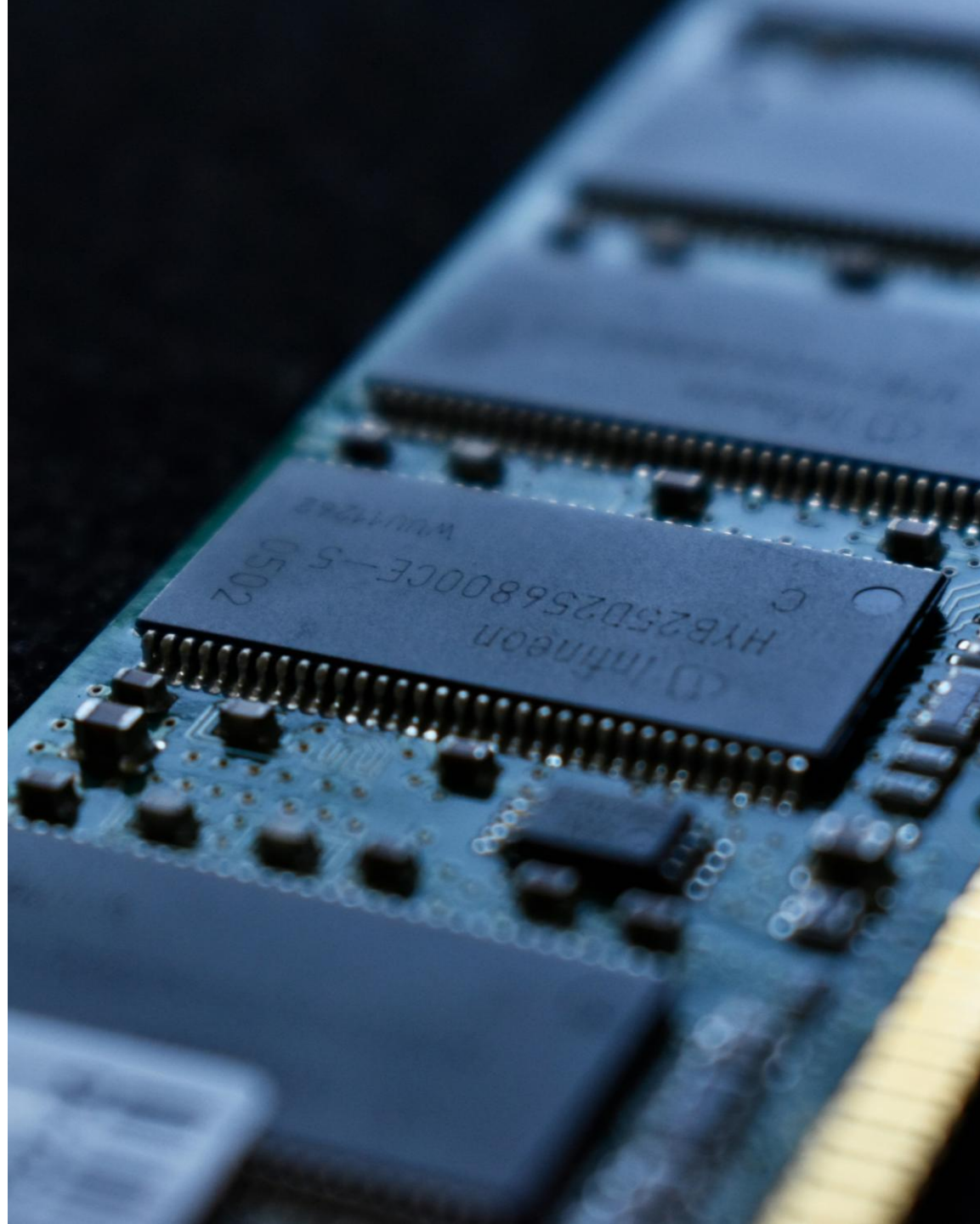


# Hybrid Cache changes everything



- Umbraco's new cache for content and media
- Introduced with .NET 9 in Umbraco 15
- Impact for developers?
- Slides will be shared





umbraco  
MVP 2023

# Markus Johansson

@markusjoha







Content

Media

Settings

Packages

Users

Members

Forms

Content

...

Welcome

Getting Started

Redirect URL Management

Home

Products

People

About Us

About this Starter Kit

Blog

Contact

Recycle Bin

Recent activities

Shows recent activities from all users in the back office.

June 16, 2020 11:53 AM

Admin saved and published [About this Starter Kit](#).

June 10, 2020 5:48 PM

Markus Johansson saved and scheduled [Contact](#) for publishing at June 10, 2020 5:48 PM.

June 10, 2020 5:26 PM

Markus Johansson saved and published [Home](#).

June 10, 2020 5:20 PM

Markus Johansson saved and published [About Us](#).

June 10, 2020 3:57 PM

Markus Johansson saved and published [This will be great](#).

June 10, 2020 3:57 PM

Markus Johansson saved and published [Another one](#).

June 10, 2020 1:34 PM

Markus Johansson moved [Todo list for the Starter Kit](#) to [recycle bin](#).

June 8, 2020 10:04 PM

Admin saved and published [My Blog Post](#).

June 8, 2020 10:04 PM

Unpublished content

Shows unpublished content that has not been scheduled for publish.

0

Your recent activity

Shows your own recent activities

June 16, 2020 11:53 AM

Saved and published [About this Starter Kit](#).

June 9, 2020 5:43 PM

Saved and published [Home](#).

June 8, 2020 10:04 PM

Saved and published [Contact](#).

June 8, 2020 10:04 PM

Saved and published [This will be great](#).

June 8, 2020 10:04 PM

Saved and published [Another one](#).

June 8, 2020 10:04 PM

Saved and published [My Blog Post](#).

June 8, 2020 10:04 PM

Saved and published [Blog](#).

June 8, 2020 10:04 PM

Saved and published [Todo list for the Starter Kit](#).

June 8, 2020 10:04 PM

Saved and published [About Us](#).

23

Published content nodes

1

Nodes in recycle bin

0

Members on website

0

New members last week



## The Dashboard



Nice content dashboard, shows a short summary of recent events inside a site like recent changes.



ContentMediaSettingsPackagesUsersMembersTranslationE-mail

Newsletter Studio

Create new Campaign

Unicorn Inc

Transactional

Double Opt In Confirmation

Unicorn Inc

Campaigns

Transactional

Activities

Templates

Contacts

Settings

Test Company Inc

Administration

Double Opt In Confirmation

ActivitiesSettings

Total6logged in total

Last week0logged last 7 days

Last month0logged last 30 days

Filter by e-mail or name

Status: All

| Status  | To | Subject                     | Sent              |
|---------|----|-----------------------------|-------------------|
| Sent    |    | Please Confirm Subscription | 11/27/2024, 23:46 |
| Clicked |    | Please Confirm Subscription | 11/27/2024, 23:32 |
| Sent    |    | Please Confirm Subscription | 11/27/2024, 21:56 |
| Clicked |    | Please Confirm Subscription | 2/13/2024, 23:07  |
| Sent    |    | Please Confirm Subscription | 10/1/2023, 11:00  |
| Clicked |    | Please Confirm Subscription | 12/8/2021, 00:29  |

CancelSave

CloseSave and closeSave





# Cookie Tractor





VOLVO

STARBREEZE  
ENTERTAINMENT

SUPPORT

NEBULA

CREATORS

MERCH

INVESTOR RELATIONS

Home

About

Our Work

Careers

News

Contact

# The Undiscovered Leader of Heisting Games



## Cookie settings



Starbreeze Entertainment and our partners save information on your device to offer a customized experience, enable visitor statistics, and support personalized marketing. You decide which types of cookies you accept in addition to the necessary ones needed for the website to work.

Accept all

Only necessary

Visitor statistics ☐

Marketing ☐

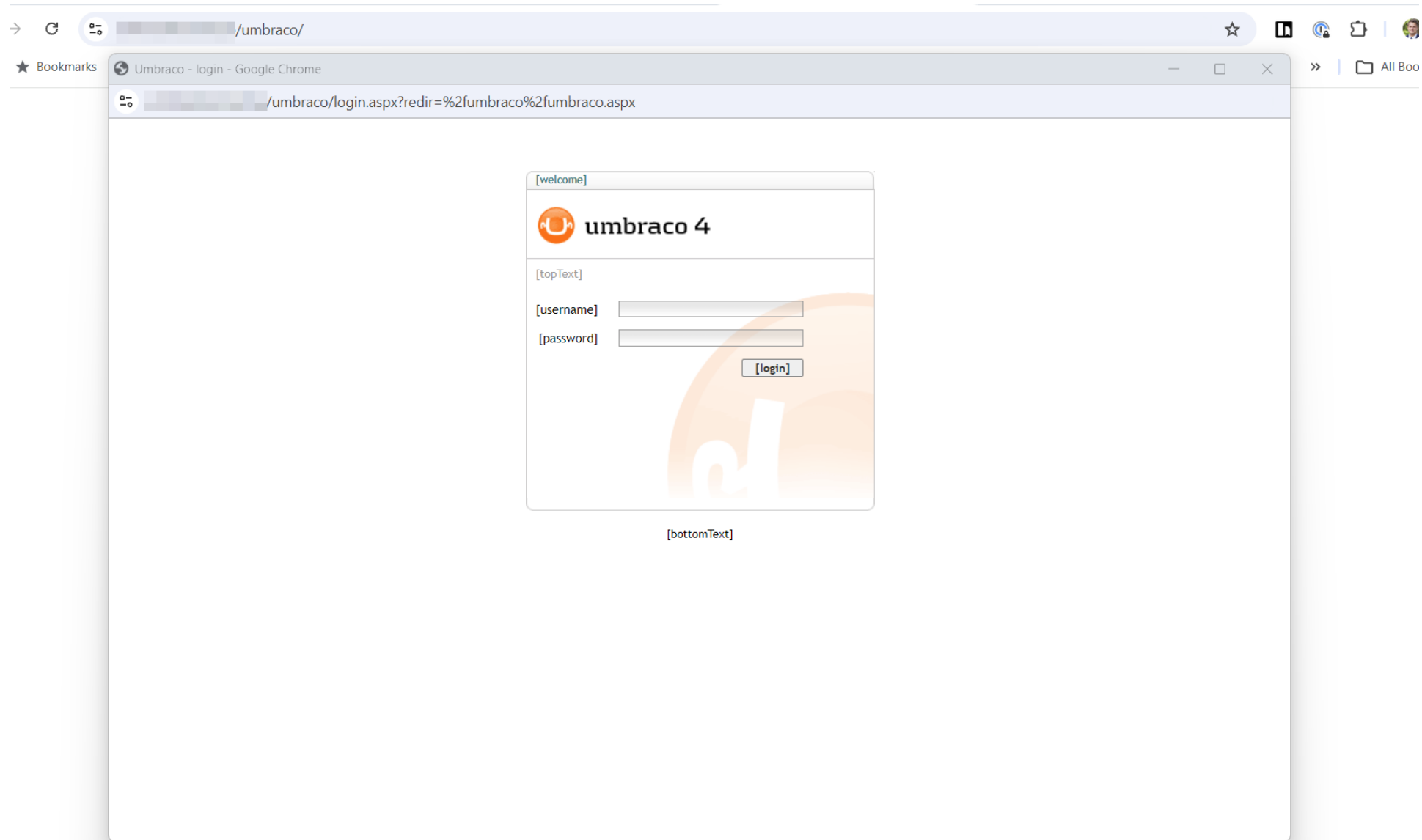
► Read more about our cookies

PAYDAY® 3

READ MORE







# Nikolaj Geisle

- Thank you!
- Real insights
- Gossip



# Hybrid what?





Luke Hook | Gotta Cache'em All | Codegarden 2025



Umbraco HQ  
2.58k subscribers

Subscribe

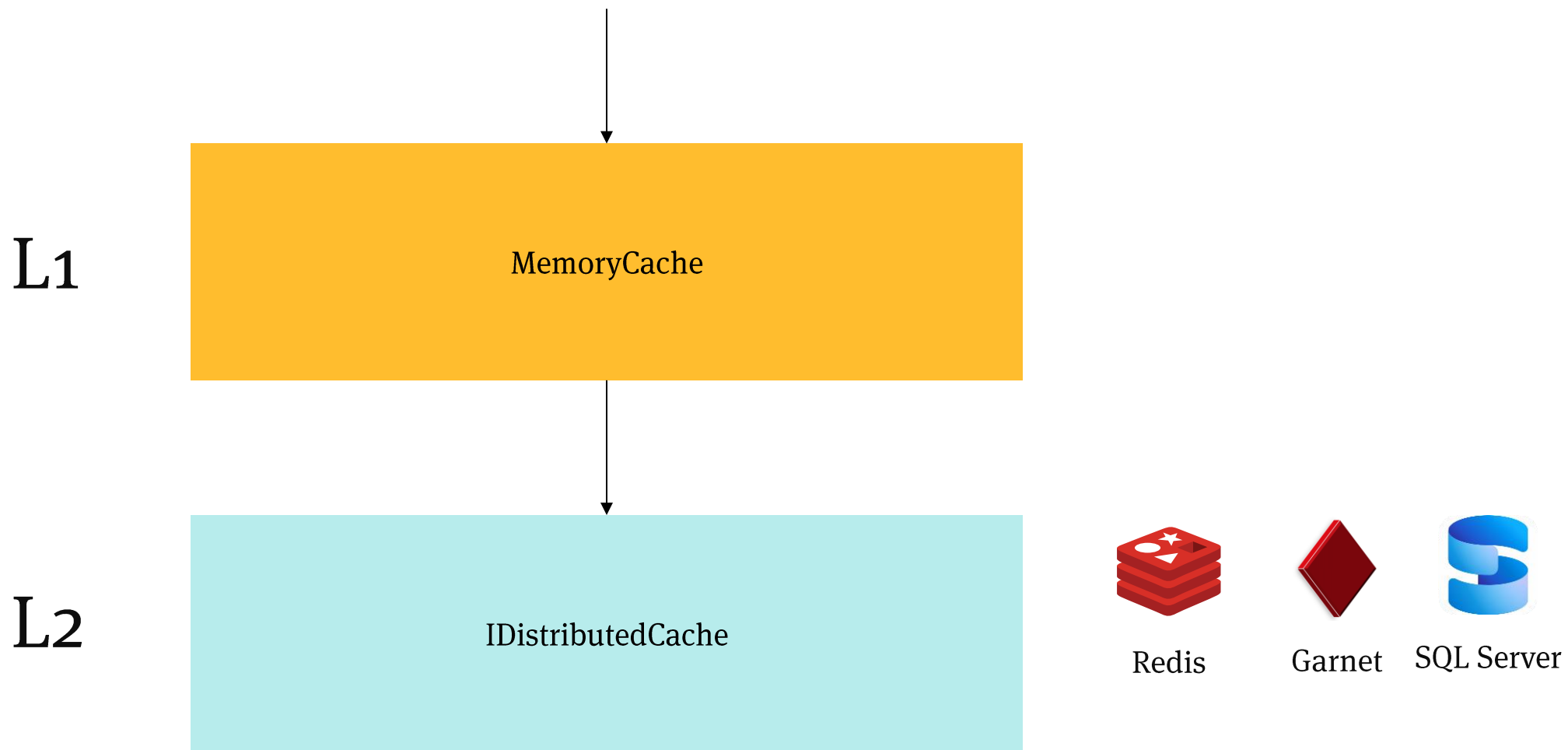


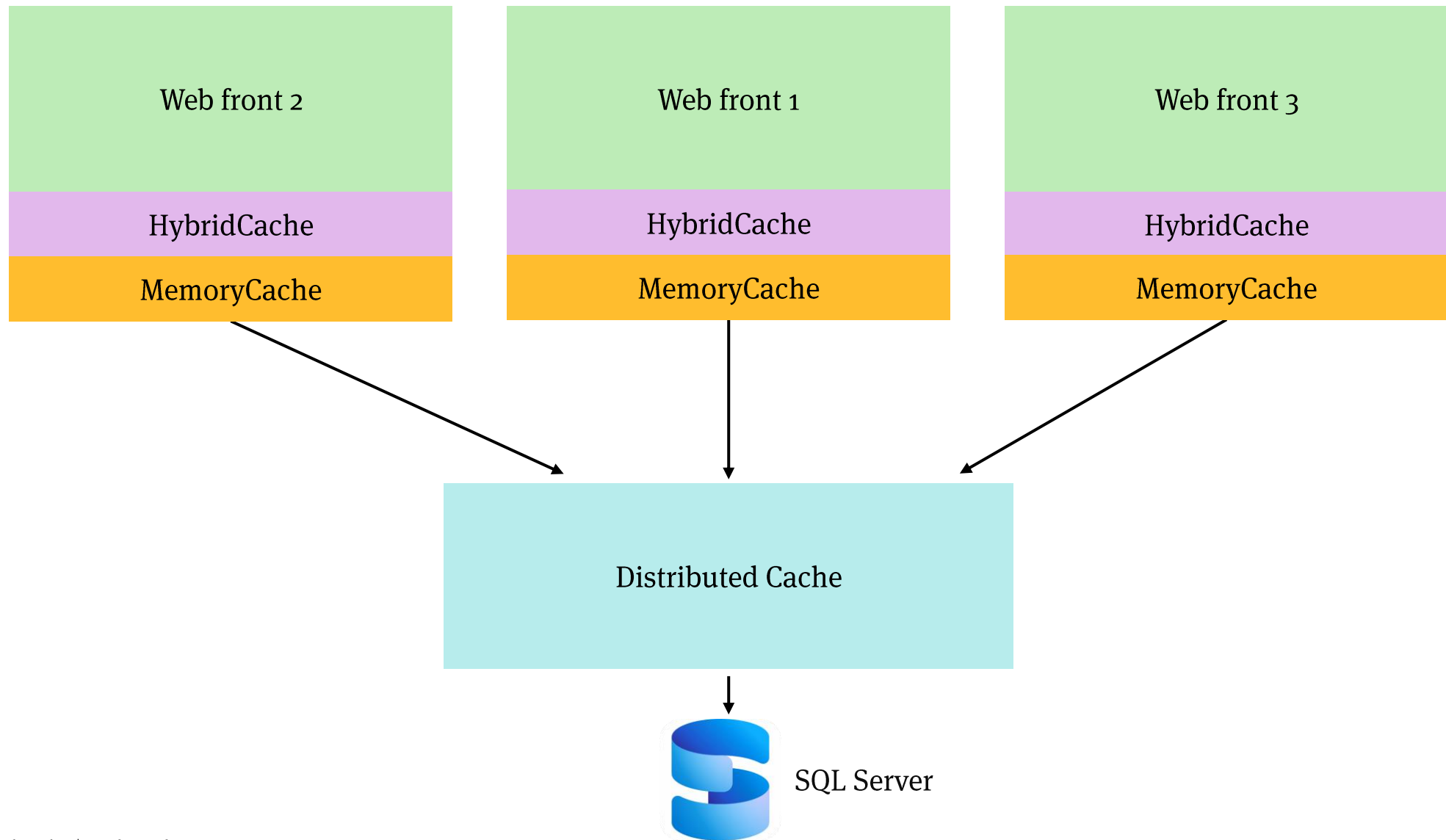
Markus Johansson | @markusjoha | markus@obviuse.se



