Index/Data lifecycle Management

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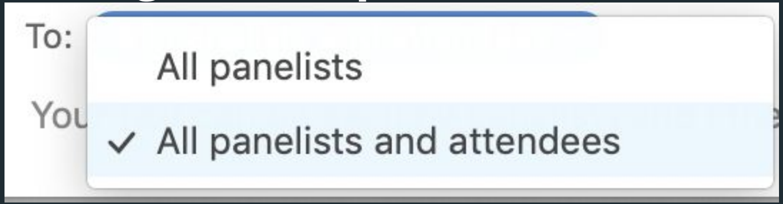
Housekeeping & Logistics

- Attendees are automatically muted when joining Zoom
- Q+A will be at the end of the webinar
- Ask questions for us in the Zoom chat during the webinar
  - Chat settings **To: All panelists and attendees**

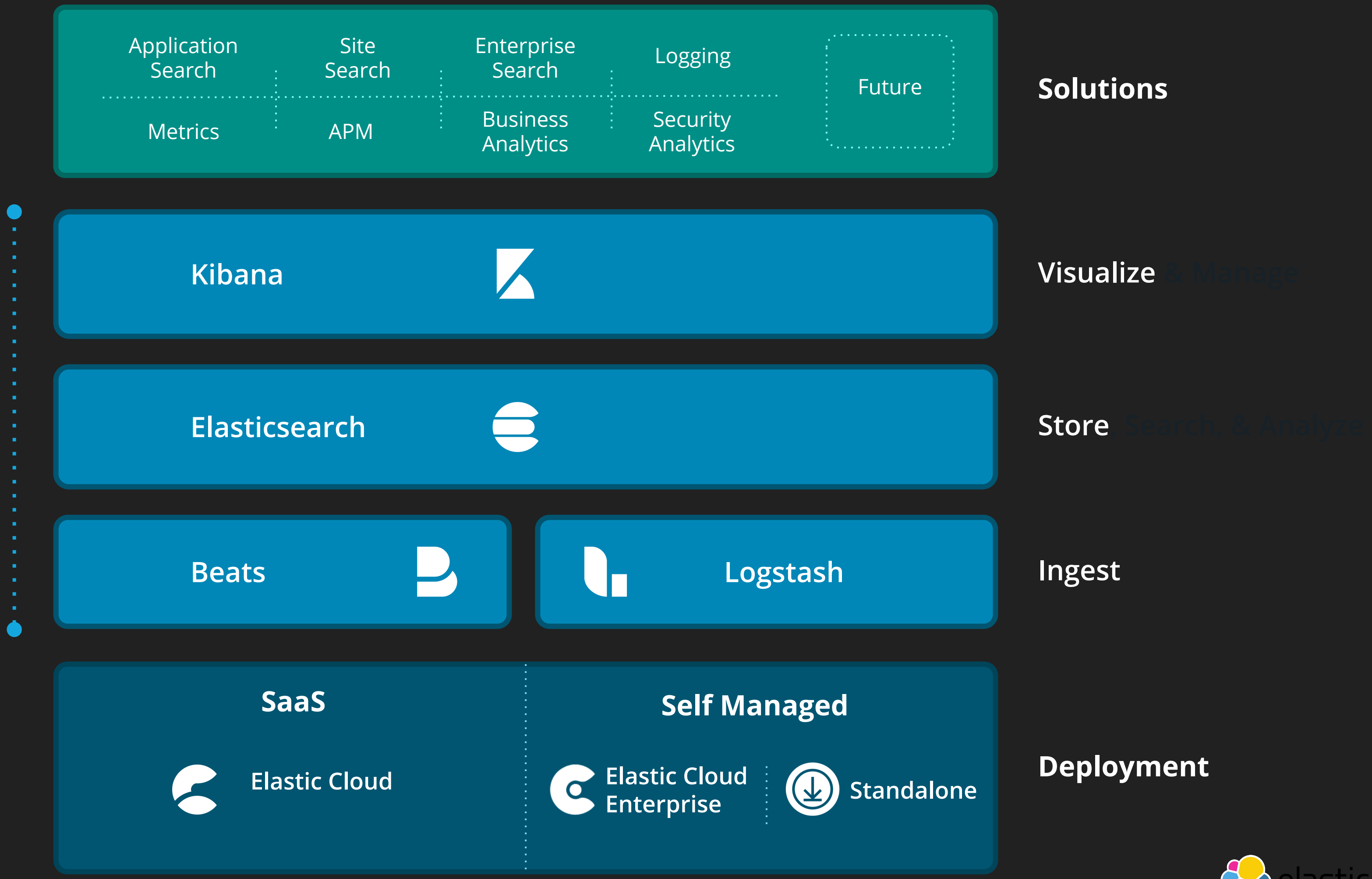


  - Ask more questions on our discuss forum: **discuss.elastic.co**
- **Recording** will be available after the webinar and emailed to all registrants

Agenda

- Index/Data Management in Elastic Stack
  - The Big Picture around Data Management
  - Data Lifecycle Phases
  - Data Lifecycle Features
- Demo ILM

