ElasticSearch Essential Training Notes

# ElasticSearch Architecture

Graphical user interface, application

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**Cluster**: Before we dig in and start using Elasticsearch, I thought it would make sense to cover all the concepts here so you have a general understanding of how all the pieces fit together.

**Node**: The node is the part of your cluster that stores the data. It provides the search and index capabilities and has its own unique name.

**Index:** Now the nodes contain indexes, and an index is a collection of similar documents, such as customer data or product information. The node names are in all lower case, and you can have as many of them as you want. When you're doing almost anything in Elasticsearch, you're going to be referencing an index, so it's important to have a consistent naming pattern for all of them in your cluster.

**Type:** Inside of an index, you have a type, and this is a category or a partition of your index. You can have multiple types within a single index, for example, one index may be for orders, but you may have multiple types for product information and shipping information.

**Document**: At the base unit, you have a document, which would be for a single customer or order or an event, let's say, on your website. These documents are in JSON format and physically reside in your index.

**Shard/Replica**: The index, in order to be scalable, has to be distributed, and it does this using shards and replicas. Now a replica is a segment of an index, and a shard is a portion of that index. Because of its nature, a replica can never be located on the same node as the primary shard that it's a backup for. The default when creating an index is to have five shards and one replica, that would equal five primary shards and five replica shards distributed across two different nodes.

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If we visualize this, we start out with our cluster here, and inside of the cluster, we have multiple nodes. Inside of a node we have our index, which is our primary index, and inside of that, we have our types. We have customer type and an order type. From there, we have our documents, which actually have the data living in them. We also have a shard, so this is a partition of our index. Now we have our same types and our documents in there as well. Additionally, we have our replicas, which are the backup copies in case we have any issues with the primary shards of our index.