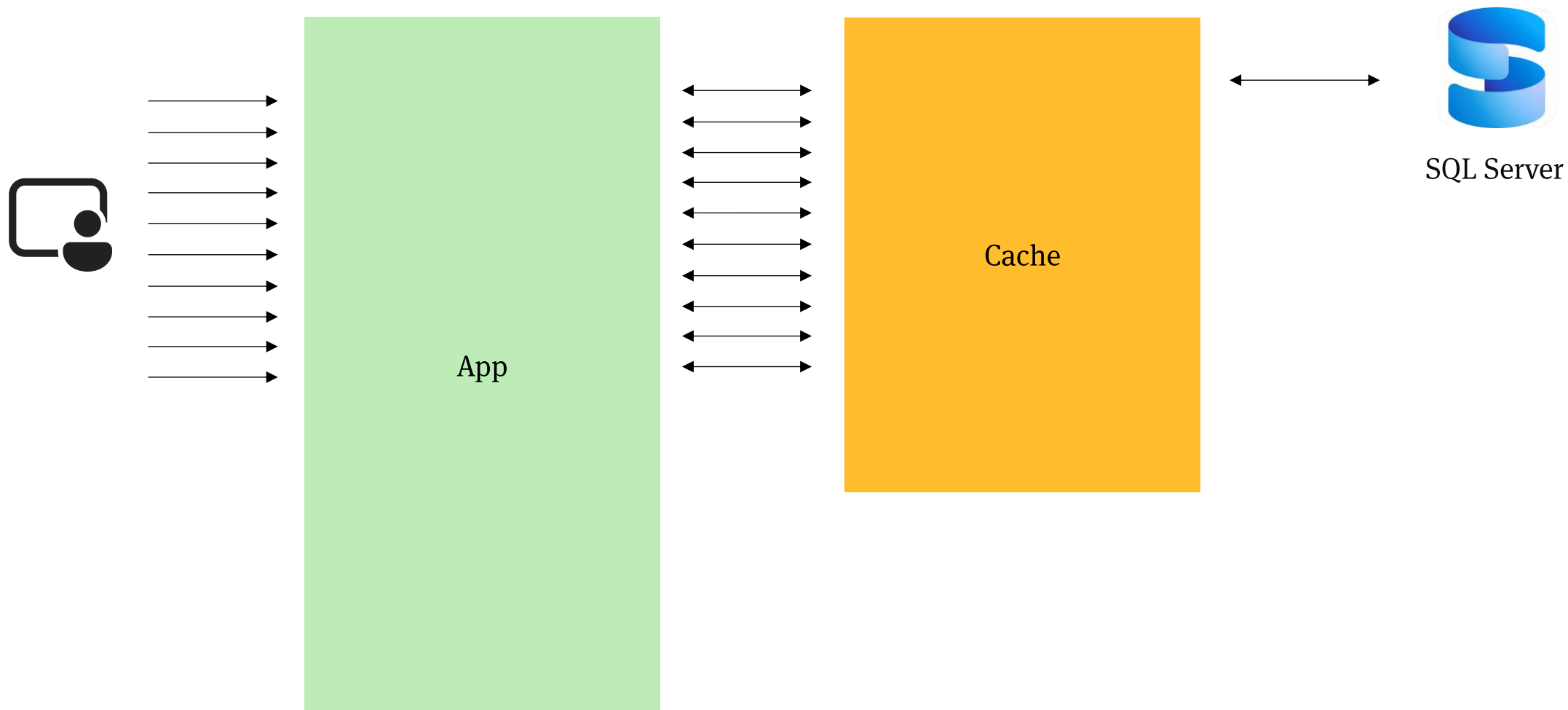
# Microsoft HybridCache

- Package from Microsoft to make cache management easier.
- A hybrid between
  - MemoryCache (L1)
  - IDistributedCache (L2)
- Factory pattern to retrieve or create entries.
- Stampede protection





# Stampede protection





```
var item = await hybridCache.GetOrCreateAsync(  
    $"cache:{key}",  
    async result => await ExpensiveCallAsync(key)  
);
```



# What it means for Umbraco

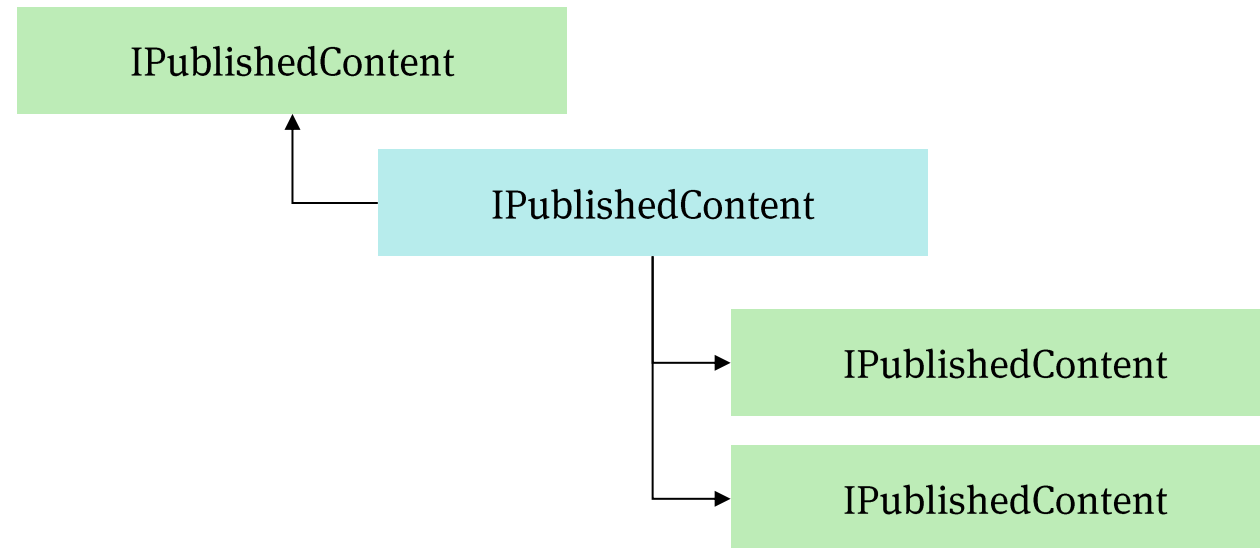
---

# IPublishedContent

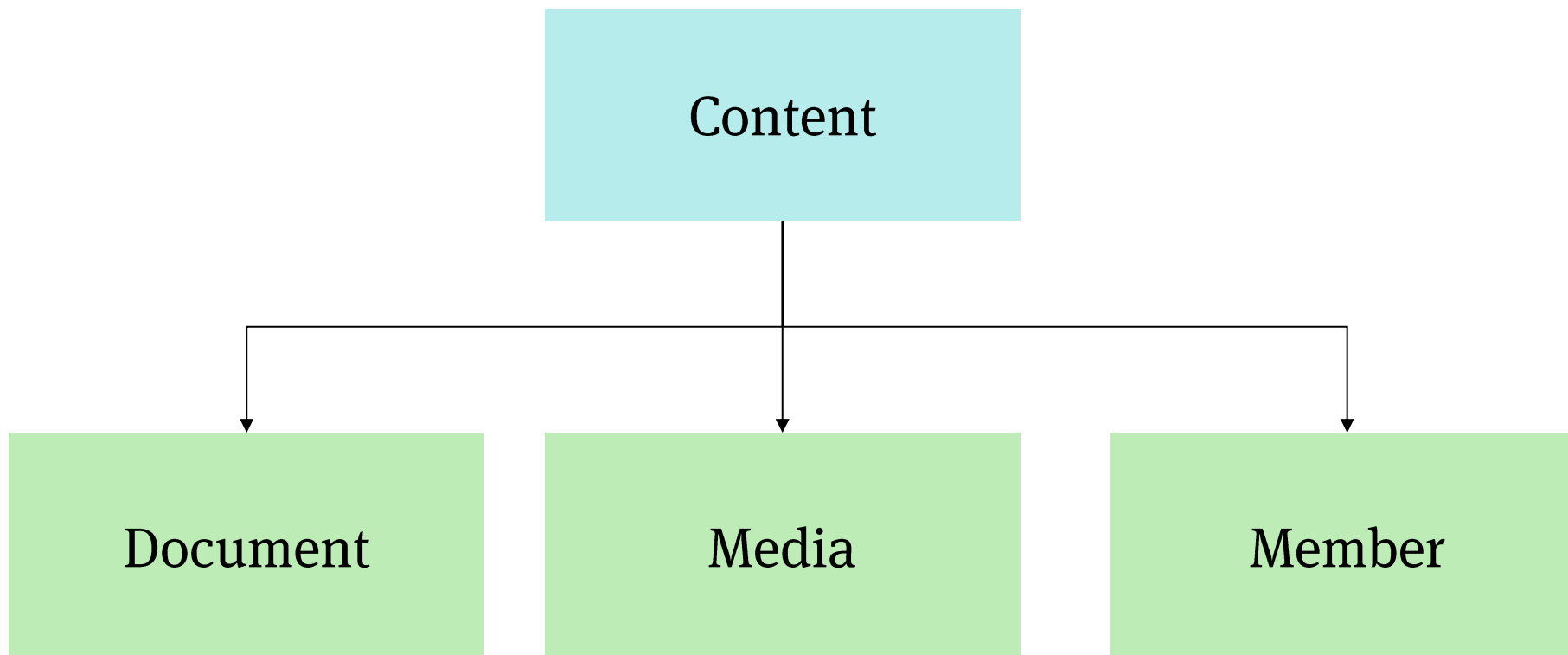
---

# IPublishedContent

- Representation of published document /media / member

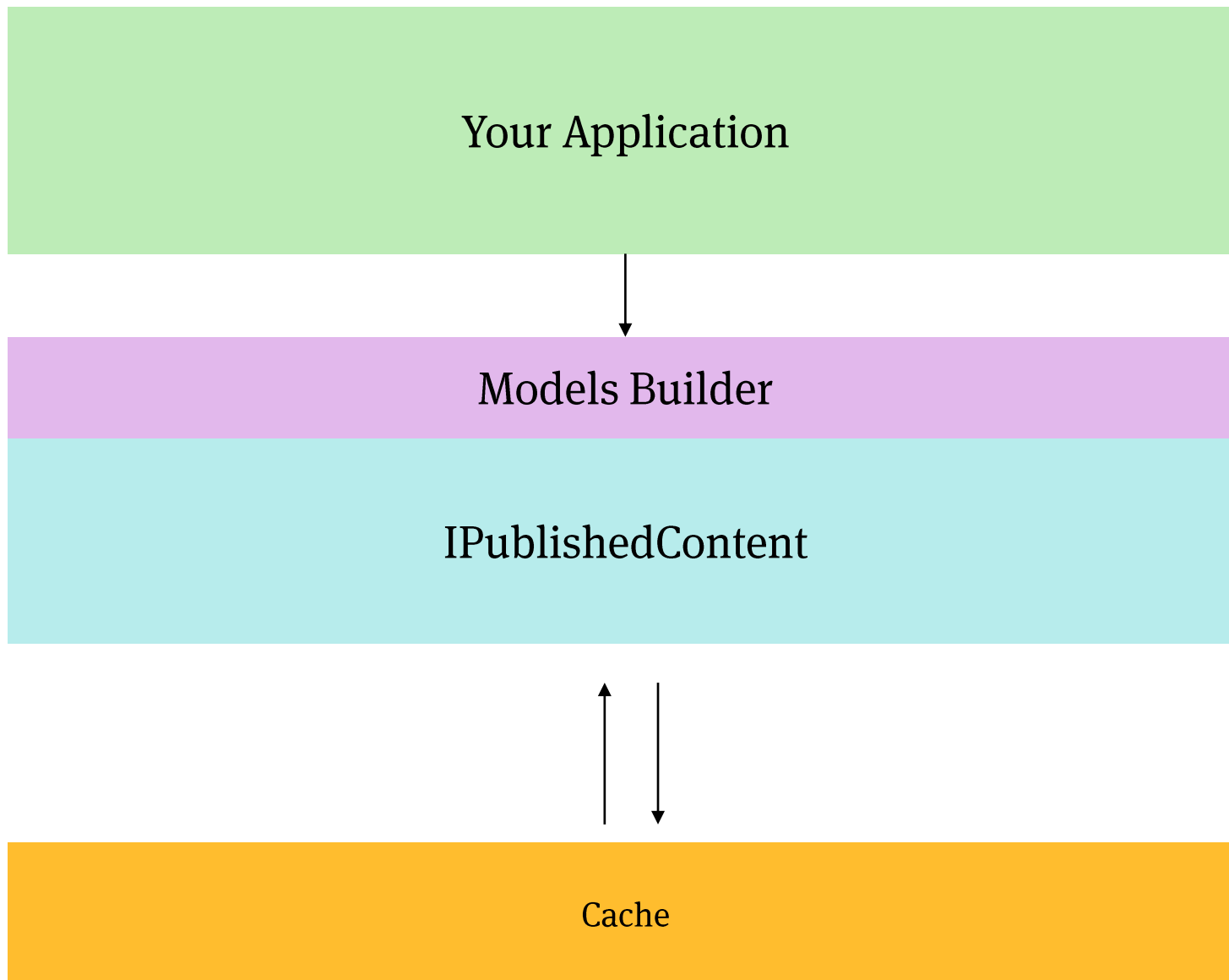


# Content



## IPublishedContent

- Name
- ContentType
- Writer
- Cultures
- Properties
  - Configured on a Content Type



IPublishedContent

Property



```
<html>
```

```
  <body>
```

```
    <h1>@Model.Value("heading")</h1>
```

```
  </body>
```

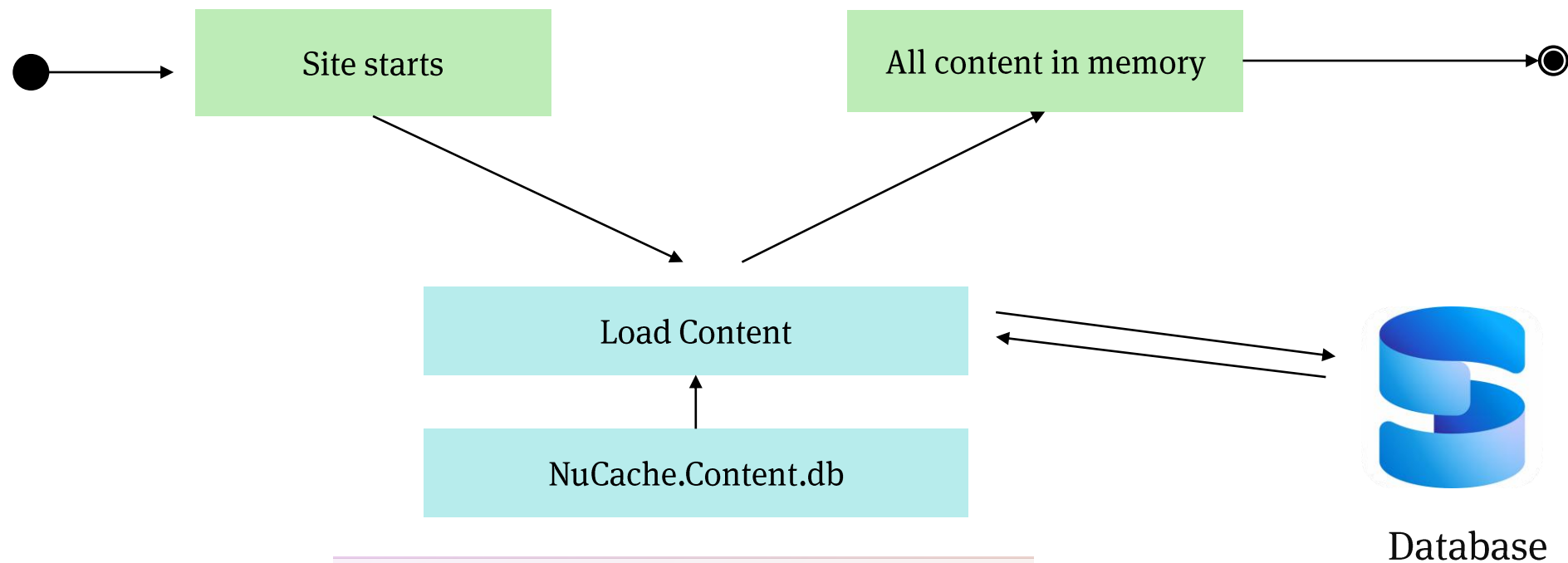
```
</html>
```



A vertical orange line on the left side of the slide.