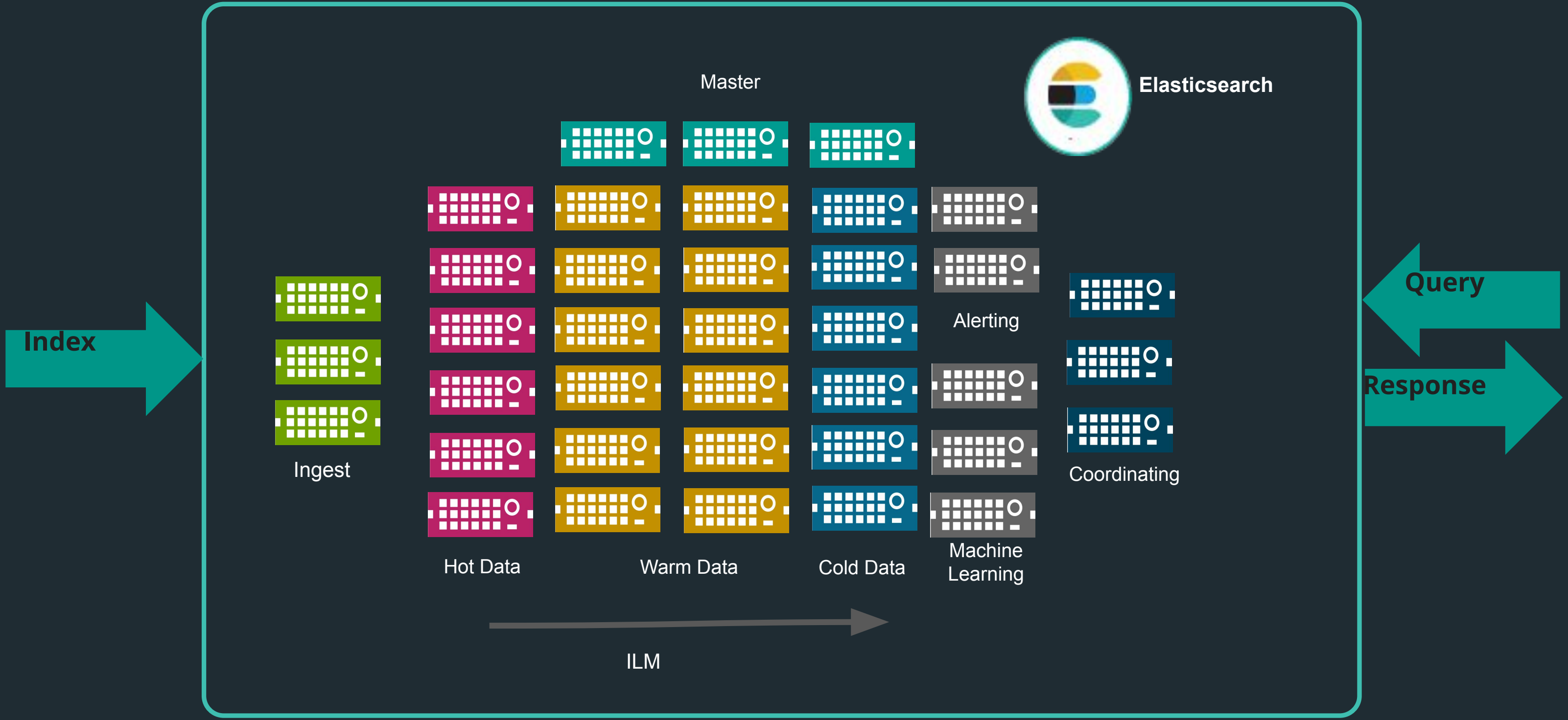
Elastic Stack



elastic

Inside a Large Elasticsearch Logging Cluster

Reduce infrastructure costs, isolate workloads, and manage data lifecycle



Dive Deep into Elasticsearch

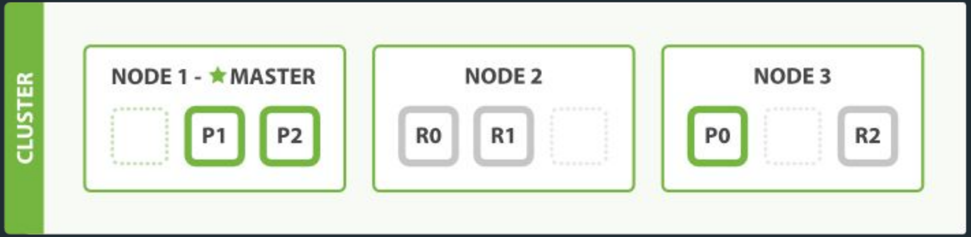
Shards & replicas

Shards

- Start with 1 primary shard per index (default starting 7.0)
- How many per node?
  - Max 20 Shards per GB of JVM Heap
  - 30 GB Heap = MAXIMUM 600 Shards
- Add more to scale for ingest volume
- Shard allocation and cluster-level routing:
  settings to control where, when, and how shards are allocated to nodes

Replicas

- Keep in mind more replicas = slower writes
- Only add more replicas if your use case is search heavy

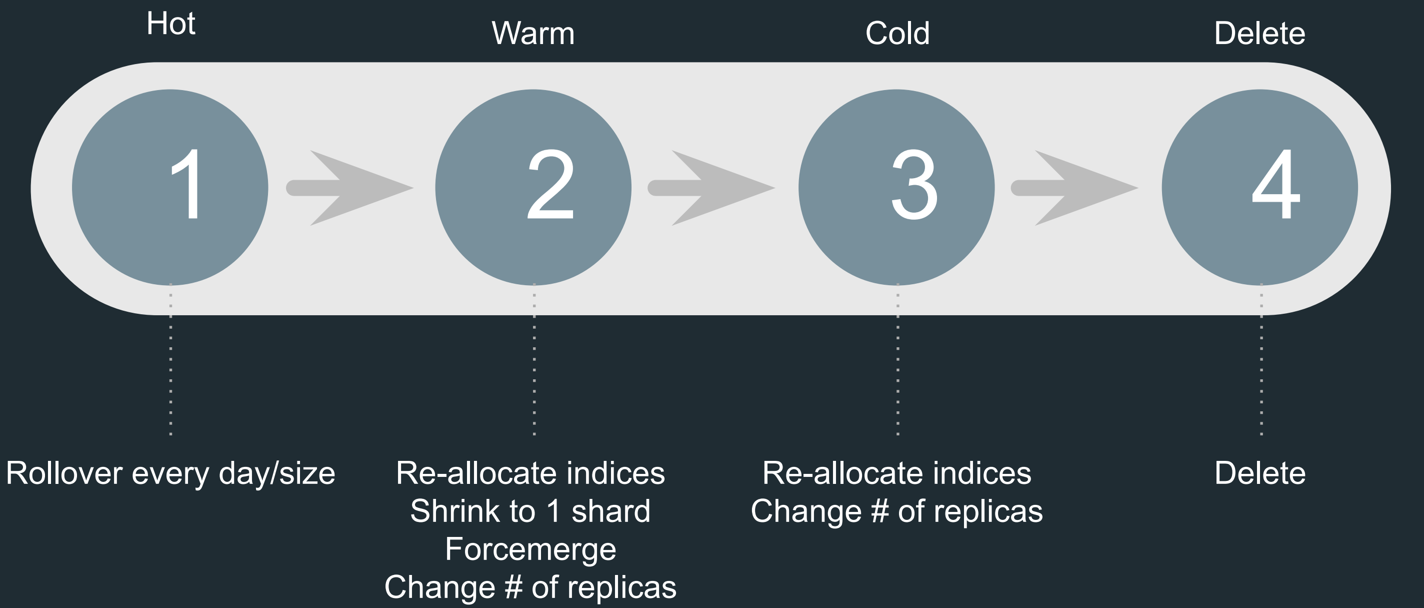


Hot	In this phase, you are actively querying and writing to your index.
Warm	You are still querying your index, but it is read-only. You can allocate shards to less performant hardware. For faster searches, you can reduce the number of shards and force merge segments.
Cold	You are querying your index less frequently, so you can allocate shards on significantly less performant hardware. Because your queries are slower, you can reduce the number of replicas.

Frozen	A frozen index has little overhead on the cluster and is blocked for write operations. You can search a frozen index, but expect queries to be slower.
Backup	Using Snapshot and Restore API, the data will be moved out of an Elasticsearch cluster and archived on a defined storage. It can be restored back into an Elasticsearch cluster.

