with the `verbose` build arg. It's useful to see which specific queries are the most expensive. For instance, the `nodeQuery` to get all VA Forms has a lot of nodes (almost 500) and takes almost 3 minutes on its own, which means it is sometimes the bottleneck. We might be able to make this more efficient by splitting it into two queries, with one taking advantage of Drupal's GraphQL cache.

These result are taken from <http://jenkins.vfs.va.gov/blue/organizations/jenkins/testing%2Fvets-website/detail/nps-individual-queries/20/pipeline/100>.

The "Multiple queries" ran on the vagovstaging build whereas the monolithic query ran on the vagovprod build. Both use Drupal's prod environment.

- ▶ Multiple queries - finishes at 3 minutes, 2 seconds
- ▶ Monolithic query: 14 minutes, 48 seconds

Test this locally but pulling the branch and running `yarn build:content --pull-drupal` .

## Acceptance criteria

- ☒ Peak GraphQL response times are drastically reduced

## Definition of done

- ☒ Events are logged appropriately
- ☒ Documentation has been updated, if applicable
- ☒ A link has been provided to the originating GitHub issue (or connected to it via ZenHub)
- ☒ No sensitive information (i.e. PII/credentials/internal URLs/etc.) is captured in logging, hardcoded, or specs



1



1



1

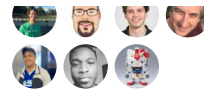





















































**nckslvn** added 31 commits on Feb 5




Begin pattern for separate nodeQuery

28bd8d7




 	Add landing page, health care region page	5e9a4e1
 	Add bio page; fix health care region page	✗ 53c3c7c
 	parallelize the requests	✗ 3e4da4c
 	add office	1354da3
 	Add health care local facility	5408aea
 	add services listing	✗ 7dddef6
 	add news stories	1297990
 	add press release page	23f0e63
 	add press release listing	a193a05
 	add event listing pages	15045fb
 	add story listing, event	✗ 1e3c592
 	add location lists and leader lists	✗ dbbe040
 	add GetNodeVamcOperatingStatusAndAlerts	✗ 5212582
 	add publication GetNodePublicationListingPages, GetNodeHealthCareRegi... 	✗ 45a9760
 	Add the non-node queries	6de7ae7
 	fail on graphql errors	516880f
 	Add NodeQA and fix components	74e9e46
 	Add multiple faq	✗ fbc3b9c
 	add step by step	✗ 0b430f9
 	Add GetNodeMediaListImages	6463ddb
 	Add GetNodeChecklist	d50306e
 	add GetNodeMediaListVideos	051d591
 	add GetNodeSupportResourcesDetailPage	08f91f2
 	Add GetNodeBasicLandingPage	b572e36
 	Add GetCampaignLandingPages	abc01a1
	update health_care_region_page filter	b3c7541
	add to rest of build	✗ c388c0a
	remove types	d447ce7
	Merge remote-tracking branch 'origin/master' into nps-individual- queries	✗ ac26f5f

35 hidden items  
[Load more...](#)

 **va-vfs-bot** temporarily deployed to master/nps-individual-queries on Feb 9 Inactive

 **nckslvn** requested review from **mpelzsherman** and **department-of-veterans-affairs/vsa-public-websites-frontend** on Feb 9



 **kelsonic** approved these changes on behalf of **department-of-veterans-affairs/vsa-public-websites-frontend** on Feb 9

[View changes](#)

**kelsonic** left a comment • edited ▾

Member

LGTM! 🎉 Thank you SO much for doing this!! 🙏 Will this affect how we write our graphql fragments in the future?




**nckslvn** commented on Feb 9

Member

Author

@**kelsonic** it will but there is already a pattern set up so that we can follow pretty easily.  
`src/site/stages/build/drupal/graphql/faqMultipleQa.graphql.js` is a good example of a simple query that also includes some shared paragraph fragments



 **va-vfs-bot** temporarily deployed to master/nps-individual-queries on Feb 9 Inactive



 **mpelzsherman** reviewed on Feb 9

[View changes](#)

`src/site/stages/build/drupal/graphql/paragraph-fragments/staffProfile.paragraph.graphql.js`

...	...	@@ -35,7 +35,7 @@ module.exports = `
35	35	alt
36	36	title
37	37	url
38	-	derivative(style: 1
	38	+ derivative(style: 1



**mpelzsherman** on Feb 9 Member

Curious why this change was needed?