# NuCache .

# NuCache Umbraco 8 - 14



...

umbraco

>

Data

>

TEMP

>

NuCache

Search NuCache

🔍

📁

🔗

🗑️

↕️ Sort

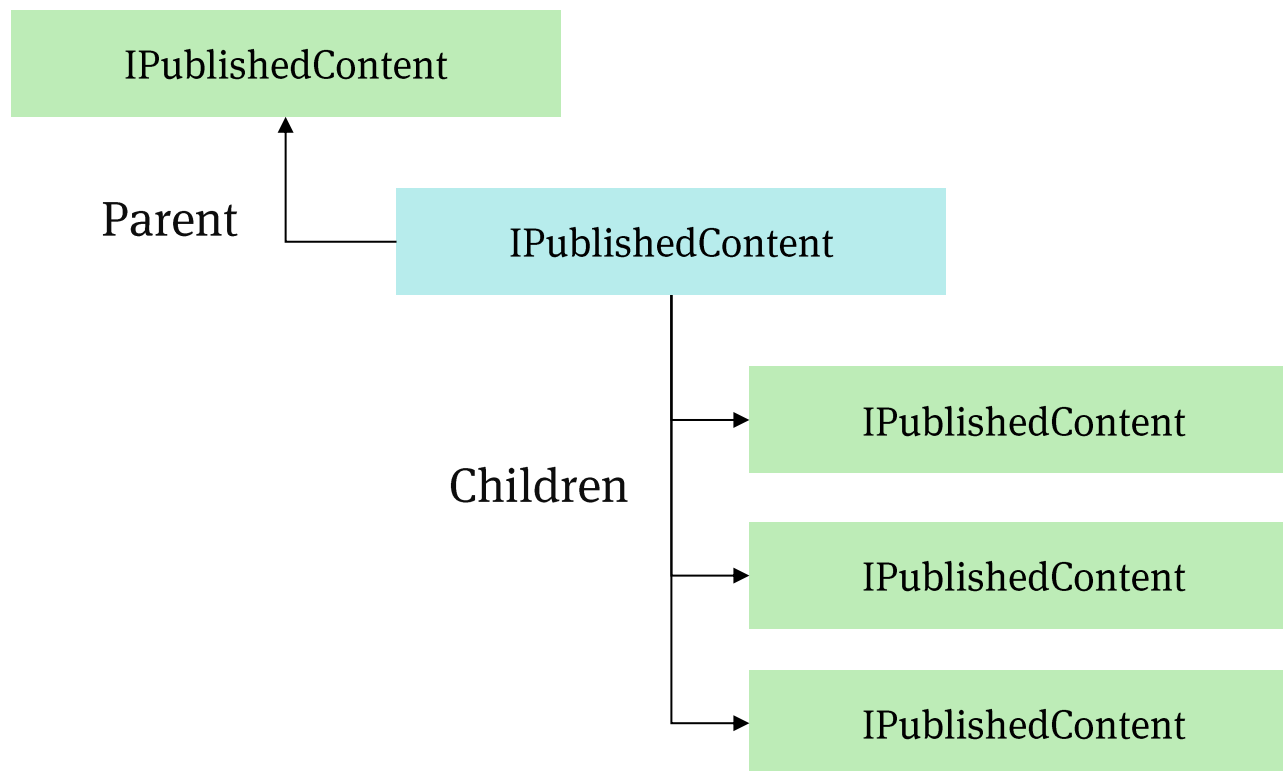
☰ View

⋮

🔍 Details

| Name                                                                                                     | Date modified    | Type           | Size      |  |
|----------------------------------------------------------------------------------------------------------|------------------|----------------|-----------|--|
|  NuCache.Content.db   | 2025-10-03 21:28 | Data Base File | 12 288 KB |  |
|  NuCache.Content.tlog | 2025-10-03 21:28 | TLOG File      | 0 KB      |  |
|  NuCache.Media.db     | 2025-10-03 21:25 | Data Base File | 4 096 KB  |  |
|  NuCache.Media.tlog   | 2025-10-03 21:25 | TLOG File      | 0 KB      |  |

# NuCache Umbraco 8 - 14



## Sounds great, right?

- Yes. For small and medium-sized websites
- Devastating for very large websites
- Devastating in resource-constrained environments

## For example

- 4k content per node
- 35 languages
- 250 000 pages
- 33 GB



# The real world

- 3 hours to startup 
- 100+ GB memory 
- Pods killed due to memory
- Startup lock issues like “NuCache.Content.db used by another process” 

Make PublishedSnapshotService more performant  
for NuCache & Examine taking a long time to  
build on large websites #13051

✓ Closed

Labels

state/needs-more-info

type/bug



jt3432 opened on Sep 22, 2022

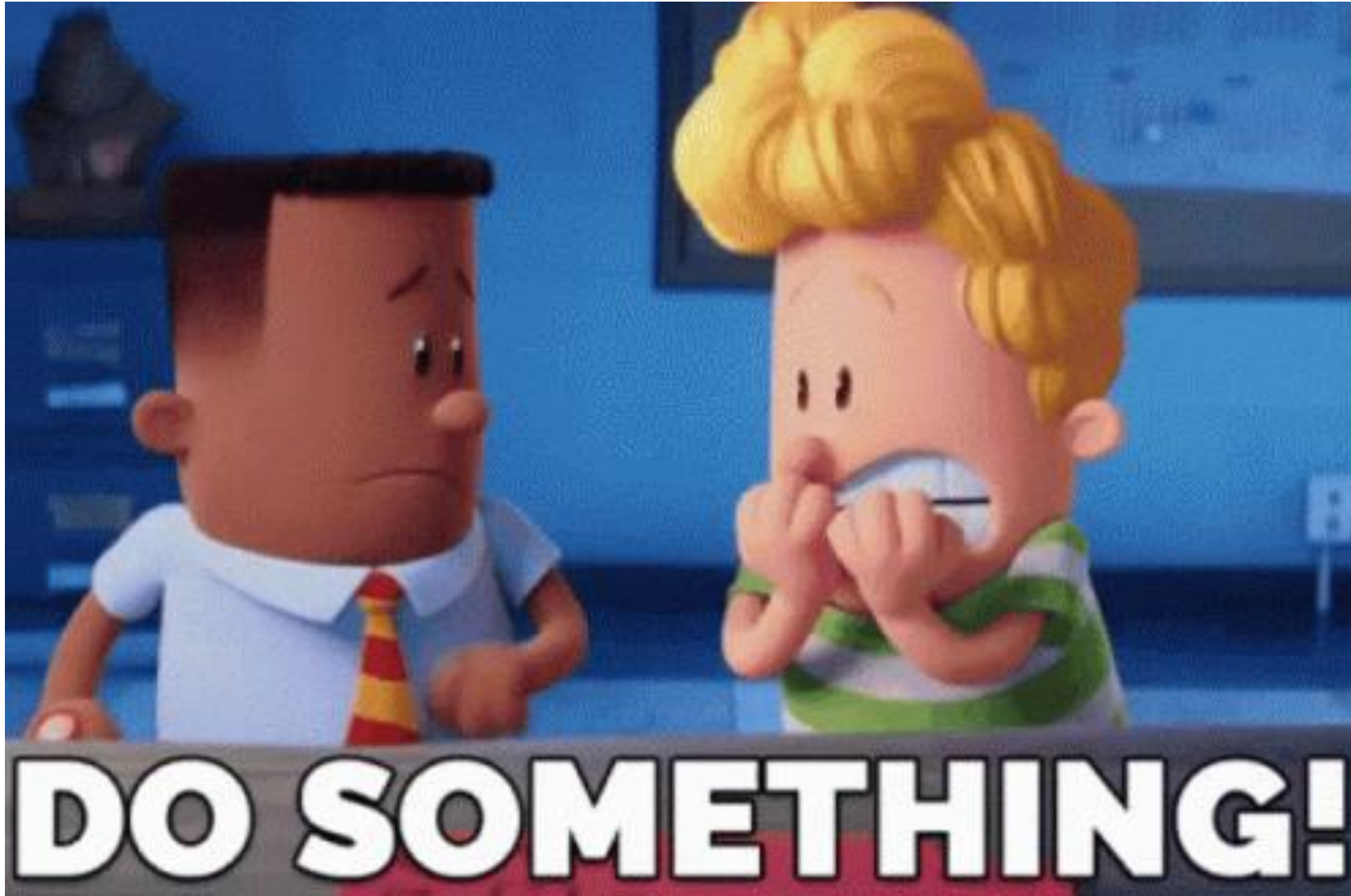
Last edited by jt3432

Which Umbraco version are you using? (Please write the *exact* version, example: 10.1.0)

10.2.0

## Bug summary

I have a large site that has ~200000 nodes. It taking about 30mins to start up on a local instance with a database installed locally as well. It is taking a bit over an hour with a VM and Azure SQL in the same region. This long startup time is causing issues in the Azure hosting environment. Azure App Services have a 230sec timeout that cannot be adjusted so using this method to host the site is failing epically. We are testing with hosting the site in a Linux VM (for cost reasons) but that is also proving to be a bit of a challenge. We suspect that even with a MS SQL database in the same azure region the latency is still too much during a fresh startup. Setting EnvironmentTemp help on sequential deployments.





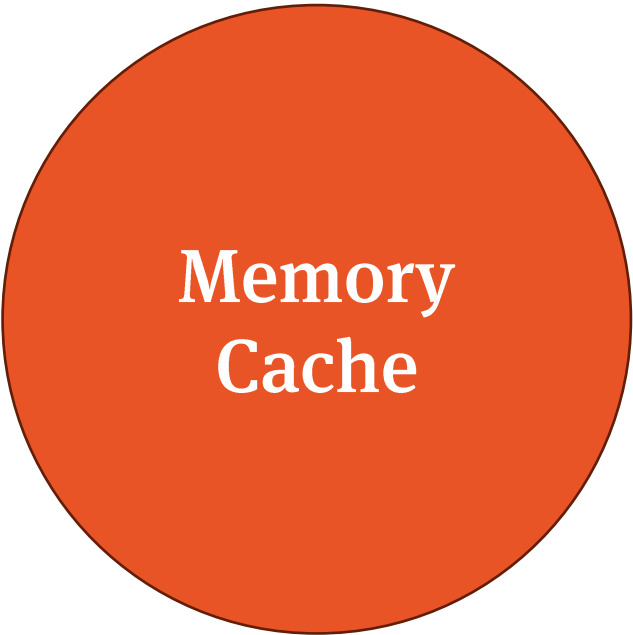




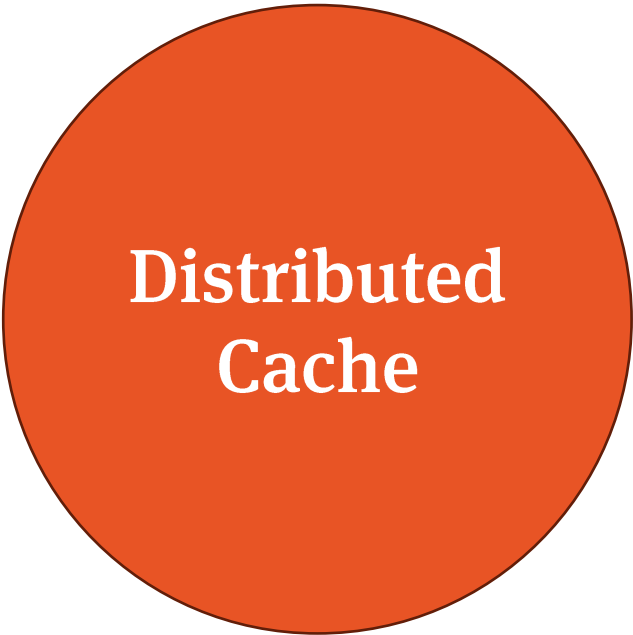
# Splitting the problem

- Routing
  - Navigation
  - Always in memory
  - Fast
- Content
  - When needed
  - Hot / Cold
  - Distributed cache

# Splitting the problem

A large orange circle representing a memory cache.

Memory  
Cache

A large orange circle representing a distributed cache.

Distributed  
Cache

# HybridCache .

# “The best code is no code at all”

Jeff Atwood,  
Co-founder Stack Overflow and Discord



## Elevator pitch for HybridCache

- Only parts of the content are kept in memory
- Lower memory usage
- Faster startup
- Hot / Cold content. Pages that are rarely accessed can be released from memory.

# HybridCache Umbraco 15+

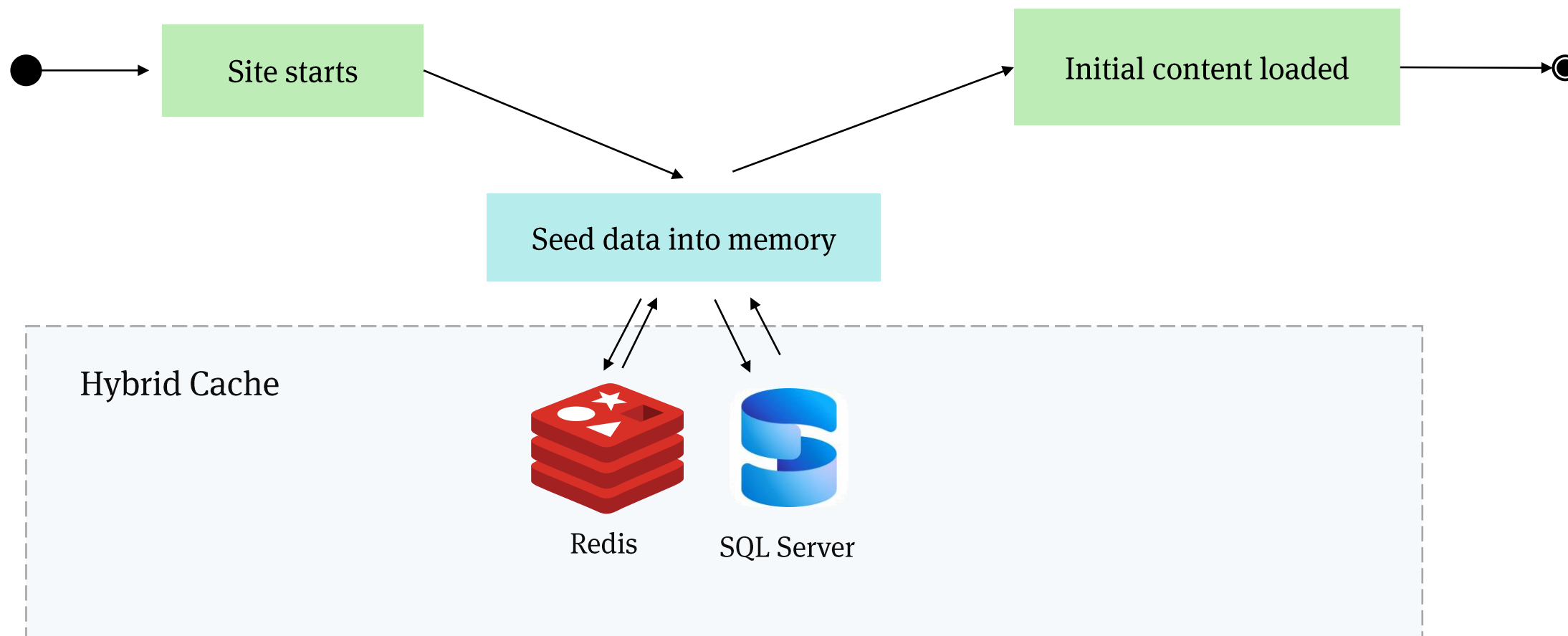


Umbraco 13



Umbraco 15+

# HybridCache Umbraco 15+

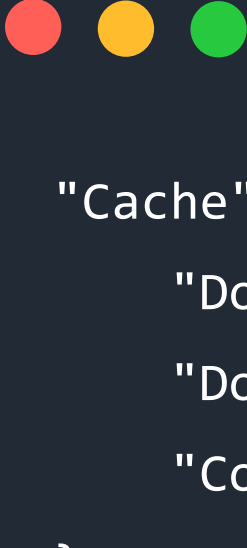


## Startup seed settings

- Load X number of nodes (100 by default)
- Load all nodes of type X and Y
  - Home page
  - Menu nodes
  - etc.



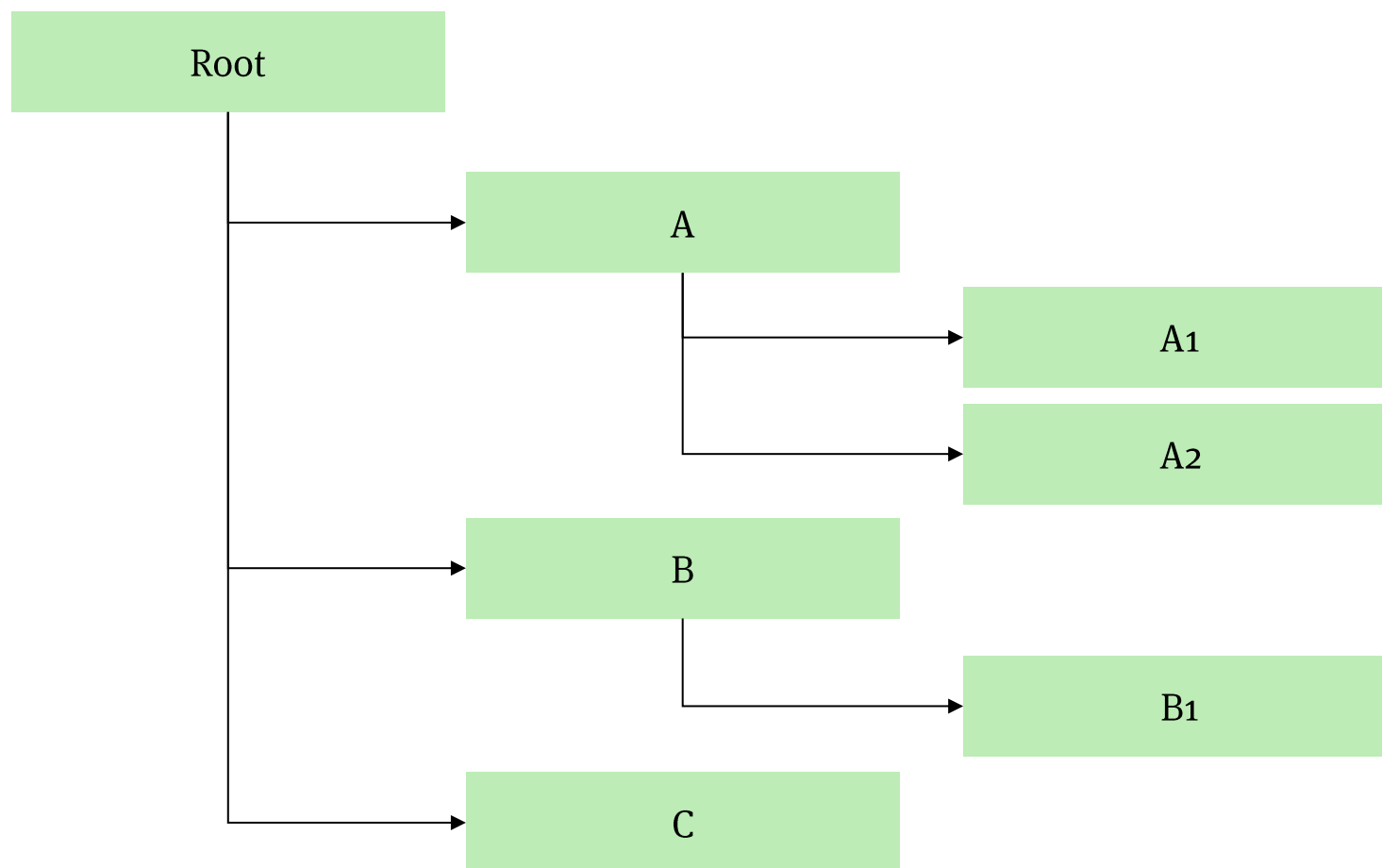
```
"Cache": {  
  "DocumentBreadthFirstSeedCount": 100,  
  "DocumentSeedBatchSize": 100  
}
```



```
"Cache": {  
  "DocumentBreadthFirstSeedCount": 100,  
  "DocumentSeedBatchSize": 100,  
  "ContentTypeKeys": ["36843c07-846d-4053-998a-a435fe871c2f", ...],  
}
```

```
"Cache": {  
  "DocumentBreadthFirstSeedCount": 100,  
  "DocumentSeedBatchSize": 100,  
  "ContentTypeKeys": ["36843c07-846d-4053-998a-a435fe871c2f", ...],  
  "MediaBreadthFirstSeedCount": 100,  
  "MediaSeedBatchSize": 100  
}
```