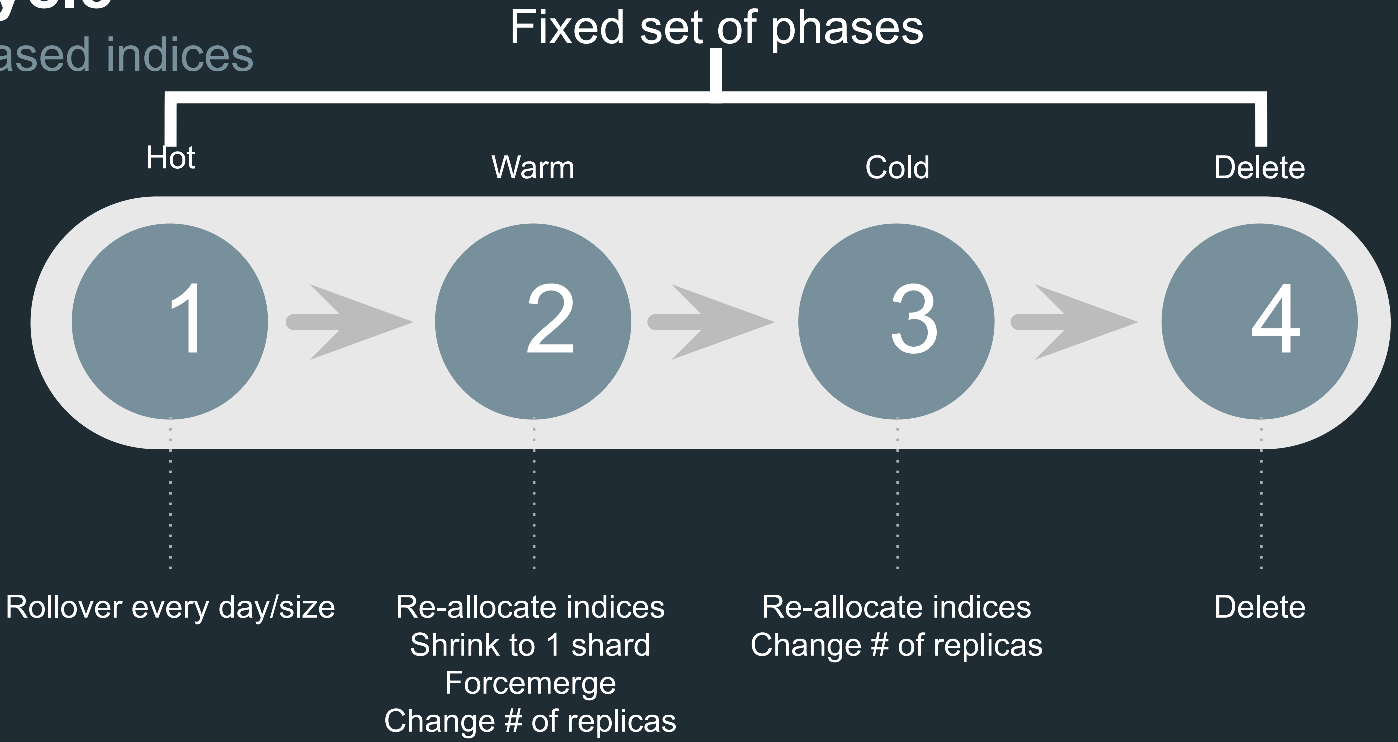
Lifecycle

Time-based indices



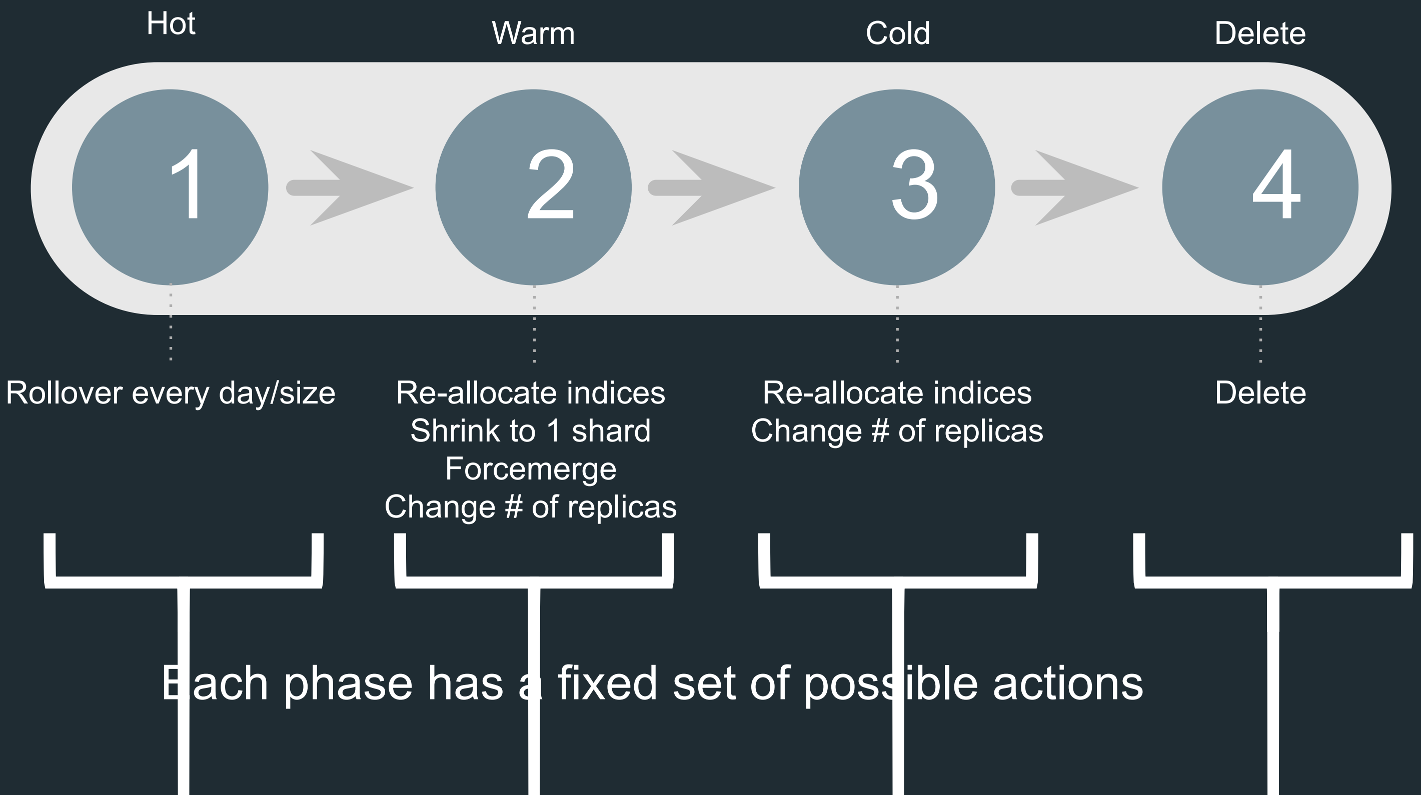
Lifecycle

Time-based indices



Lifecycle

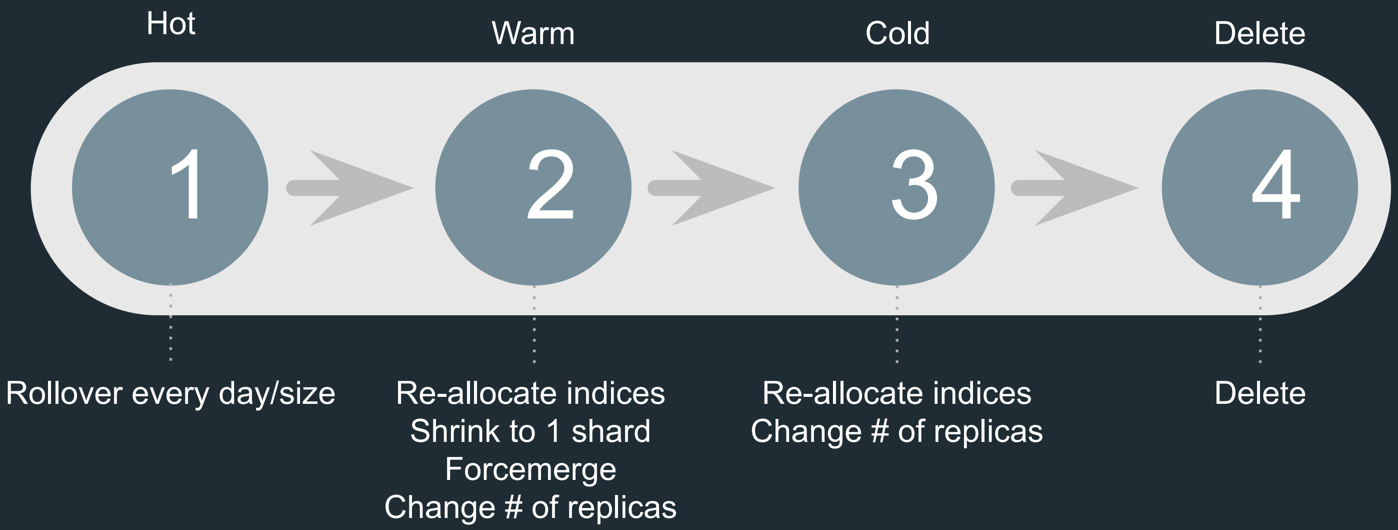
Time-based indices



Each phase has a fixed set of possible actions