**nckslivn** on Feb 9 Author Member

Using `_1_1_SQUARE_MEDIUM_THUMBNAIL` was reported as a GraphQL error and was relying on `src/site/utilities/stringHelpers.js` to turn it into `_11SQUAREMEDIUMTHUMBNAIL`. Instead of using the `stringHelper`, I just changed the value, because I can't find any context for why it was like that. Asking the CMS folks if they have any idea,

<https://dsva.slack.com/archives/CDHBKAL9W/p1612907370100500>



**nckslivn** on Feb 9 Author Member

Found it...it's safe to just make this change. The string-helpers that did the replacement before is just leftover complexity from a CMS feature flag, [7b54b49 #diff-78d2ba7081dd26ac2a8a81b3bc6c0c80461f62412580c370dff8564362e33ee4R71](#).



**nckslivn** on Feb 11 Author Member

I wrote a ticket to remove this old code, [department-of-veterans-affairs/va.gov-team#19722](#)



Reply...

Resolve conversation



**mpelzsherman** approved these changes on Feb 9

[View changes](#)



**brangi** self-requested a review on Feb 9



**brangi** approved these changes on Feb 9

[View changes](#)



**nckslvn** added 3 commits on Feb 10



**Issue a count query to generate pagination dynamically** a1cdc87



**start index at 1** 08a8676



**fix some bugs with pagination** ✖ 24674e9



**va-vfs-bot** temporarily deployed to master/nps-individual-queries on Feb 10 Inactive



**nckslvn** changed the title ~~[GraphQL] Experiment with using multiple node queries~~ **[GraphQL] Break apart monolithic GraphQL query into a pattern of small GraphQL queries** on Feb 10



**nckslvn** changed the title ~~[GraphQL] Break apart monolithic GraphQL query into a pattern of small GraphQL queries~~ **[GraphQL] Break apart monolithic query into a pattern of small queries** on Feb 10



**nckslvn** changed the title ~~[GraphQL] Break apart monolithic query into a pattern of small queries~~ **[GraphQL] Convert monolithic query into a pattern of small queries** on Feb 10



**kelsonic** commented on Feb 11

Member

@department-of-veterans-affairs/frontend-review-group  
could we get a PR review when you have time please? 😊

👁️ 1



**theodur** approved these changes on behalf of **department-of-veterans-affairs/frontend-review-group** on Feb 11

[View changes](#)

**theodur** left a comment

Member







LGTM



**nckslvn** added 2 commits on Feb 11



**Make create function break** ✖ 20-2341

-   merge remote-tracking branch 'origin/master' into nps-individual-queries  e8a0211
-   strengthen the megamenu safety check  f713f36



nckslvn reviewed on Feb 11

[View changes](#)

src/site/stages/build/drupal/menus.js

269	269	// eslint-disable-next-line no-c
270		- console.warn('formatHeaderData h
271		- return null;
	270	+ throw new Error('formatHeaderDat



nckslvn on Feb 11

Author

Member

I made this check stronger because I just can't imagine a case where it is acceptable for a build to report success when the MegaMenu is actually failing to build.



Reply...

Resolve conversation



va-vfs-bot deployed to master/nps-individual-queries on Feb 11

[View deployment](#)



nckslvn merged commit ef0f068 into master on Feb 11  
4 of 5 checks passed

[View details](#)

[Revert](#)



nckslvn deleted the nps-individual-queries branch on Feb 11

[Restore branch](#)



**nckslvn** added a commit that referenced this pull request on Feb 11



Revert "[GraphQL] Convert monolithic query into a pattern of small qu... 7939583 ...



**nckslvn** mentioned this pull request on Feb 11

**Revert "[GraphQL] Convert monolithic query into a pattern of small qu...**

🔒 Closed

#16027

📋 0 of 4 tasks complete



**k80bowman** mentioned this pull request 25 days ago

**Discovery on Improving CMS Export Build Times** department-of-veterans-affairs/va.gov-team#19612

🔒 Closed