# NuCache Umbraco 8 - 14



```
public interface ISeedKeyProvider
{
    ISet<Guid> GetSeedKeys();
}
```

# appsettings.json

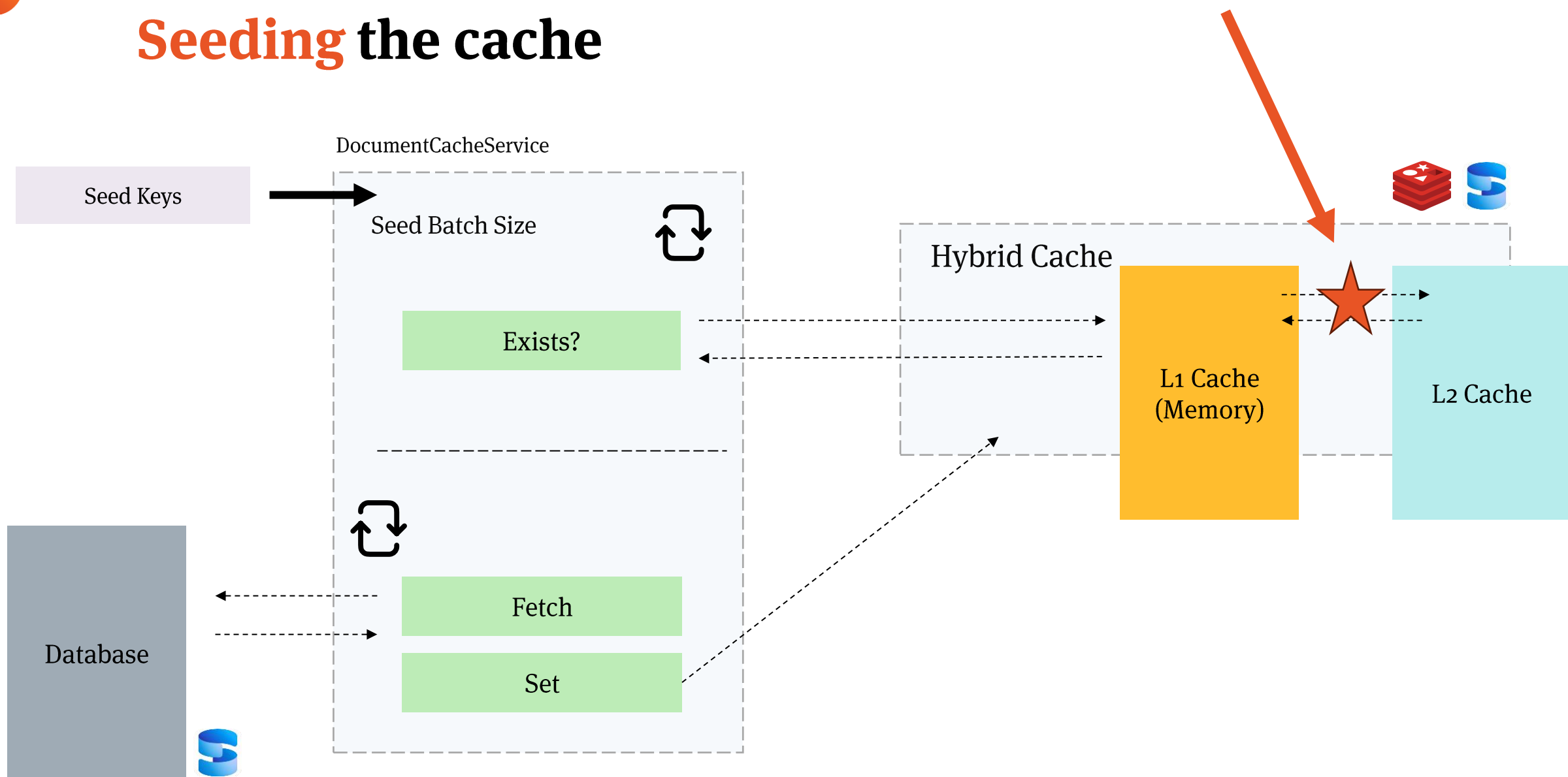
**Breadth First**

**Document  
Types**

**Seed Key  
Provider(s)**

**Deduplicated and used for seeding**

# Seeding the cache



# Traversing

---

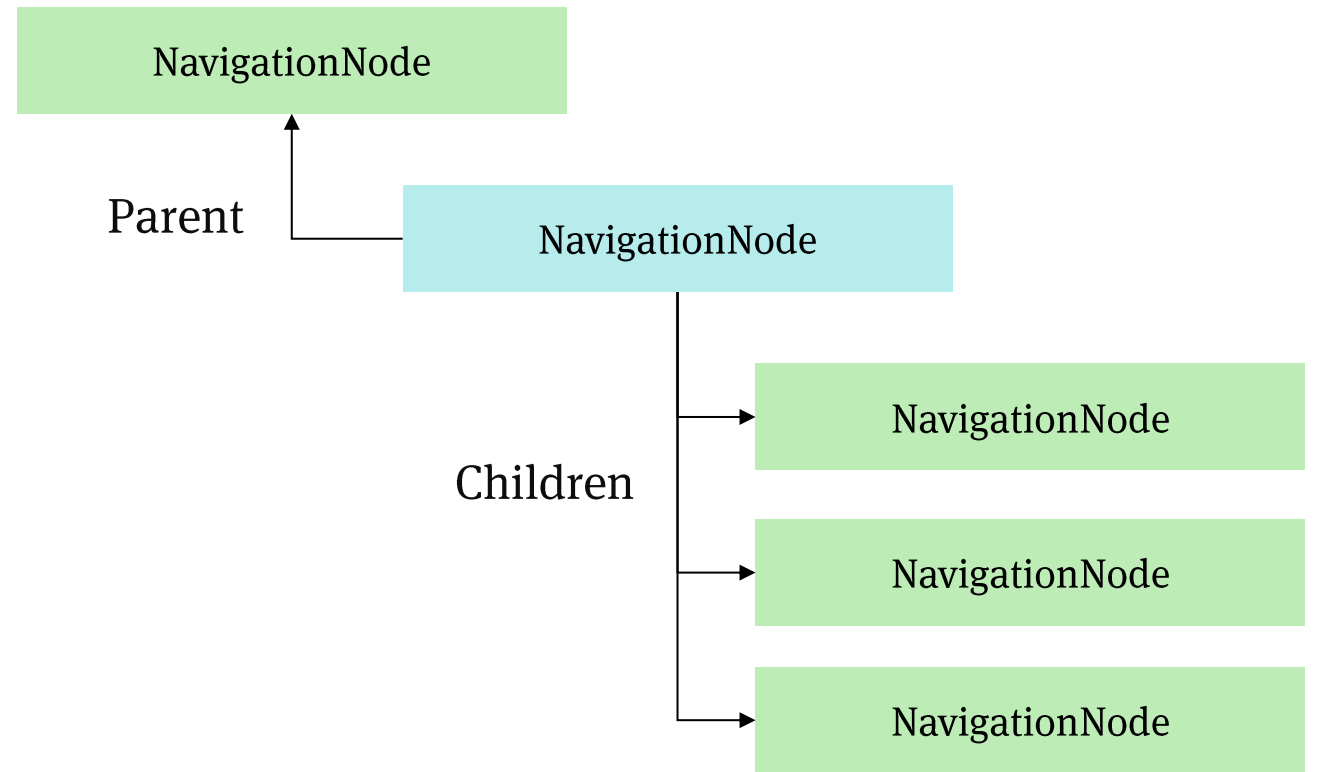




```
.Descendants()  
.Children()  
.Ancestors()  
.Siblings()  
.Where(...)
```

# NavigationNode

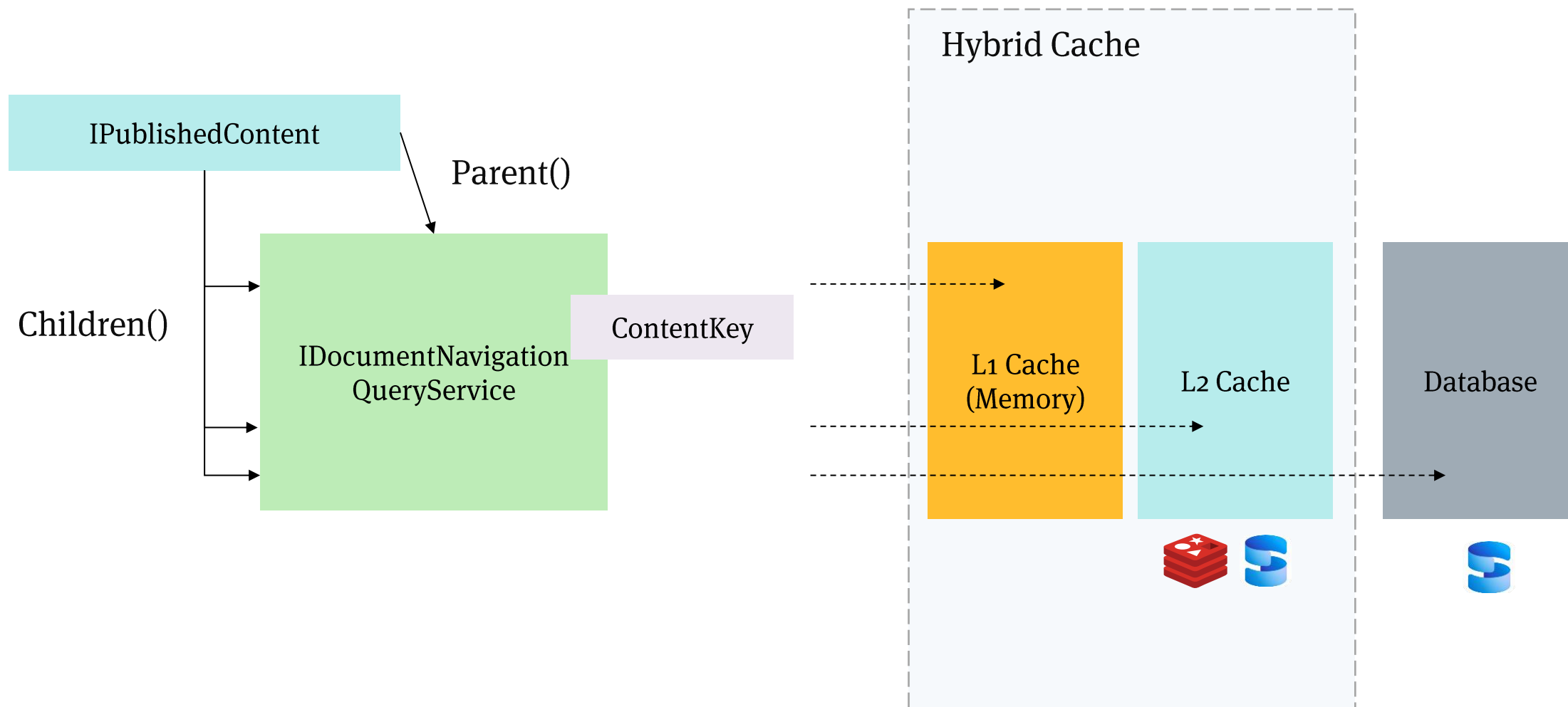
- Key
- ContentTypeKey
- SortOrder
- ParentKey
- Children (Keys)



# IDocumentNavigationQueryService

- TryGetChildrenKeys
- TryGetChildrenKeysOfType
- TryGetDescendantsKeys
- TryGetAncestorsKeysOfType
- TryGetAncestorsKeys
- TryGetDescendantsKeysOfType
- TryGetLevel

# HybridCache Umbraco 15+





```
var articles = container.Descendants<Article>()  
    .Where(x => x.IsVisible())  
    .Take(10)
```



```
var blogPosts = container.Children<BlogPost>()  
    .Where(x =>  
        x.Category.Name == "Tech" &&  
        x.Author.City == "Odense"  
    )  
    .Take(20)
```

## Watch out for references

- Related pages, categories, author, image and so on
- Content Picker, MNTP, etc. store reference (Guid)
- References are resolved from cache



```
var blogPosts = container.Children<BlogPost>()  
    .Where(x =>  
        x.Category.Name == "Foo" &&  
        x.Author.City == "Odense"  
    )  
    .Take(20)
```



# Load it all into memory?



# Severe performance regression in IPublishedContent.Children()/tree traversal in v17 despite full cache seeding #22646

[New issue](#)[Closed](#)

FabCodeDE opened last month

Last edited by FabCodeDE ▾ Contributor ⋮

Which Umbraco version are you using?

17.3.4

Bug summary

Which Umbraco version are you using?

17.x

Bug summary

After upgrading from Umbraco 13 to Umbraco 17, published content tree traversal using `IPublishedContent.Children()` has become extremely slow.

In Umbraco 13, traversing a tree with several thousand children/descendants was nearly instant. In Umbraco 17, the same traversal can take several minutes.

This happens even though `MediaBreadthFirstSeedCount` is configured higher than the total number of published elements in the installation.

This appears related to earlier issues such as [#18869](#) and [#18892](#), but the problem still affects v17 and is severe enough to make existing published content traversal code unusable in production.

Assignees

No one assigned

Labels

release/17.5.0

release/18.0.0

type/bug

Type

No type

Fields

[Give feedback](#)

Priority

None yet

Projects

No projects

Milestone

No milestone

Relationships

None yet

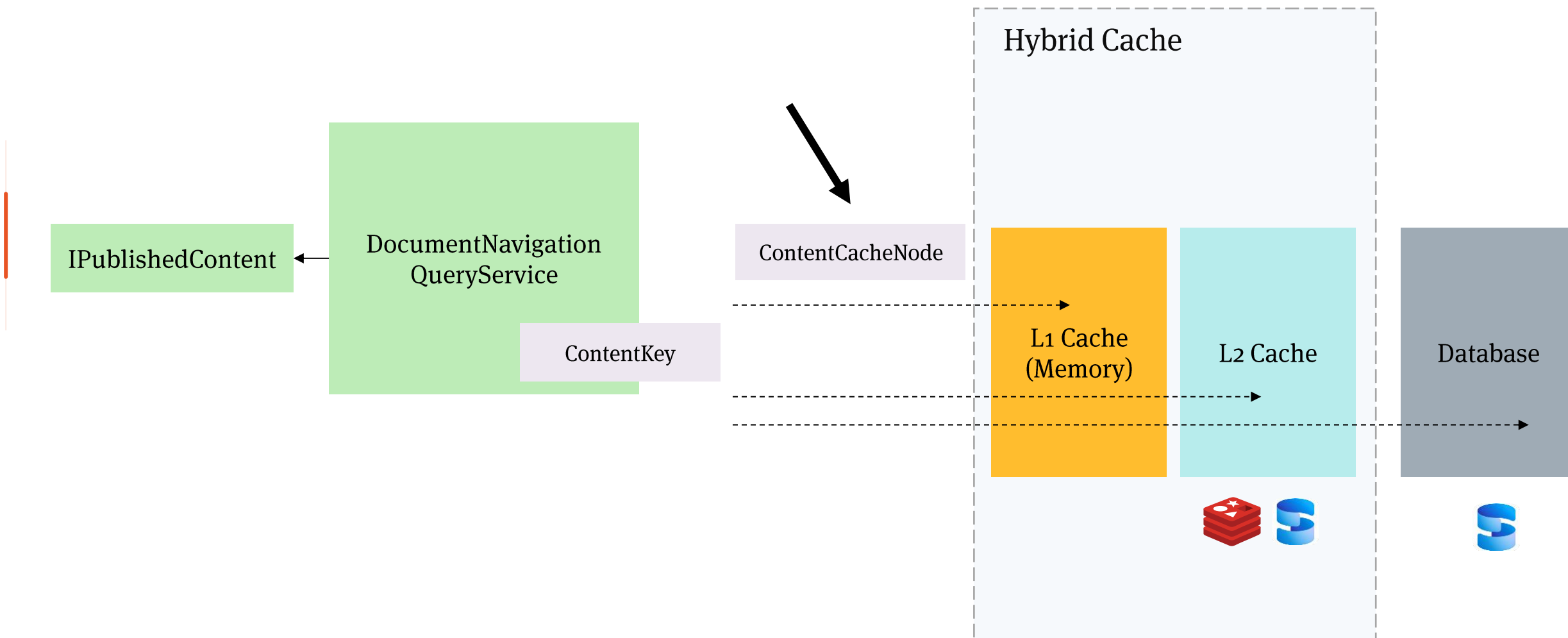
Development



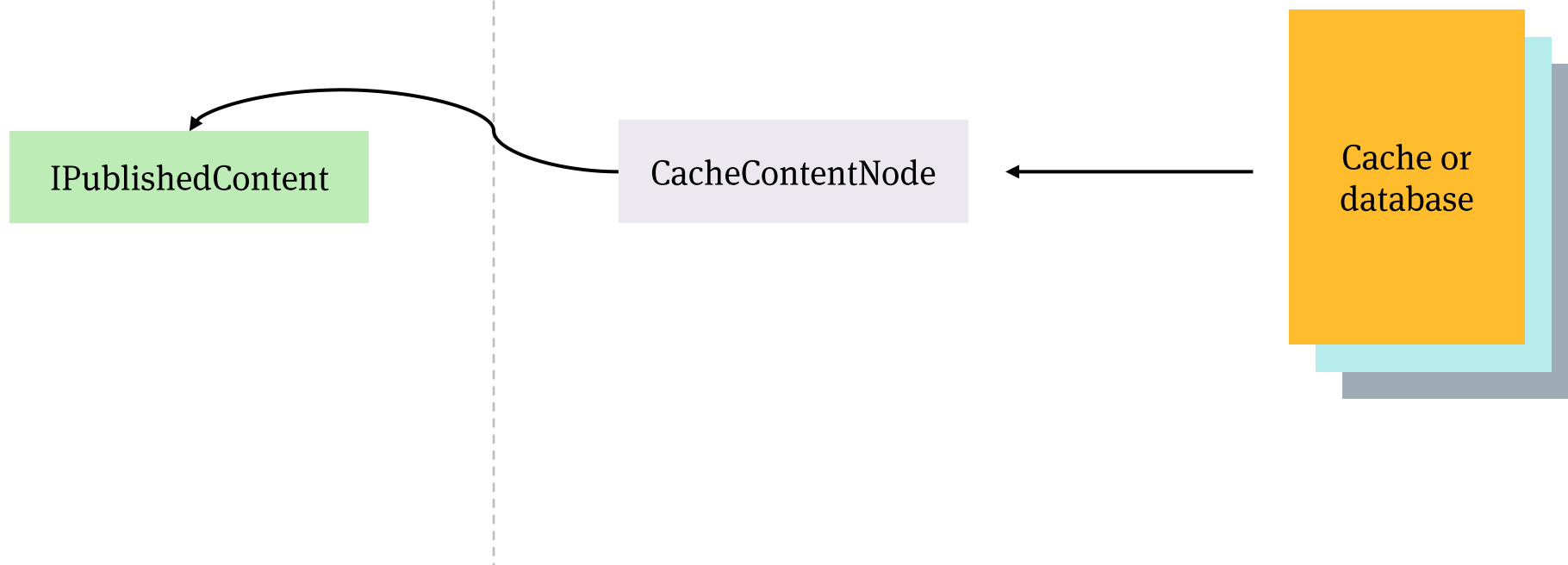
## The issue

- Upgrade from Umbraco 13 to Umbraco 17
- Site has 34 000 published nodes
- DocumentBreadthFirstSeedCount = 50 000
- "The same traversal that was nearly instant in Umbraco 13 can take several minutes in Umbraco 17."