Lifecycle

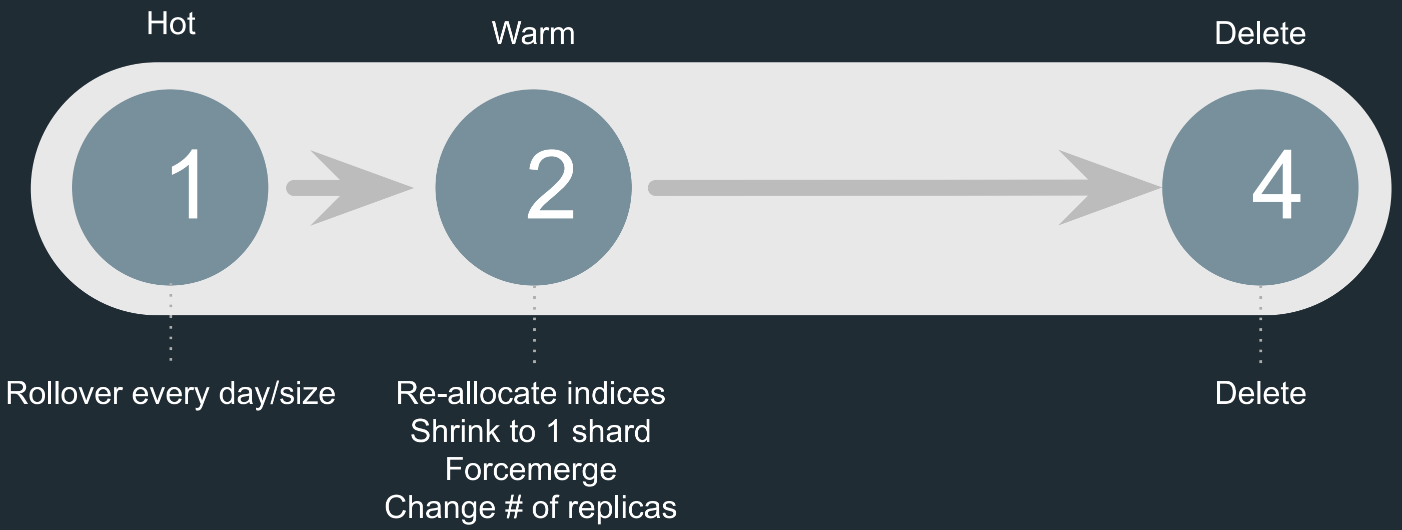
Time-based indices



Sensible defaults driven by UI

Lifecycle

Time-based indices



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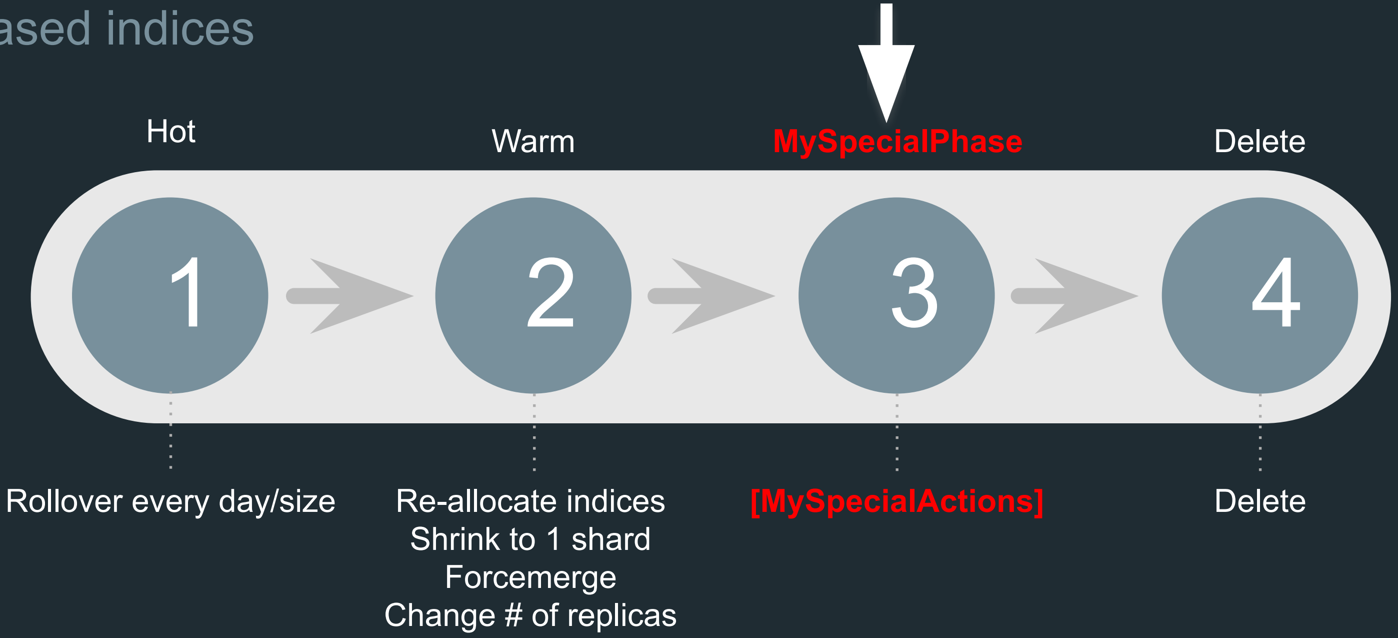
Lifecycle