# HybridCache Umbraco 15+



# Each request



# Memory pressure

| Insights                     |             | Allocations | Call Tree | Functions | Collections |
|------------------------------|-------------|-------------|-----------|-----------|-------------|
| Type                         | Allocations |             |           |           |             |
| Small Object Heap            |             |             |           |           |             |
| System.String                | 4 796       |             |           |           |             |
| UmbHybridCache.CmsNe...      | 17          |             |           |           |             |
| System.Object                | 1 214       |             |           |           |             |
| System.Func<,>               | 1 280       |             |           |           |             |
| System.Collections.Concu...  | 1 071       |             |           |           |             |
| Umbraco.Cms.Infrastruct...   | 413         |             |           |           |             |
| System.Collections.Concu...  | 7           |             |           |           |             |
| Umbraco.Cms.Core.Mode...     | 388         |             |           |           |             |
| Umbraco.Cms.Core.Cache...    | 791         |             |           |           |             |
| System.Collections.Generi... | 463         |             |           |           |             |
| Umbraco.Cms.Infrastruct...   | 413         |             |           |           |             |
| System.Collections.Generi... | 479         |             |           |           |             |
| System.Object[]              | 16          |             |           |           |             |
| Umbraco.Cms.Core.Prope...    | 388         |             |           |           |             |
| Umbraco.Cms.Core.Prope...    | 388         |             |           |           |             |
| System.Byte[]                | 8           |             |           |           |             |

Umbraco 13

12 500 allocs

| Insights                                                            |             | Allocations | Call Tree | Functions | Collections |
|---------------------------------------------------------------------|-------------|-------------|-----------|-----------|-------------|
| Type                                                                | Allocations |             |           |           |             |
| Small Object Heap                                                   |             |             |           |           |             |
| Umbraco.Cms.Infrastructure.HybridCache.PublishedProperty            | 125 403     |             |           |           |             |
| System.Threading.Lock                                               | 126 071     |             |           |           |             |
| Umbraco.Cms.Infrastructure.HybridCache.PublishedContent             | 25 619      |             |           |           |             |
| System.String                                                       | 32 680      |             |           |           |             |
| System.Threading.Tasks.Task<>                                       | 76 847      |             |           |           |             |
| System.Guid[]                                                       | 25 177      |             |           |           |             |
| Umbraco.Cms.Infrastructure.HybridCache.ContentNode                  | 25 605      |             |           |           |             |
| Microsoft.Extensions.Caching.Hybrid.HybridCacheEntryOptions         | 25 607      |             |           |           |             |
| Umbraco.Cms.Core.Models.PublishedContent.IPublishedProperty[]       | 25 604      |             |           |           |             |
| System.Collections.Generic.HashSet<>.Entry[]                        | 25 590      |             |           |           |             |
| System.Int32[]                                                      | 26 015      |             |           |           |             |
| System.Func<,>                                                      | 26 502      |             |           |           |             |
| UmbHybridCache.CmsNews                                              | 25 006      |             |           |           |             |
| System.Collections.Generic.HashSet<>                                | 25 597      |             |           |           |             |
| Umbraco.Cms.Infrastructure.HybridCache.Services.DocumentCacheSer... | 25 589      |             |           |           |             |
| System.Collections.Generic.List<>.Enumerator                        | 25 116      |             |           |           |             |
| System.Collections.Generic.HashSet<>.Enumerator                     | 25 080      |             |           |           |             |
| System.Collections.Generic.List<>                                   | 25 938      |             |           |           |             |
| System.SZGenericArrayEnumerator<>                                   | 25 350      |             |           |           |             |

Umbraco 15

744 396 allocs



# Performance: Degradation in throughput v13 vs 15 #18892

Edit

New issue

Closed

#20209



enkelmedia opened on Mar 31 · edited by azure-devops-sync

Edits Contributor

## Which Umbraco version are you using?

15.3.0

## Bug summary

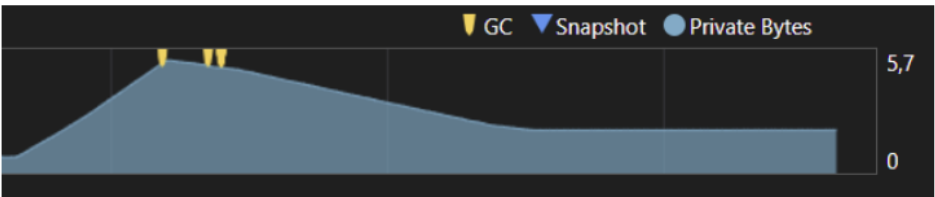
While testing out v15 with a "real world database" from one of our projects I'm noticing quite a difference in throughput between v13 and v15.

### Umbraco 13.7.2

Median load time: 9ms  
Request per second: 343

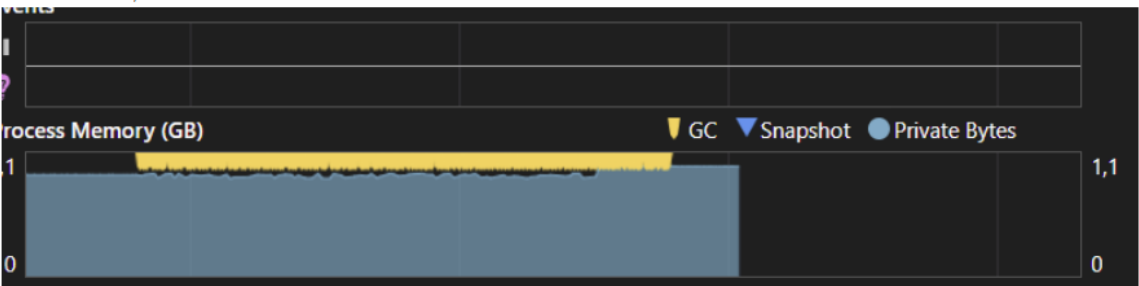
### Umbraco 15.3.0

Median load time: 28ms  
Request per second: 131



### Umbraco 15:

In Umbraco 15, the GC runs almost all the time.



### Assignees

No one assigned

### Labels

affected/v15 type/bug

### Type

No type

### Projects

No projects

### Milestone

No milestone

### Relationships

None yet

### Development

Code with agent mode

Caching: Don't remove null values from hybrid cache to avoid broken content references repeatedly requiring a database hit (closes #18892)  
umbraco/Umbraco-CMS

### Notifications

Customize

Unsubscribe

You're receiving notifications because you're subscribed to this thread.

### Participants



Markus Johansson | @markusjoha | markus@obviuse.se

<https://github.com/umbraco/Umbraco-CMS/issues/18892>

**What does this  
mean?**



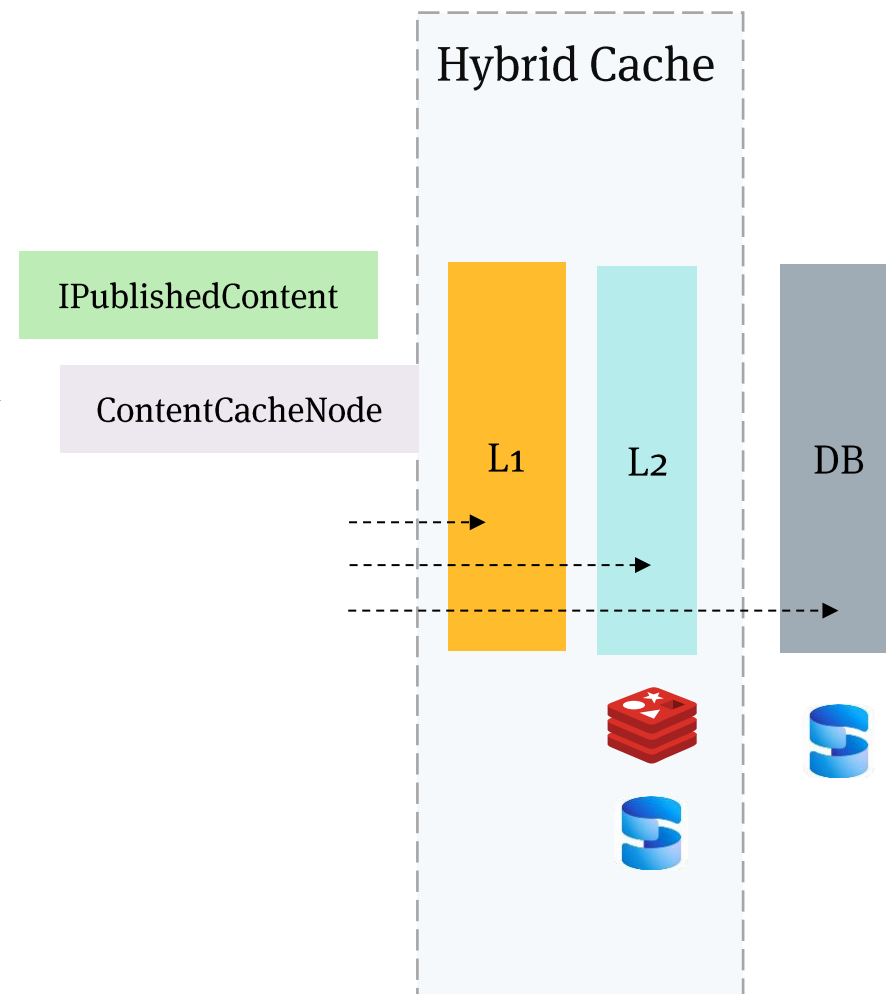
## Impact on day-today work

- Not so much if the website is small
- Traversing the tree costs a lot more
- Affects filtering `.Children().Where(...)`
- Affects references. e.g. conditions for Content Picker

```

container.Children<BlogPost>()
    .Where(x =>
        x.Category.Name == "Tech" &&
        x.Author.City == "Odense"
    )
    .Take(20)

```



## Querying with Descendants using DescendantsOrSelf

When using queries like this, you need to understand the implications. Here is a particularly bad scenario:

You have 10,000 content items in your tree and your tree structure is something like this:

- Root
- Home
- Blog (Collection with 9495 nodes)
- Office Locations (Collection with 500 nodes)
- About Us
- Contact Us

You create a menu on your Home page like:

```
<ul>
  <li><a href="@Model.Root().Url()">@Model.Root().Name</a></li>
  @foreach (var node in Model.Root().DescendantsOrSelf().Where(x => x.Level == 2))
  {
    <li><a href="@node.Url()">@node.Name</a></li>
  }
</ul>
```

The query above renders out: *Root, Home, Blog, Office Locations, About Us, Contact Us*

# Benchmarks.

# Disclaimer: Stupid

---



U

ContentMediaSettingsPackagesUsersMembersTranslation

Content

Start Page

Writers

News

Markus första

Quasi est excepturi.

Sunt veniam dolore omnis aliqu...

Perferendis consectetur repelle...

Repellat animi eveniet eum qua...

Pariatur vel magnam neque vel ...

Iste magni qui aut qui aliquid.

Non minima non perferendis ex...

Sed quae quasi.

Dolor expedita laudantium offic...

Eum vitae eum est officia ea velit.

Quasi est excepturi. (1)

Sunt veniam dolore omnis aliqu...

Markus första

Intro

Writer

Publish Date

Body

Archived

a little into

Markus Johansson

10/13/2025 12:00:00 PM

</> | B | I | U |

≡ ≡ ≡ | ≡ ≡ | ≡ ⚡ |

🔗 ↺ | 📎 🖨

This is the **HTML!**

×

Content

Info

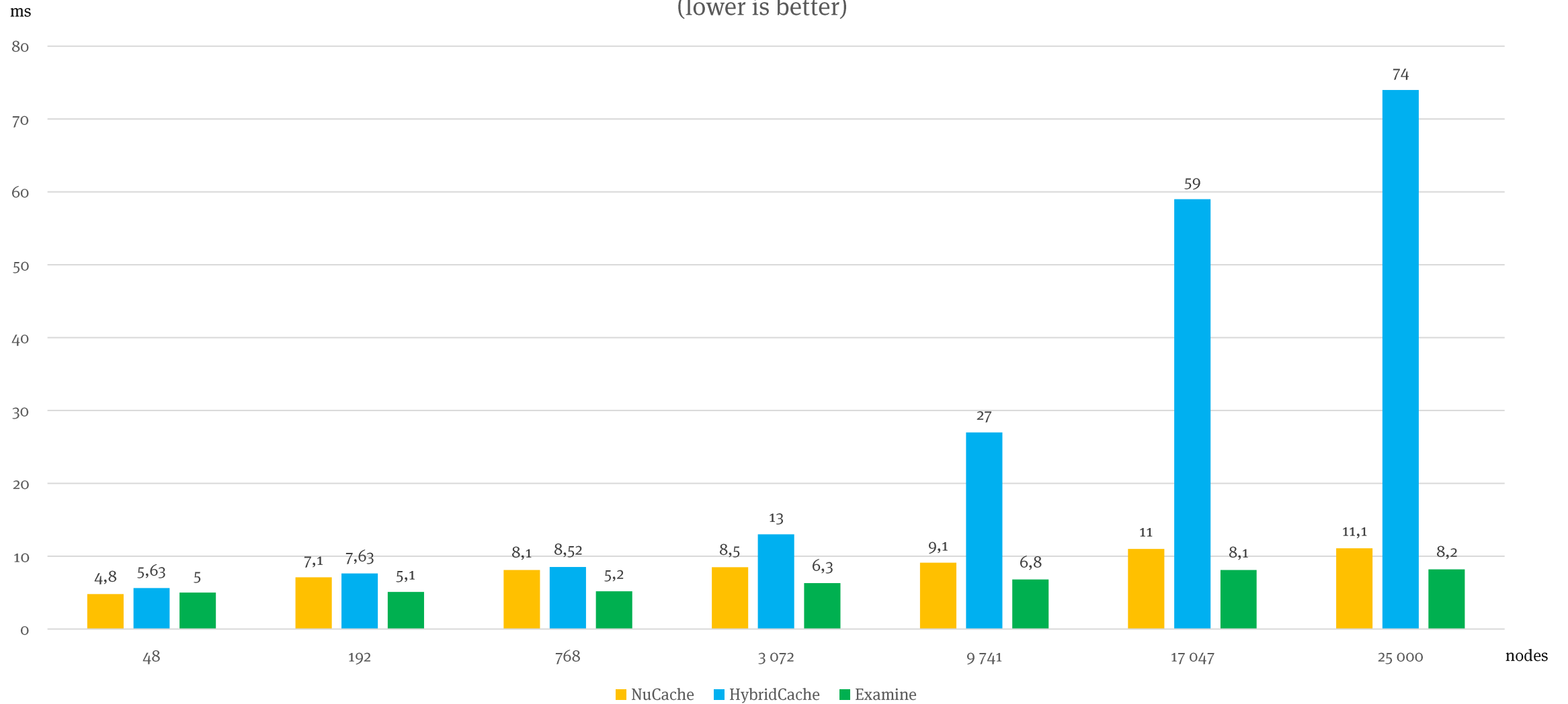


# My Umbraco 16 benchmarks

- 48 to 25 000 nodes
- Everything seeded into memory
- No L2 cache
- Render a list, no menu, no footer, no nothing
- Filter on reference values from Content Picker
- Really bad idea to query against 25 000 nodes

# Page Load Time (ms)

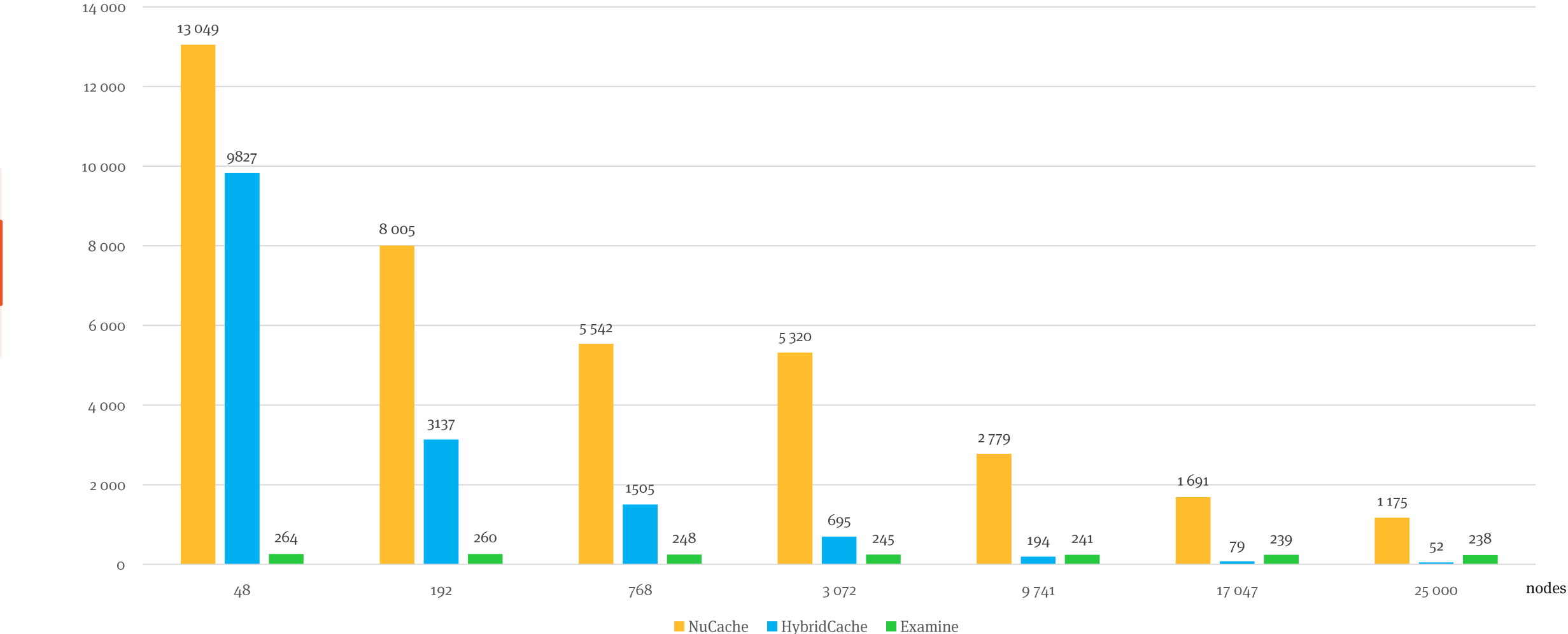
(lower is better)



# RPS (Requests Per Second)

(Higher is better)

requests / second





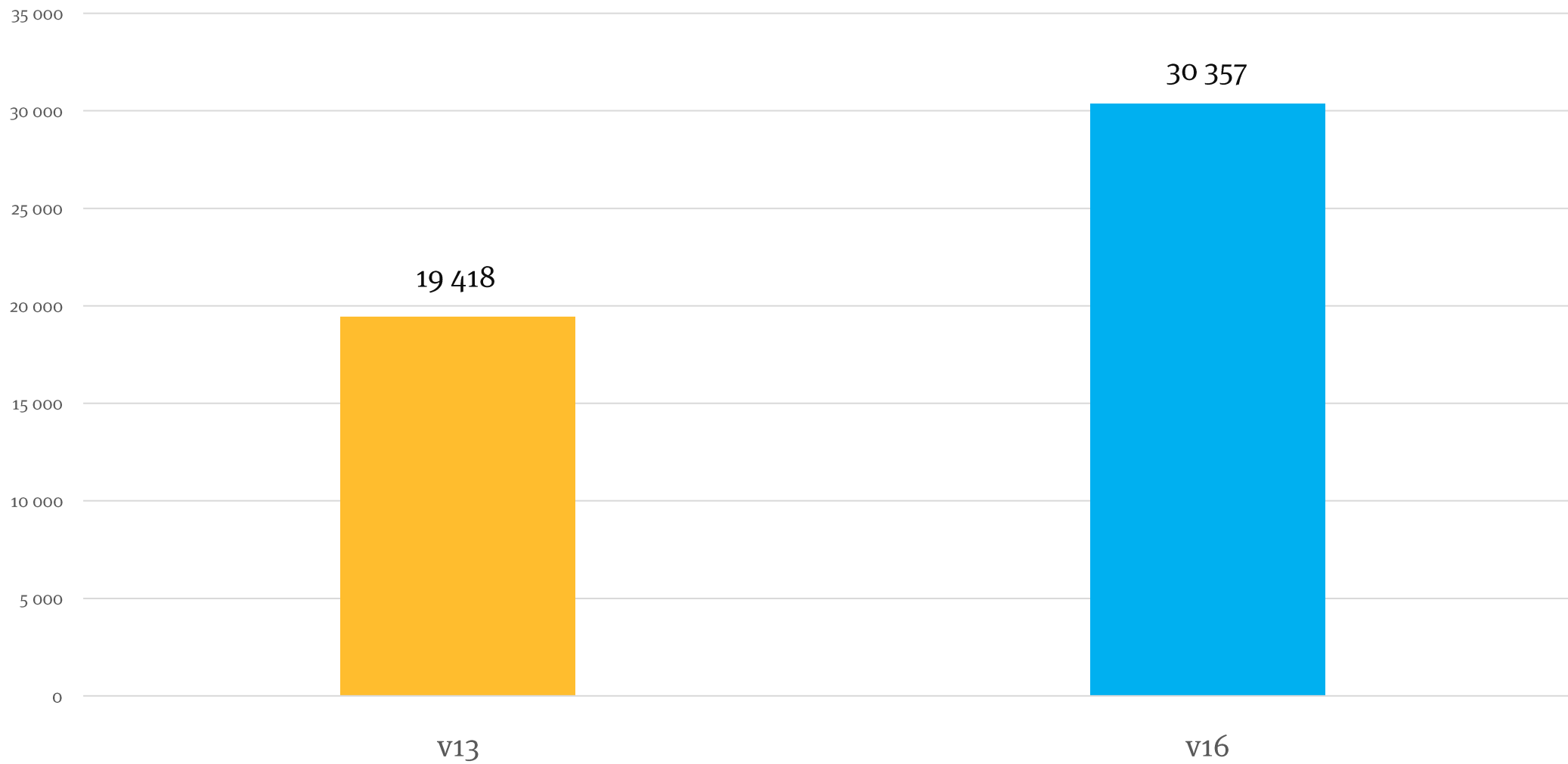
Oh no...



# RPS Single IPublishedContent

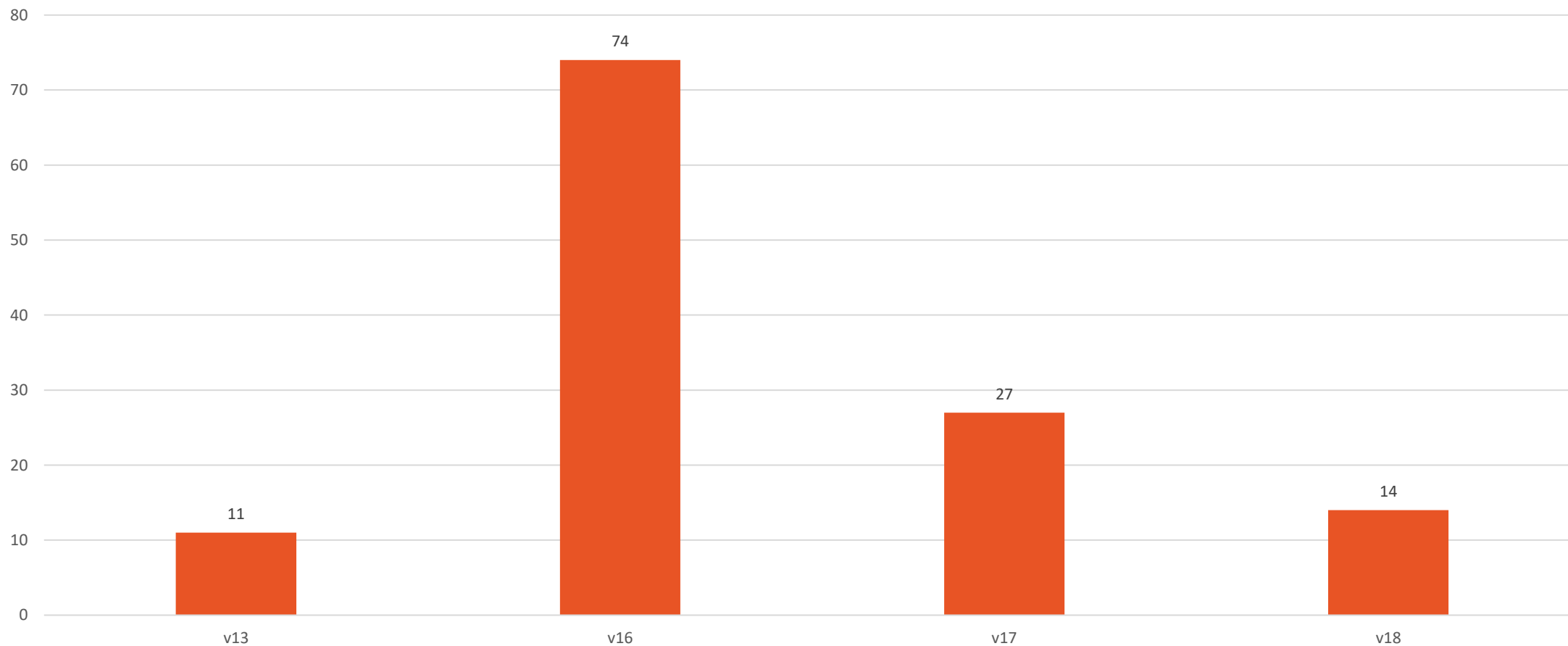
Requests / s

(Higher is better)



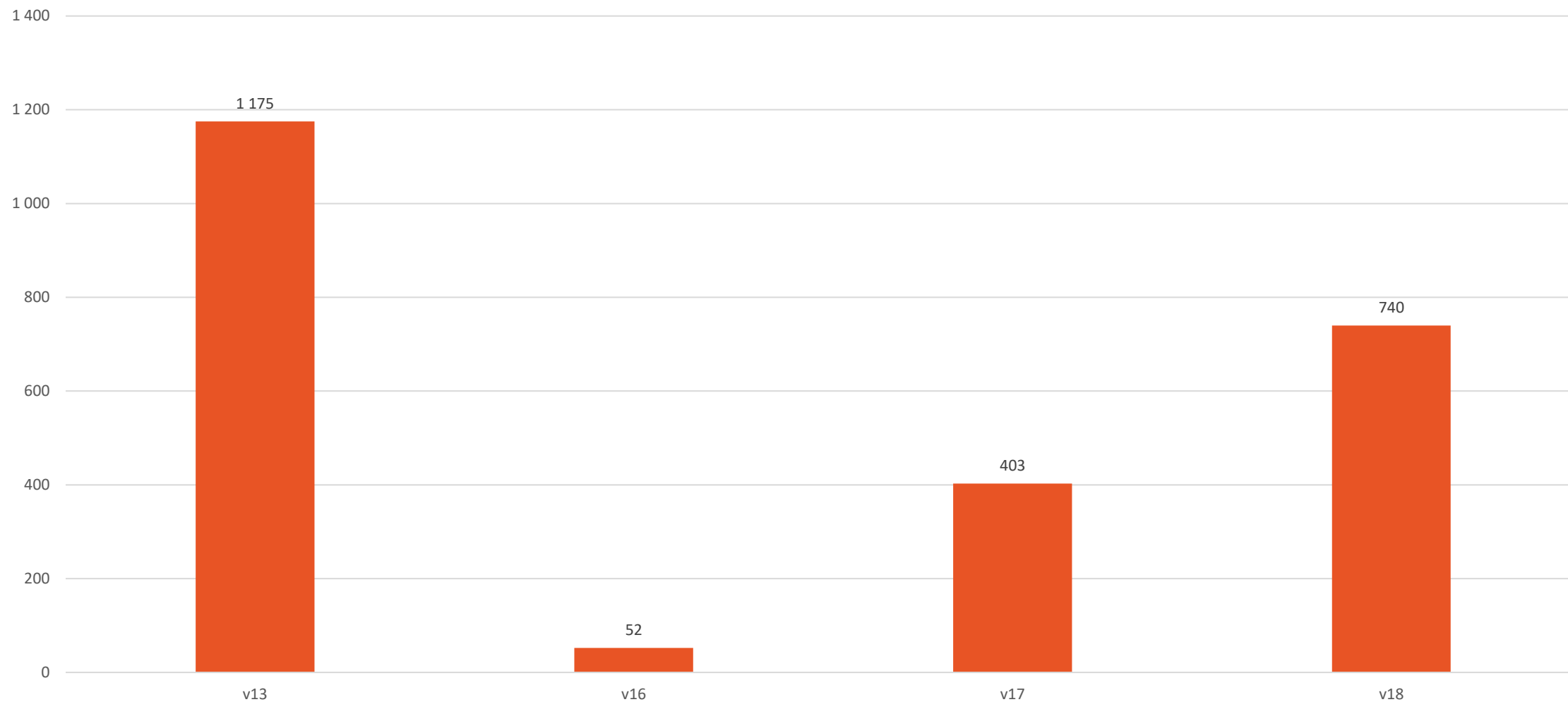
# Load Time (ms) – 25 000 nodes

(Lower is better)



# RPS – 25 000 nodes

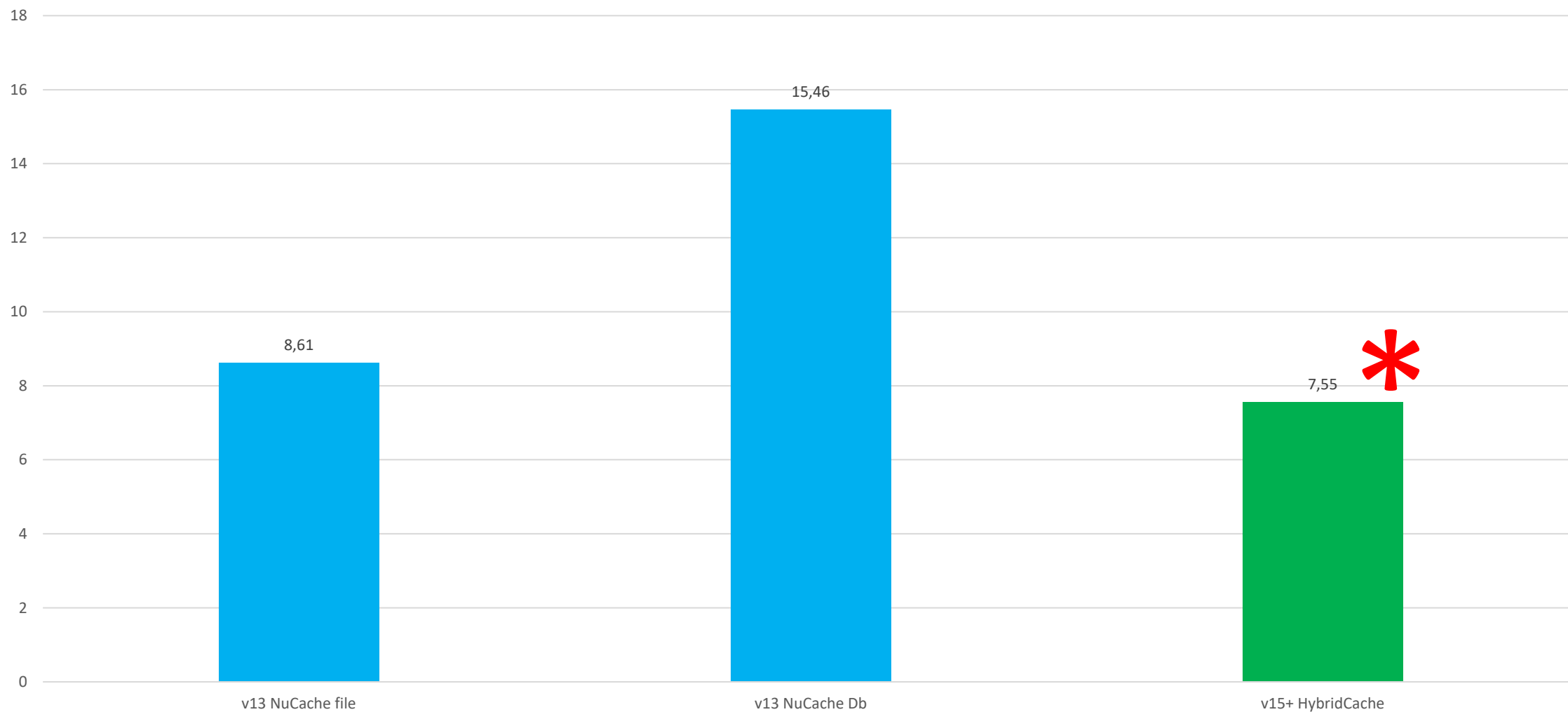
(Higher is better)



# Startup Time (ms)

(Lower is better)