Time-based indices



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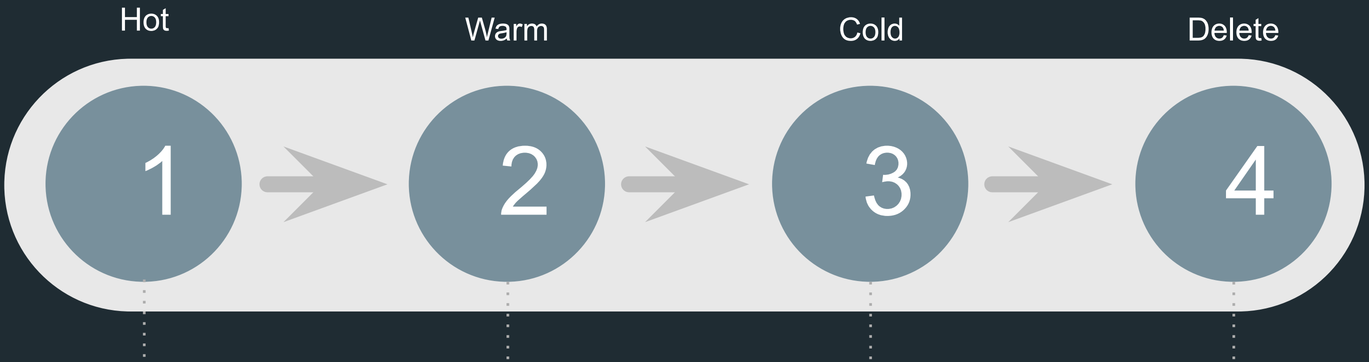
Lifecycle
Time-based indices

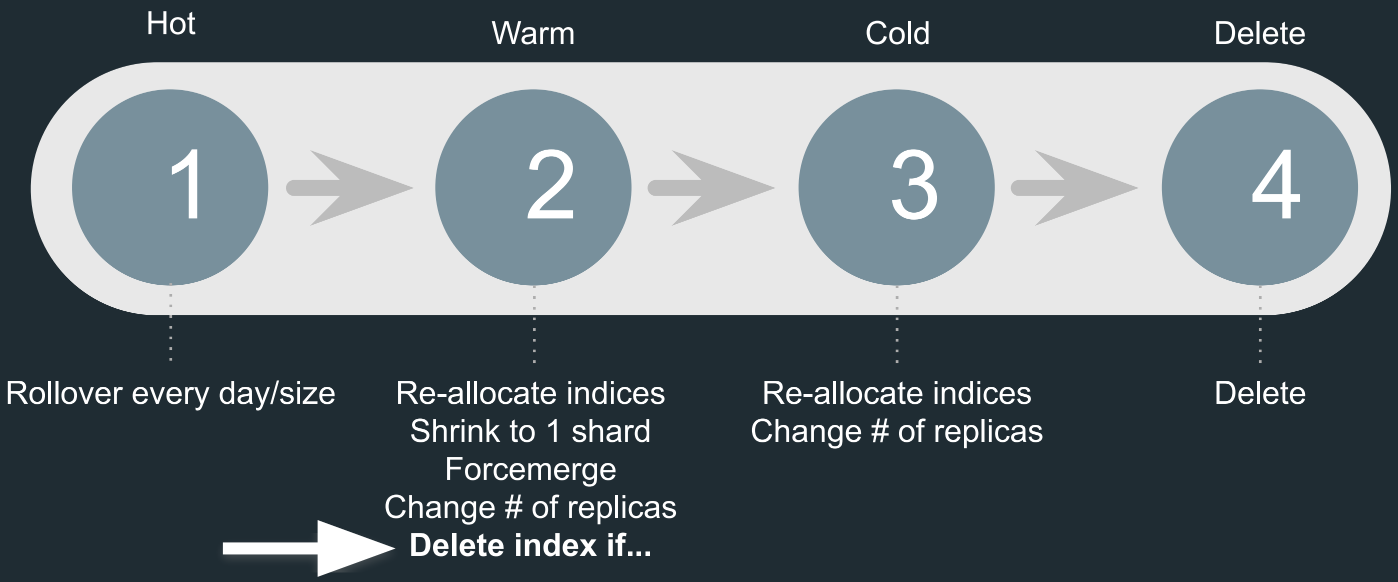


Hot	Warm	Cold	Delete
Rollover every day/size	Re-allocate indices ~~Shrink to 1 shard~~ ~~Forcemerge~~ Change # of replicas	Re-allocate indices ~~Change # of replicas~~	Delete

This is allowed

Lifecycle

Time-based indices



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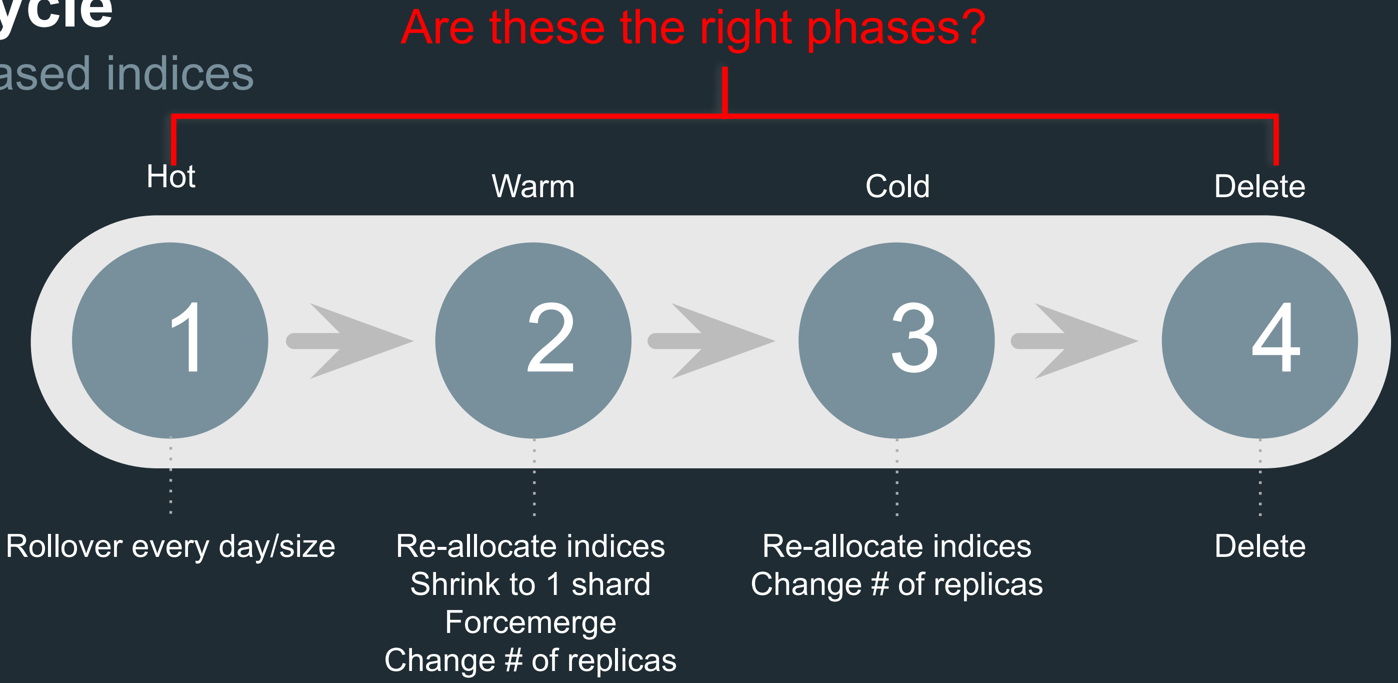
Questions to ask...