Requests / s

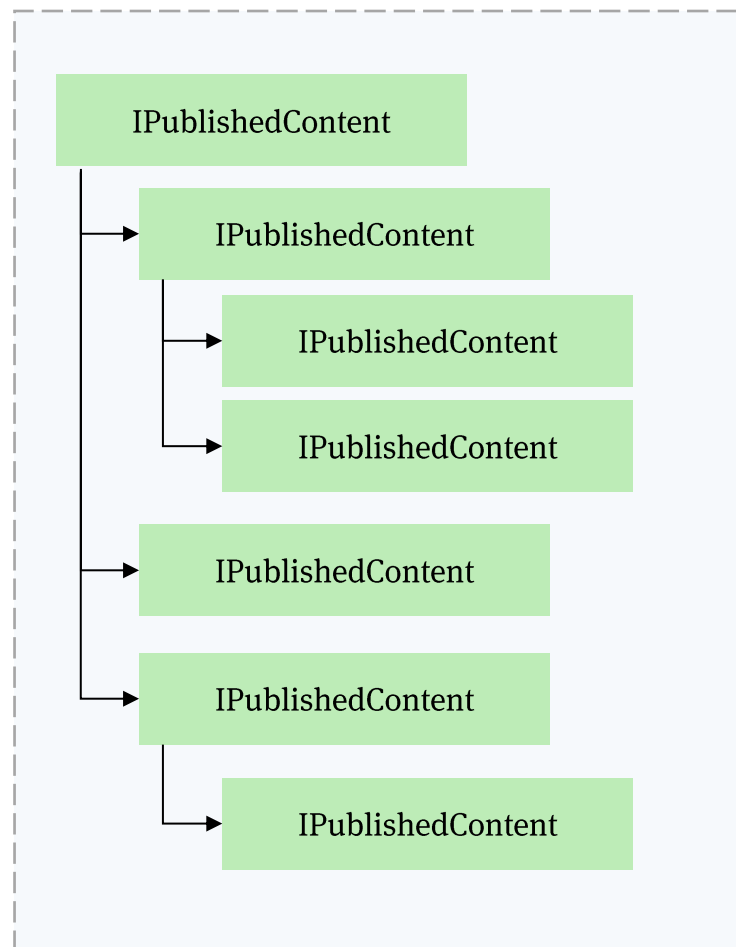




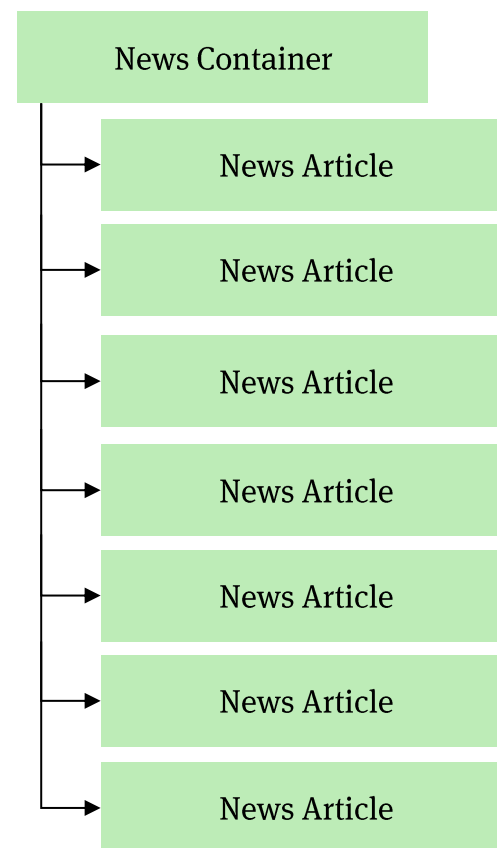
**Cost didn't vanish.  
It moved.**



Startup = seeded in batches

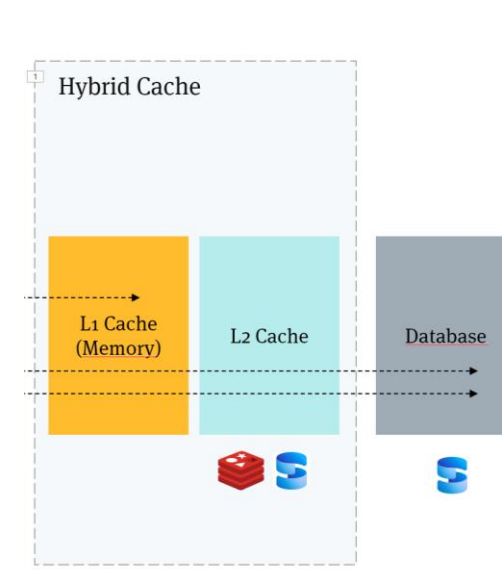


Then one by one



For each node

- L1 Cache lookup
- L2 Cache lookup
- Database lookup



# What to do?



**Use search!**

**Use Examine!**

---

# Umbraco + Examine

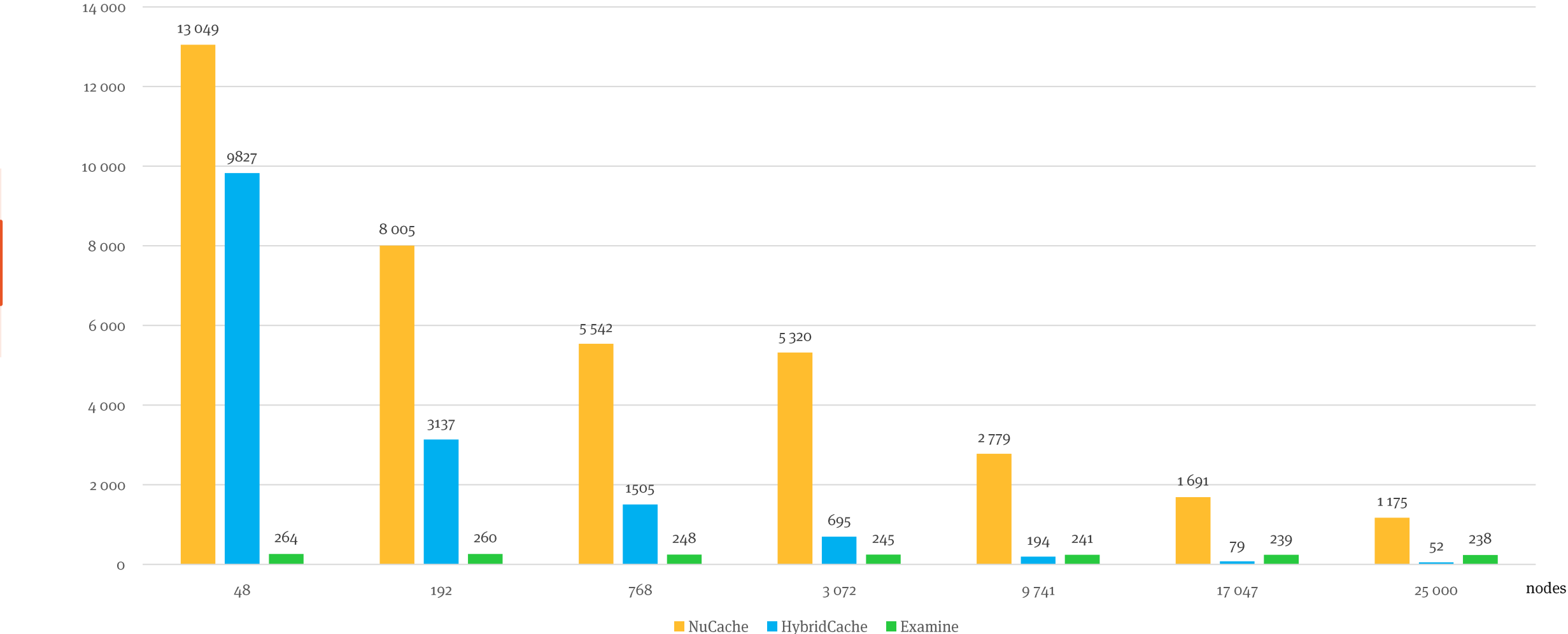


- Examine is the Lucene powered search in Umbraco
- Index for Published Content & Media
- Can be extremely fast

# RPS (Requests Per Second)

(Higher is better)

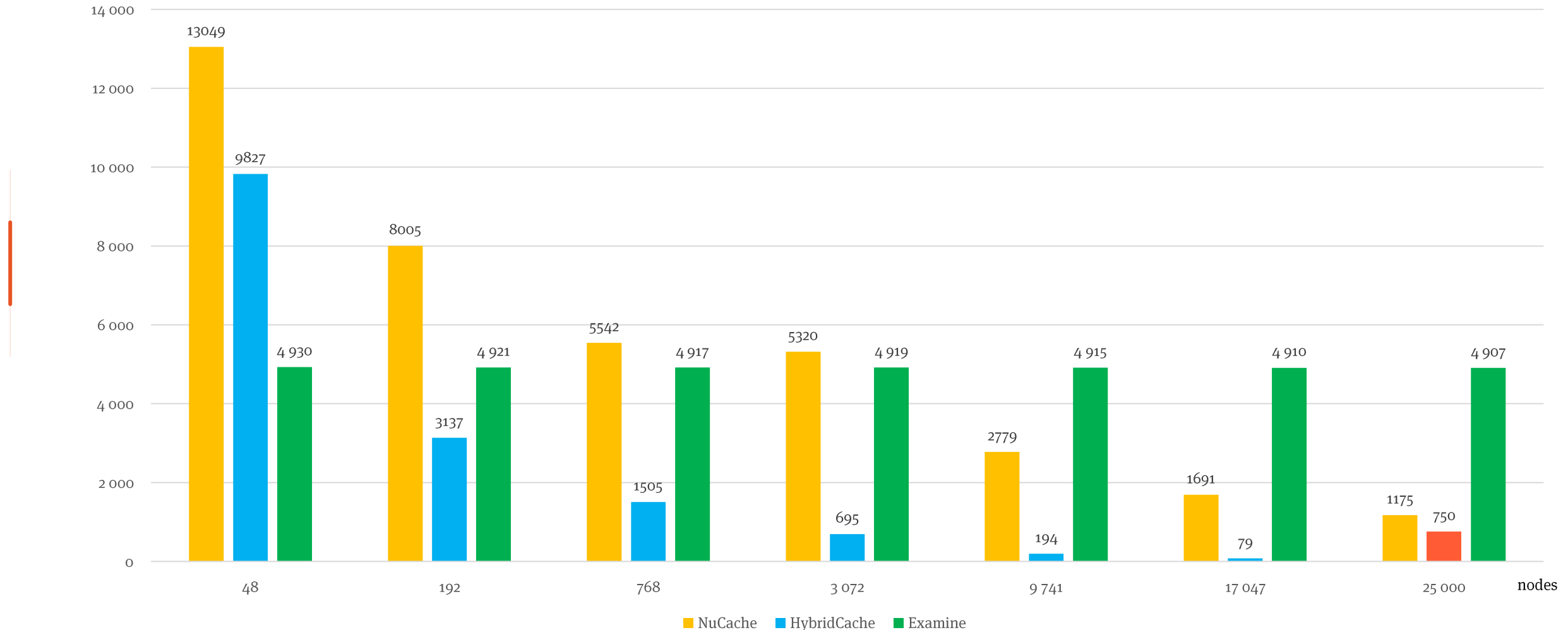
requests / second



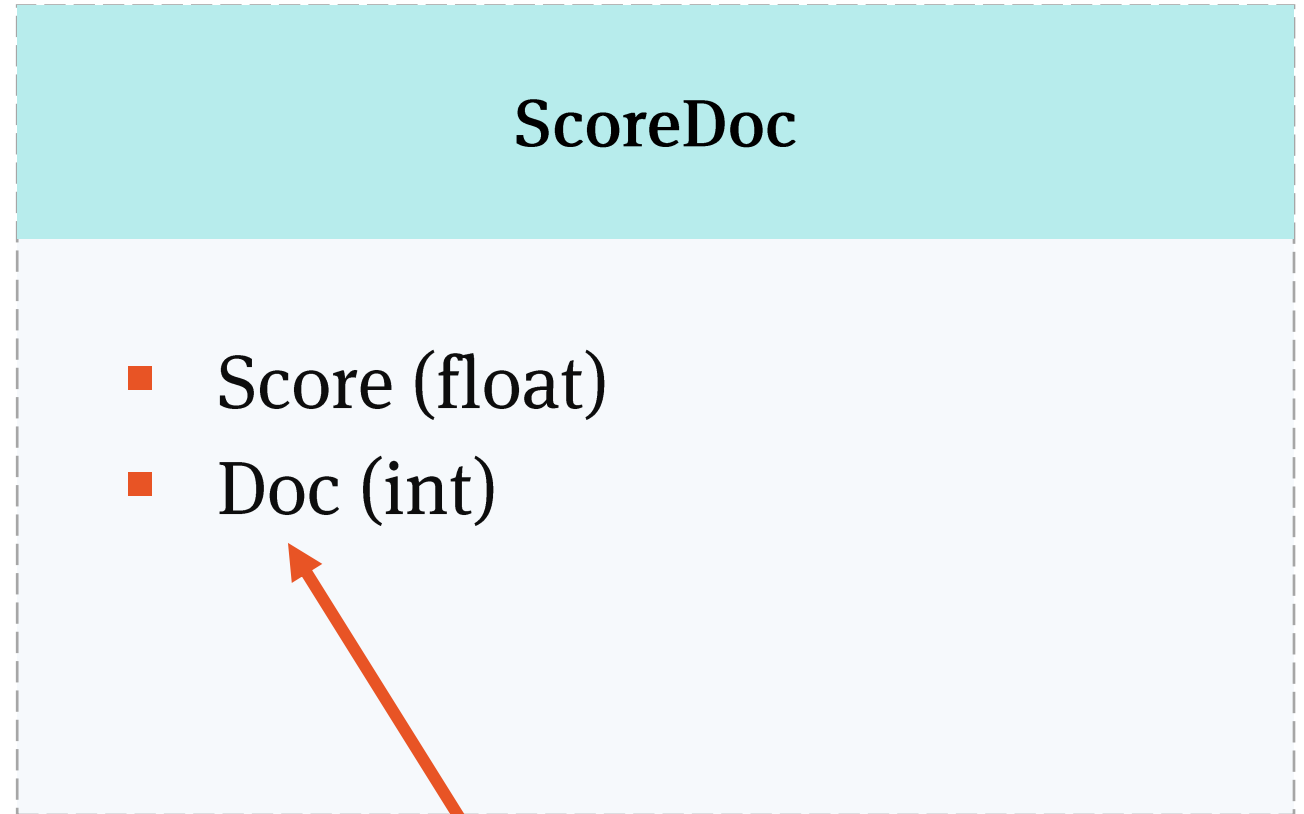
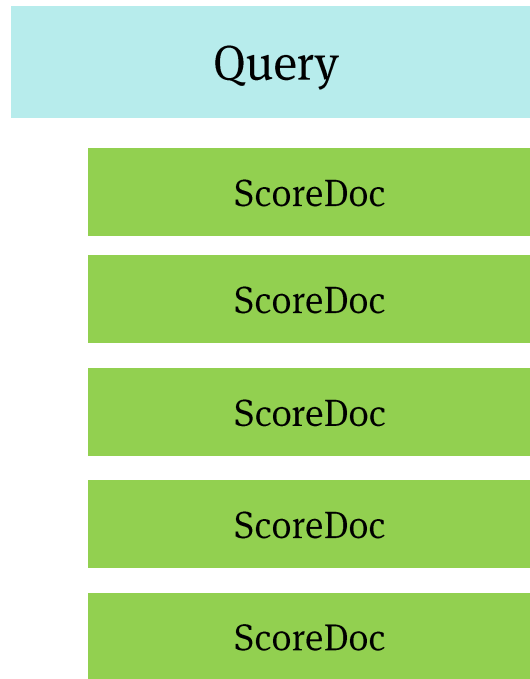
# RPS (Optimized Examine)

requests / second

(Higher is better)

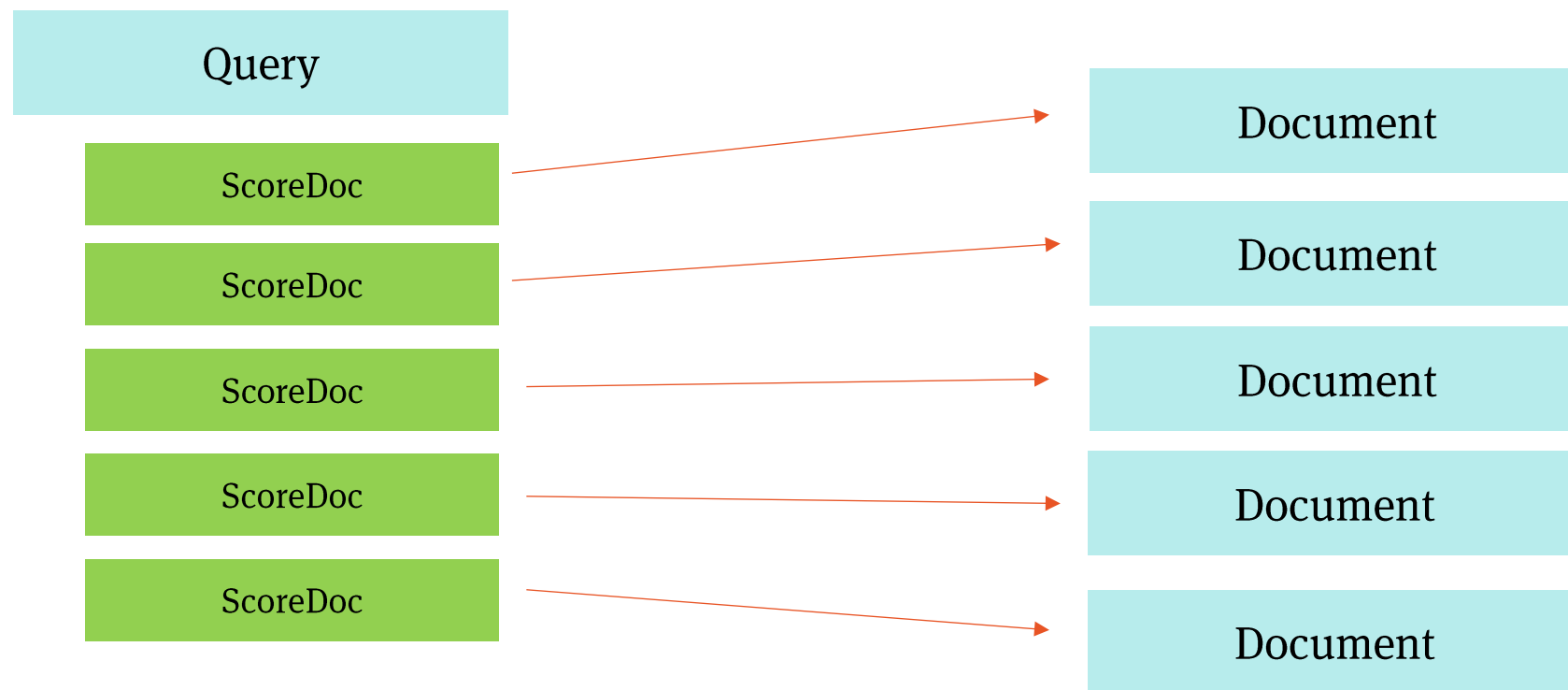


# Optimized Examine



Lucene Document Id

# Optimized Examine



U

ContentMediaSettingsPackagesUsersMembersTranslation

Structure

Document Types

Media Types

Member Types

Data Types

Languages

Document Blueprints

Templating

Templates

Partial Views

Stylesheets

Scripts

Synchronisation

uSync

Advanced

Relations

Log Viewer

Extension Insights

Webhooks

WelcomeExamine ManagementPublished StatusModels BuilderHea

← Back to overview

Search the index and view the results

eaque

Showing 1 - 100 of 13440 result(s) - Page 1 of 135

| Score      | Id    | Name                                |
|------------|-------|-------------------------------------|
| 0.5336222  | 6001  | Occaecati saepe eaque voluptas.     |
| 0.527858   | 17098 | Enim eaque voluptatem.              |
| 0.5114337  | 13563 | Labore est commodi eaque.           |
| 0.5065089  | 16115 | Eaque quo impedit.                  |
| 0.47523904 | 19275 | Occaecati saepe eaque voluptas. (2) |
| 0.47523904 | 9082  | Occaecati saepe eaque voluptas. (1) |
| 0.47403032 | 12774 | Eaque nobis similique nesciunt.     |
| 0.47403032 | 17205 | Sit impedit eaque voluptatem.       |
| 0.47367293 | 18777 | Eum eligendi eaque. (3)             |
| 0.47367293 | 3967  | Eum eligendi eaque.                 |
| 0.47367293 | 5503  | Eum eligendi eaque. (1)             |
| 0.47367293 | 8584  | Eum eligendi eaque. (2)             |
| 0.47297537 | 17320 | Minus eaque eos ea.                 |

Enim eaque voluptatem.

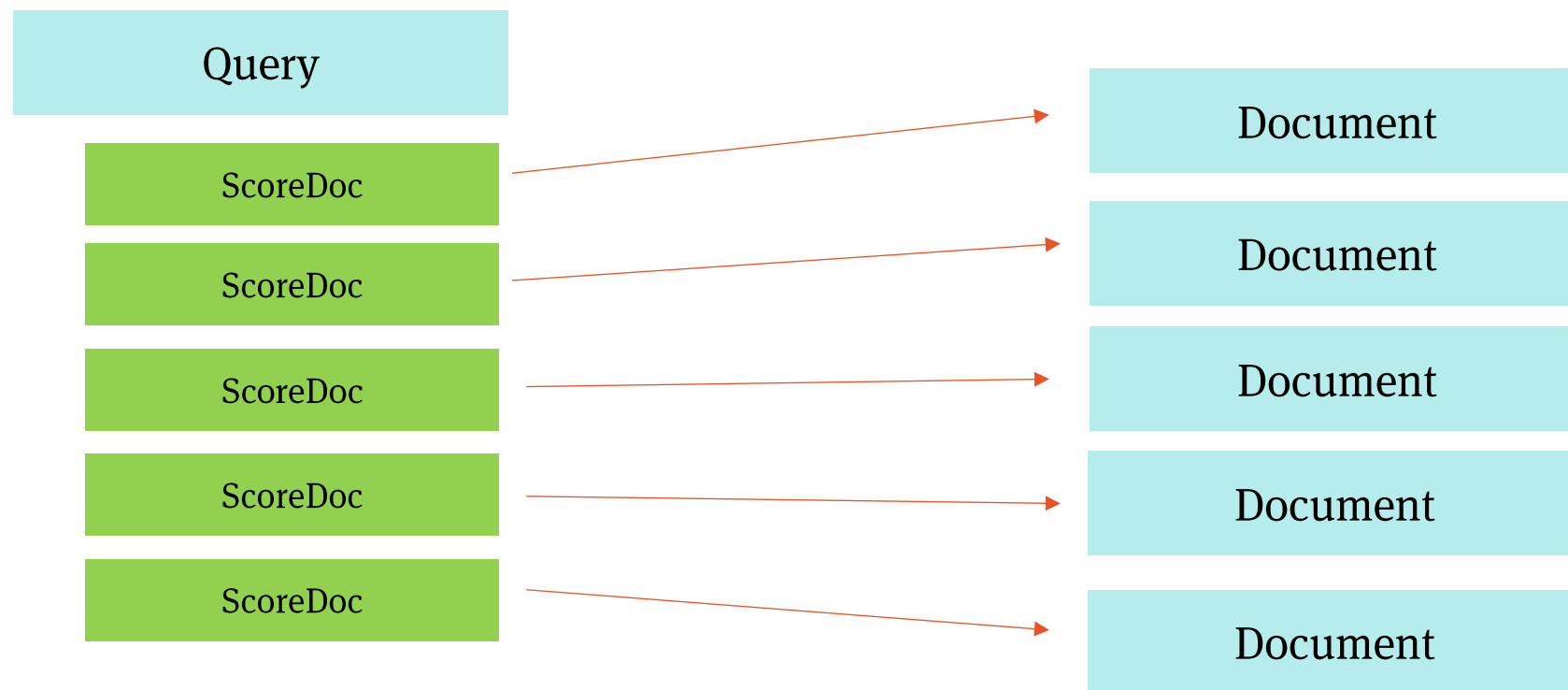
| Field           | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| __Icon          | icon-newspaper color-light-blue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| __IndexType     | content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| __Key           | f189c6f9-d8cd-4671-b2b0-9812ecf8877e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| __NodeId        | 17098                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| __NodeTypeAlias | cmsNews                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| __Path          | -1,1067,1069,17098                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| __Published     | y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| __Raw_body      | <p>&lt;strong&gt;Nesciunt&lt;/strong&gt; doloribus possimus consequuntur. Quia enim iure omnis laborum possimus consectetur amet molestiae. Et magnam et reprehenderit et iusto nisi et. Quae consequatur minima et dolorum et harum ipsam voluptatem ipsam. Iure possimus praesentium atque vel dolorem. Rerum fugiat commodi beatae atque fugit.</p><h2>Vel laboriosam nulla vitae esse.</h2><p>Reiciendis dignissimos eaque officiis. Enim quod temporibus eum culpa aut delectus. Qui unde delectus aut dolorem quas id culpa. Dolor <em>&lt;strong&gt;eos&lt;/strong&gt; qui culpa</em> quae repudiandae vel quasi rerum. Nihil atque at et eaque est. Ab ad magnam atque tenetur atque assumenda.</p><blockquote>Distinctio quia quis hic. Dolorem voluptate ipsam eligendi eum.</blockquote><ol><li>Molestiae ad qui qui &lt;em&gt;&lt;strong&gt;sit</strong&gt; veniam dolorem vel illum.</li><li><strong>Et rerum</strong> quaerat et quia harum repellendus ducimus voluptas ipsum.</li><li>Consectetur aliquam ipsum ducimus fugiat &lt;strong&gt;dolore</strong> <em>recusandae quo</em> quibusdam rem.</li><li>Voluptatem voluptas &lt;strong&gt;consequatur</strong> veritatis tenetur hic libero aut quos fugit.</li><li>Quasi veniam <strong>a architecto impedit</strong> expedita &lt;em&gt;nihil</em> nihil quasi at sequi.</li><li><a href="https://example.com/dolores">Modi</a> <strong>ullam magni corporis</strong> eius dolor hic facere qui ad.</li></ol><h3>Aut distinctio fuga rerum asperiores aspernatur.</h3><p>Rerum et quisquam et doloremque cupiditate sit. Et eorum reiciendis id nostrum omnis ut rerum ratione. Eligendi voluptatem nostrum maiores laborum saepe explicabo. Dolor et animi aliquid eos sed. Dolorem nemo tenetur aspernatur velit quos. Debitis alias animi eos occaecati accusamus dolores dolore. |

30 fields

Close

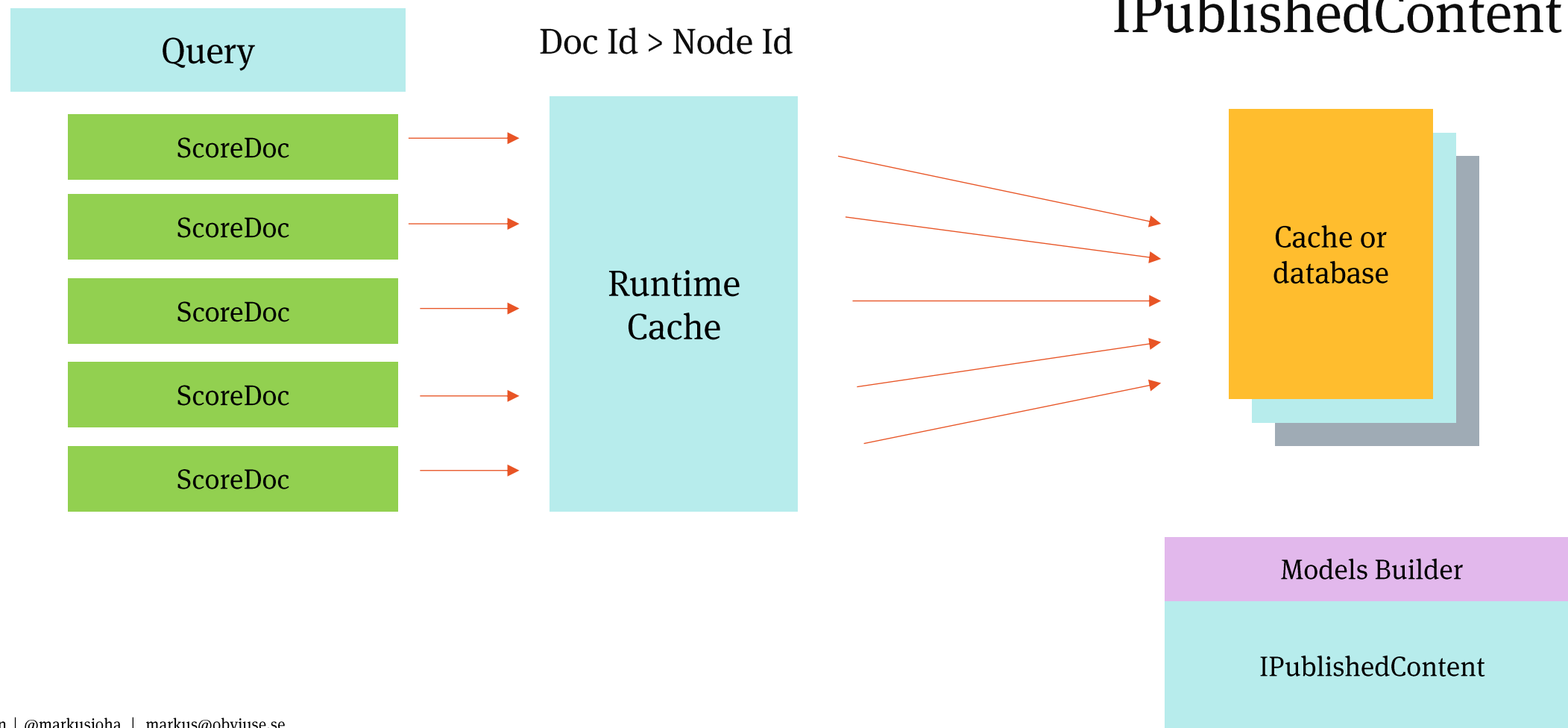


# Optimized Examine





# Optimized Examine



# Umbraco + Examine

- Fast and scalable out of the box
- Even faster with
  - Custom, smaller index
  - Optimized queries (e.g. Score + Content Cache)

```
var search = searcher.CreateQuery("content")
    .NodeTypeAlias("cmsNews")
    .And()
    .Field("writerId", "25050")
    .Execute()
    .Take(25);
```

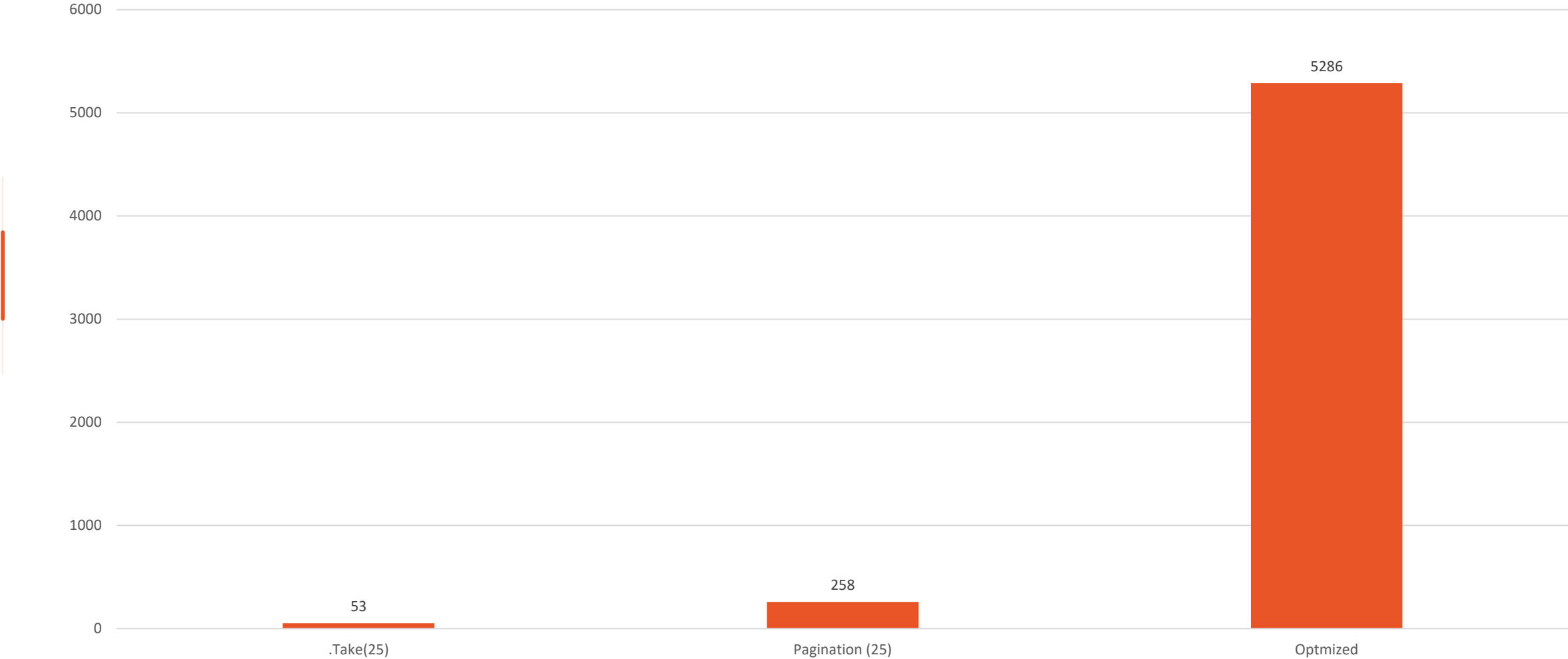
```
var search = searcher.CreateQuery("content")
    .NodeTypeAlias("cmsNews")
    .And()
    .Field("writerId", "25050")
    .Execute(new QueryOptions(0,25));
```

```
var builder = new BooleanQuery();
builder.Add(new TermQuery(new Term("__NodeTypeAlias", "cmsnews")), Occur.MUST);
builder.Add(new TermQuery(new Term("writerKey", "acb123")), Occur.MUST);

var indexSearcher = Context.RequestServices.ExtractExternalIndexSearcher();
var result = indexSearcher.Search(builder, 25);
var umbracoNodes = searchResult.ScoreDocs.Select((x) => Umbraco.Content(
    _documentIdCache.GetDoc(x.Doc, luceneSearcher.IndexSearcher).Id
));
```

# Examine RPS

(higher is better)



# Menu, footer, listings

---

## Menu, footer, listings

- Seed using “ContentTypeKeys”
- Load everything into memory
- Build DTO and store in memory





```
var menuData = _appCaches.RuntimeCache.GetCacheItem(  
    "site_menu"  
    () => BuildSiteMenuDtos()  
)
```

# Sitemap

A thin white vertical line is positioned to the left of the word 'Sitemap', extending from the top of the 'S' down to the bottom of the 'p'.

# How to build a sitemap?



Search

Topics

About

Code of conduct

Leaderboard

My posts

More

UMBRACO LINKS

Documentation

GitHub

Discord

Mastodon

Bluesky

CATEGORIES

Questions

Announcements



✓ Solved

XML sitemaps for large sites

Questions

Mar 24

Porting our internal XML sitemap generator to v15 has got me thinking...

Previously we've simply crawled through the entire content tree looking for signals to determine if a node should be part of the sitemap (in our case, a true/false property with the alias `umbracoSitemapHide` being false).

But with v15, and the new cache, not necessarily containing all content at all time, I'm thinking this approach is not the best.

What are my options then?

I've been looking into using Examine, but it seems like true/false properties sometimes aren't indexed (I suspect, if the property is added to the content type, after the content node is created, the content node gets a null value in the property and is not indexed). Because of this, the examine based sitemap is missing some pages in my initial tests.

Is there other ways in v15 I can do this? Or should I run through all my content once and for all, to set an actual "false" value in my "sitemap hide" fields, if they aren't there?

What are other people doing for automatically generating xml sitemaps?

# How to build a sitemap?

- Use Examine
- Add URL to the external index
- Query to exclude unwanted nodes

**It's improving**

---

## What to expect in the future

- Continuously looking at performance
- Improvements in v17.5 and v18
- Looking at IPublishedContent for L1 cache
- Umbraco.Cms.Search (shipped as package)



# In a nutshell

---

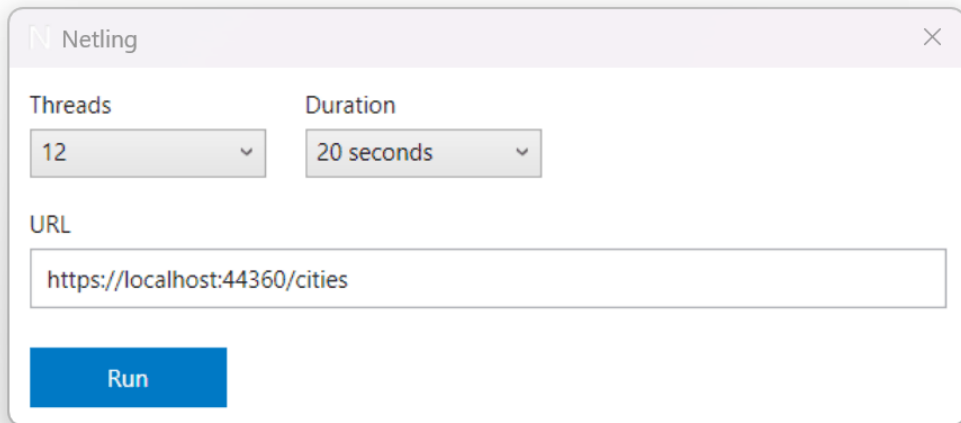
# HybridCache summary

- Increased scalability
- Lower memory footprint
- Faster startup
- Easier to shoot yourself in the foot 



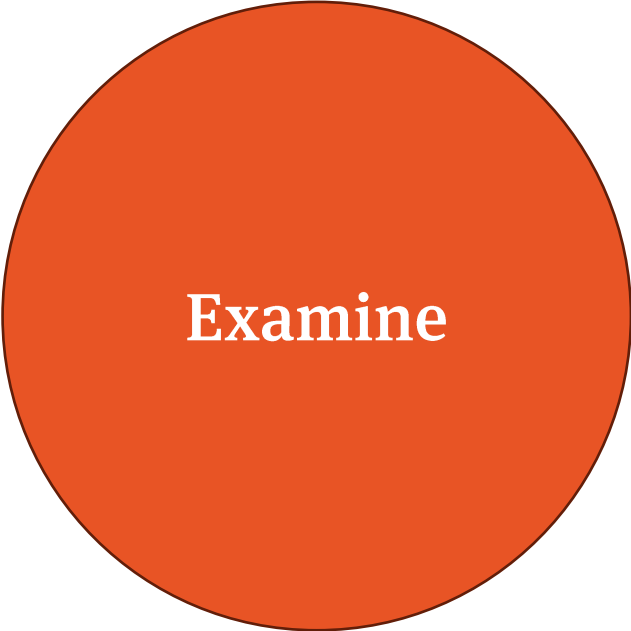
# Measure

- Continuously monitor performance

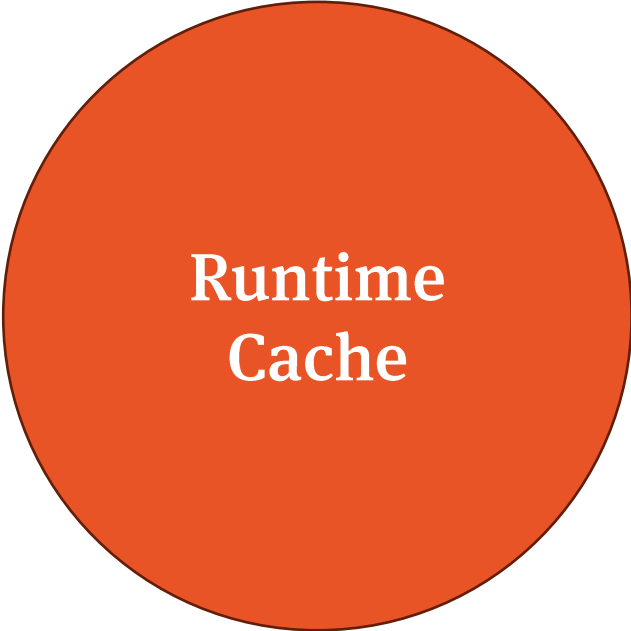


A screenshot of the Netling application window. The window has a title bar with the text "Netling" and a close button. Inside the window, there are two dropdown menus: "Threads" set to "12" and "Duration" set to "20 seconds". Below these is a text input field labeled "URL" containing the text "https://localhost:44360/cities". At the bottom of the window is a blue button labeled "Run".



A large orange circle with a thin black outline, containing the word 'Examine' in white serif font.

Examine

A large orange circle with a thin black outline, containing the words 'Runtime' and 'Cache' in white serif font, stacked vertically.

Runtime  
Cache

# Supertak!

@markusjoha

markus@obviuse.se



Download the slides

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