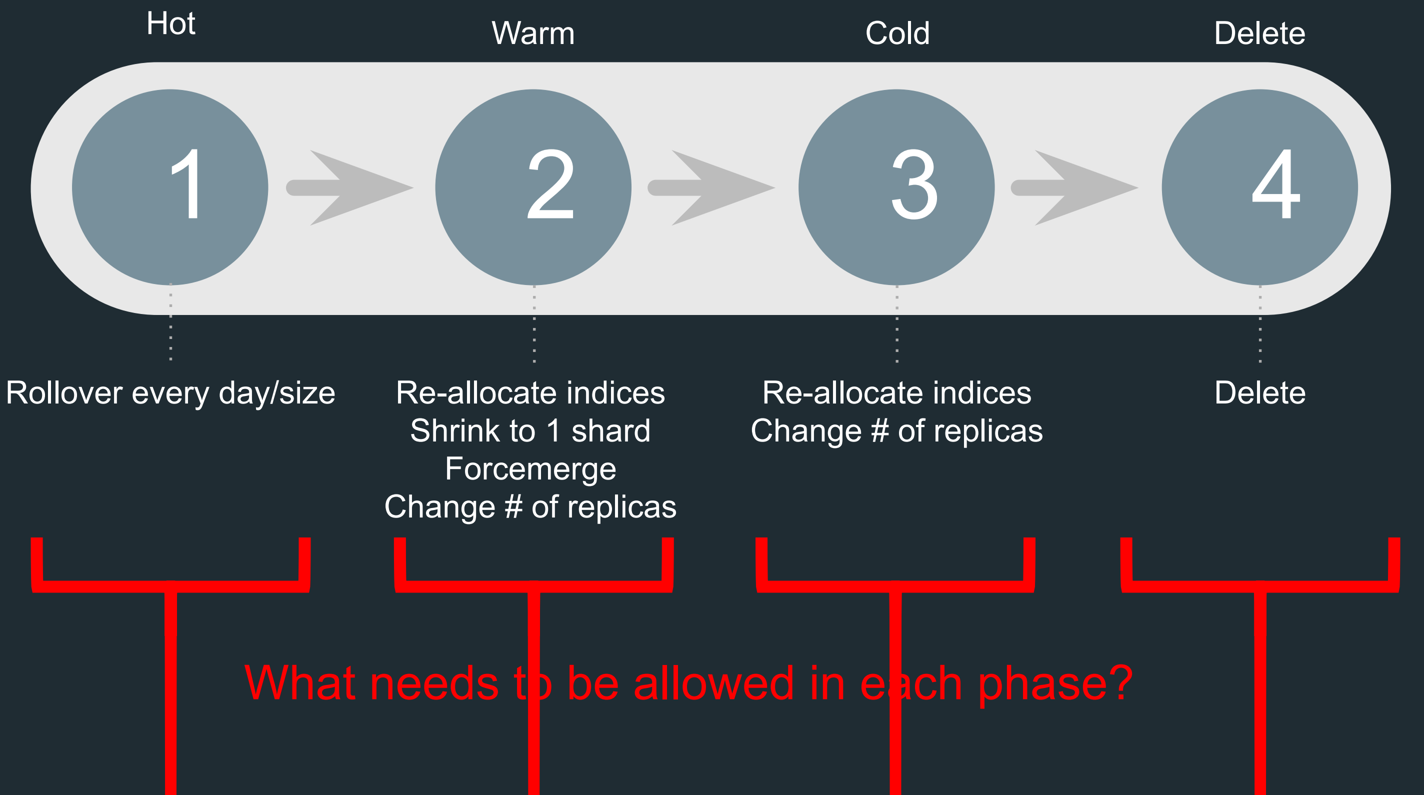
Lifecycle

Time-based indices



Lifecycle

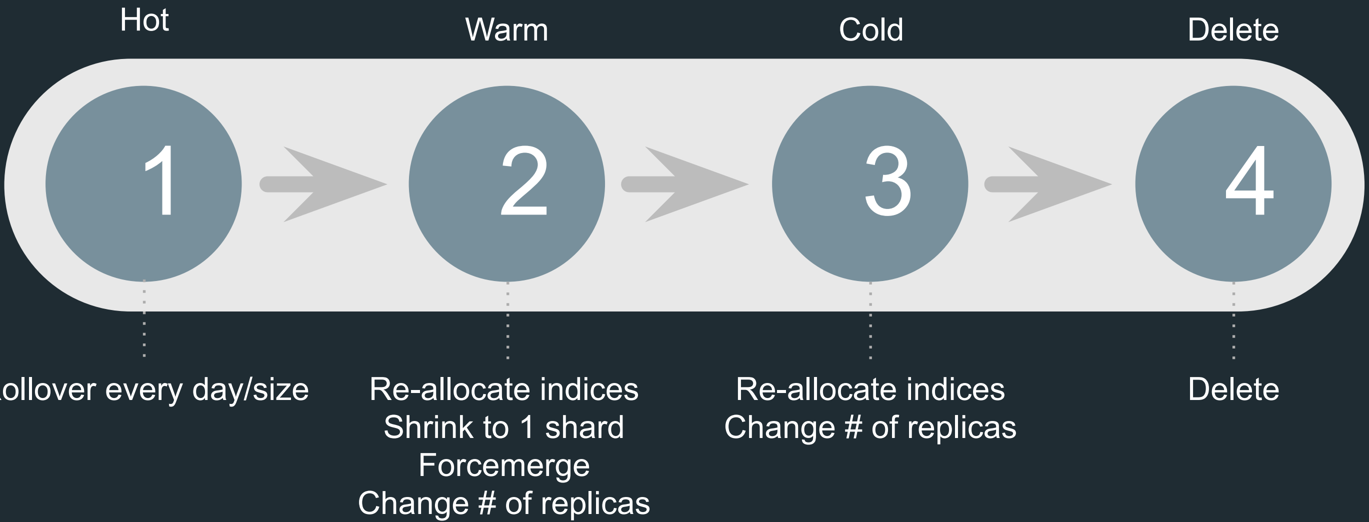
Time-based indices



Lifecycle

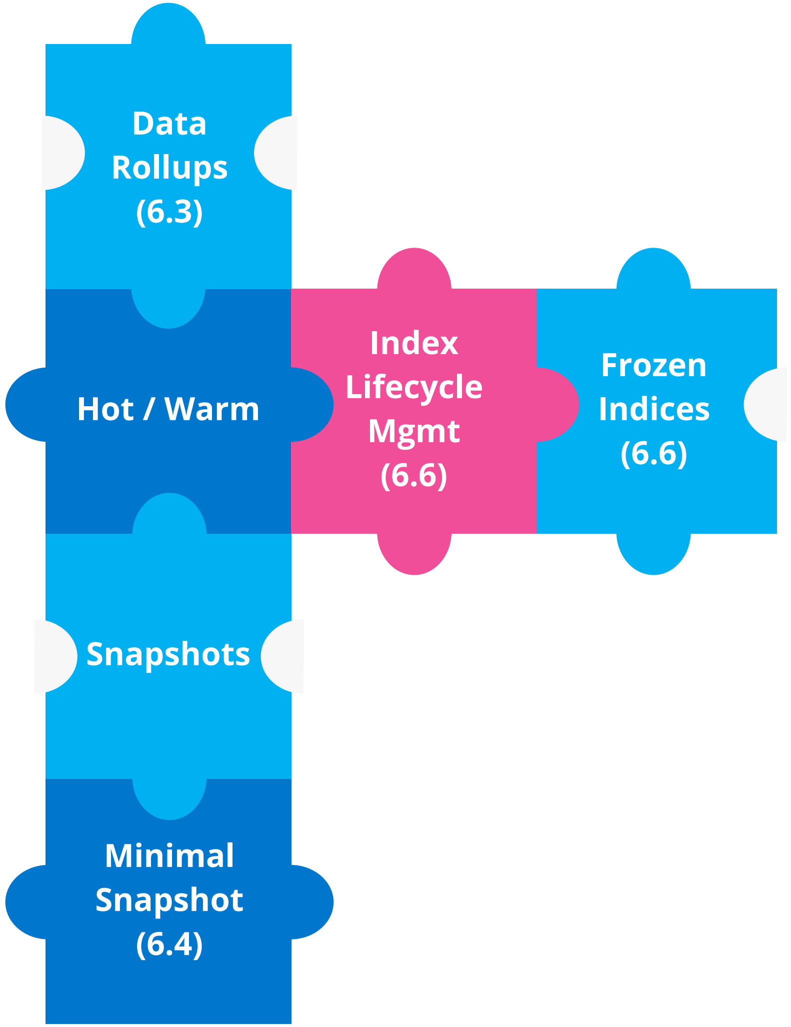
Time-based indices

What other life cycles should be considered?
What do/could they look like?



Index Lifecycle Management

Part of larger story around data management. ILM helps to **automate** the lifecycle of data without the need to create own tooling.

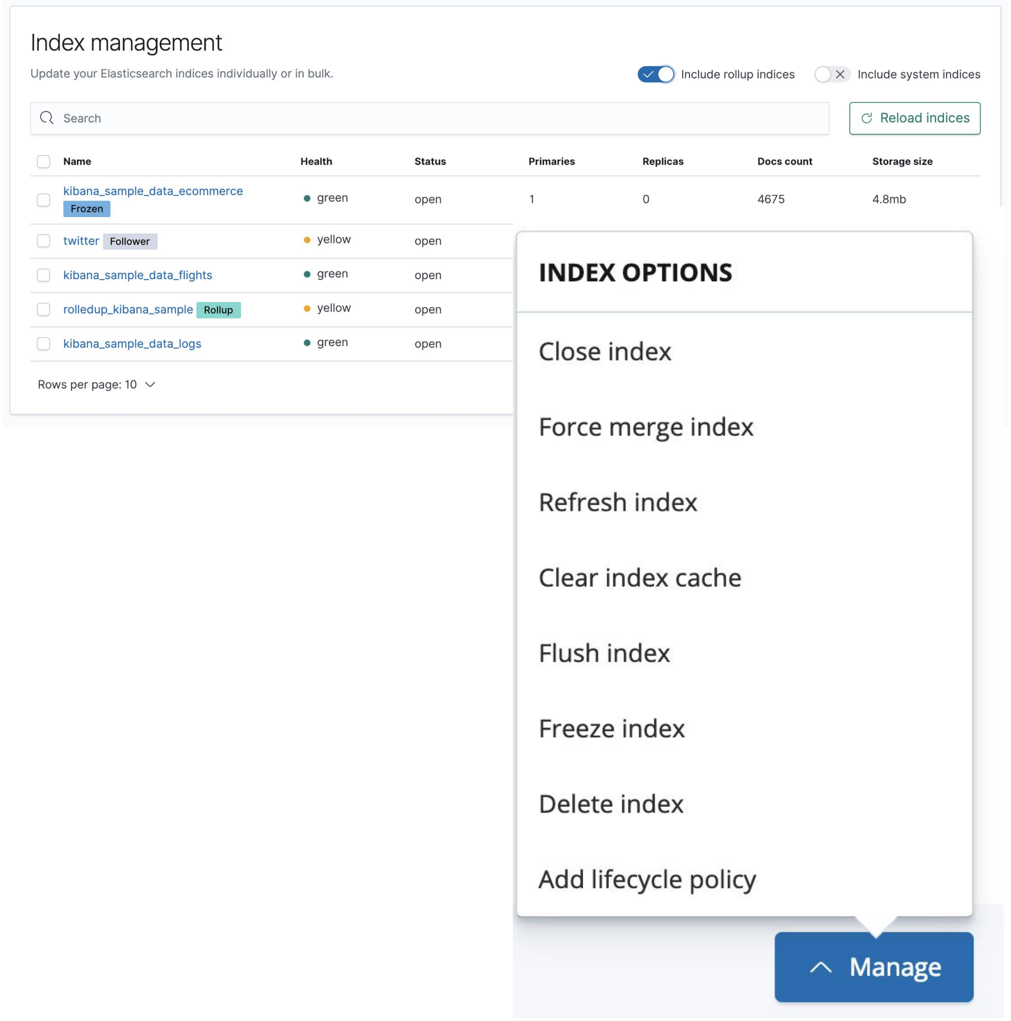


Index Mgmt Improvements

GA | Basic (free)

Badges to mark frozen, rolled-up and follower indices

Freeze / Unfreeze actions



Index management

Update your Elasticsearch indices individually or in bulk.

Include rollup indices ✓ | Include system indices

Search | Reload indices

Name	Health	Status	Primaries	Replicas	Docs count	Storage size
kibana_sample_data_ecommerce Frozen	● green	open	1	0	4675	4.8mb
twitter Follower	● yellow	open				
kibana_sample_data_flights	● green	open				
rolledup_kibana_sample Rollup	● yellow	open				
kibana_sample_data_logs	● green	open				

Rows per page: 10

Rollups in Kibana

Beta | Basic (free)

Automatically roll up data into coarser time buckets as it ages

- Save on storage space & costs
- Smaller indices = faster analytics

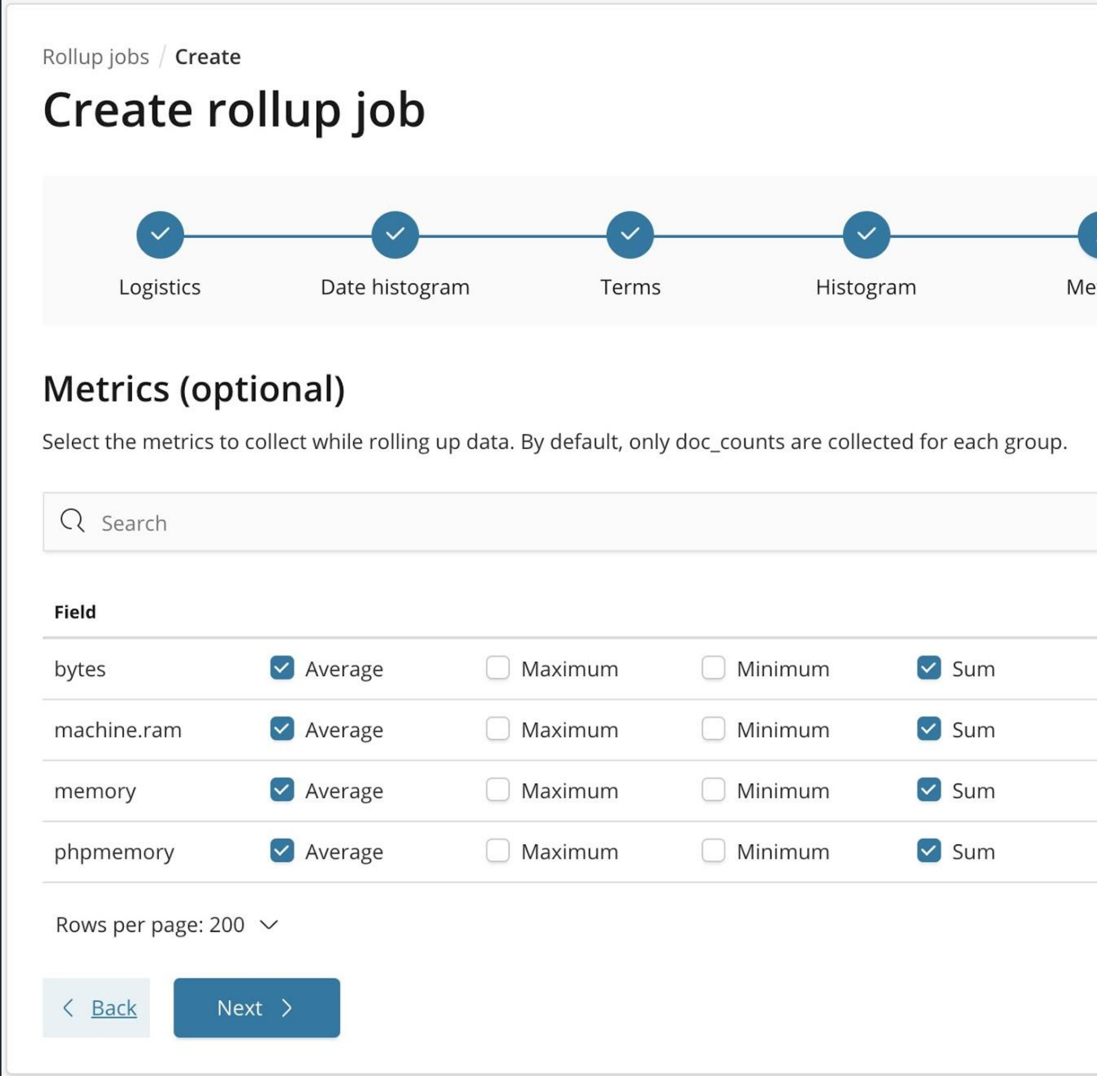
6.3 - Rollups API in Elasticsearch

6.5 - Rollups support in Kibana

- Job management UI
- Visualize rolled up indices

Aggregation functions:

- Avg, min, max, sum, count



Create rollup job

Metrics (optional)

Select the metrics to collect while rolling up data. By default, only doc_counts are collected for each group.

Field				
bytes	✓ Average	Maximum	Minimum	✓ Sum
machine.ram	✓ Average	Maximum	Minimum	✓ Sum
memory	✓ Average	Maximum	Minimum	✓ Sum
phpmemory	✓ Average	Maximum	Minimum	✓ Sum

Frozen Indices

Basic (free)

Enable higher storage: memory ratio

Trades off search speeds for lower memory footprint (i.e. lower costs)

Keep data searchable (online) in an cost-efficient way

Operationally much simpler than alternatives like snapshots or archival.

Open Index	Searchable High heap (memory) Fast searches
Frozen Index	Searchable No heap (memory) Slower searches
Closed Index	NOT searchable No heap (memory)

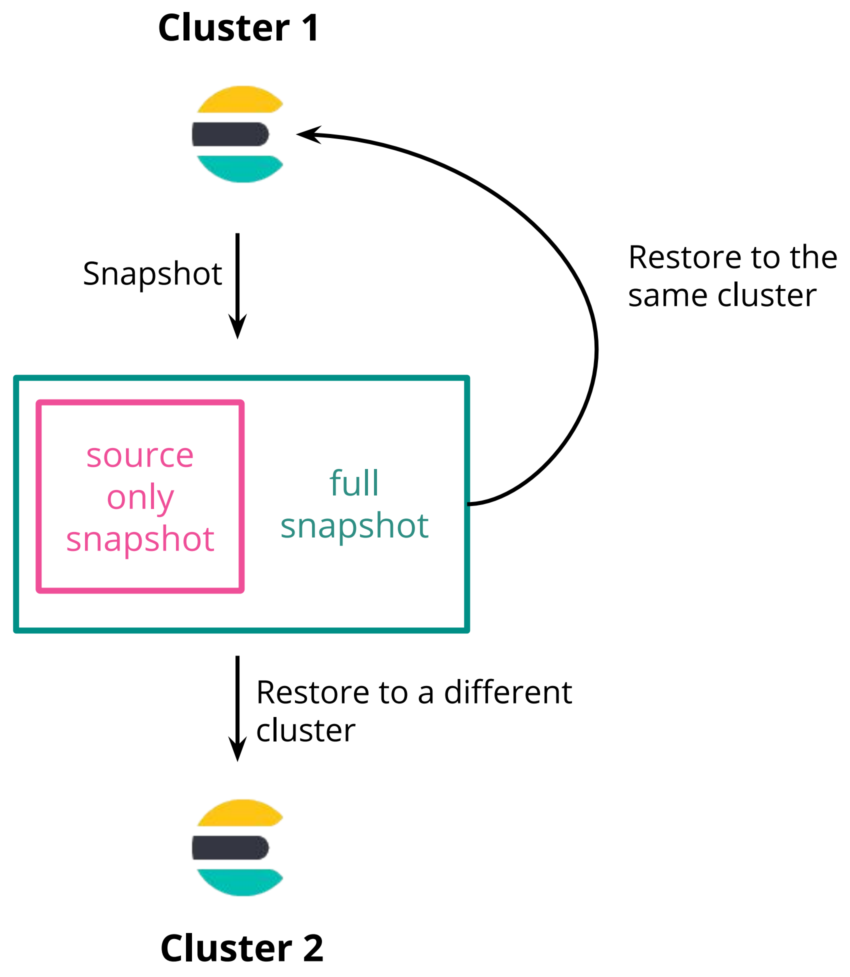
_source Only Snapshot

Basic (free)

_source only snapshots can be 50% smaller than full snapshots

Requires a reindex to make the data searchable again

Trades off restore time for smaller storage space / costs



Using origination_date

What if there's a gap between the index age and the data age?

1) data transition from other systems of records into Elasticsearch at various points in the data's lifecycle

2) data already in Elasticsearch is reindexed into new indexes

```
PUT /events-2020.01.01
{
  "settings" : {
    "index" : {
      "lifecycle.name": "readonly_and_delete_policy",
      "lifecycle.parse_origination_date": true # <1>
    }
  }
}
```

```
PUT /events
{
  "settings" : {
    "index" : {
      "lifecycle.name": "readonly_and_delete_policy", # <1>
      "lifecycle.origination_date": 1577836800000 # <2>
    }
  }
}
```

Demo ILM

Thank You