



elasticsearch  
for developer

# Life on Cluster

02\_cluster.txt

# Single node



N O D E 1

master  
data

# Create index for single node

**PUT** /blog

```
{  
  "settings": {  
    "number_of_shards": 3,  
    "number_of_replicas": 0  
  }  
}
```

# Cluster health

**GET** \_cluster/health

```
1 {  
2   "cluster_name": "elasticsearch",  
3   "status": "green",  
4   "timed_out": false,  
5   "number_of_nodes": 1,  
6   "number_of_data_nodes": 1,  
7   "active_primary_shards": 3,  
8   "active_shards": 3,  
9   "relocating_shards": 0,  
10  "initializing_shards": 0,  
11  "unassigned_shards": 0,  
12  "number_of_pending_tasks": 0  
13 }
```

# n Nodes



The diagram illustrates a system with two nodes, each containing master data. At the top, the text 'n Nodes' is centered. Below it, two green rectangular boxes are positioned side-by-side. The left box is labeled 'NODE 1' in white capital letters, and the right box is labeled 'NODE 2' in white capital letters. Below each box, the words 'master' and 'data' are written in black, stacked vertically.

N O D E 1

master  
data

N O D E 2

master  
data

# Distributed data



# Distributed data

## blog

size: 7.10ki (7.10ki)

docs: 3 (3)

Info ▼

Actions ▼



**node01**

Info ▼

Actions ▼

1

2



**node02**

Info ▼

Actions ▼

0

# Cluster health

**GET** \_cluster/health

```
1 {  
2   "cluster_name": "kaidee",  
3   "status": "green",  
4   "timed_out": false,  
5   "number_of_nodes": 2,  
6   "number_of_data_nodes": 2,  
7   "active_primary_shards": 3,  
8   "active_shards": 3,  
9   "relocating_shards": 0,  
10  "initializing_shards": 0,  
11  "unassigned_shards": 0,  
12  "number_of_pending_tasks": 0  
13 }
```



# Replica = 1

N O D E 1

master  
data

N O D E 2

master  
data

# Replicate data



# Create index for replica

**PUT** /blog2

```
{  
  "settings": {  
    "number_of_shards": 4,  
    "number_of_replicas": 1  
  }  
}
```

# Replicate data

**blog2**  
size: 460B (776B)  
docs: 0 (0)

Info ▾ Actions ▾

★	<b>node01</b>	Info ▾	Actions ▾	0	1	2	3
●	<b>node02</b>	Info ▾	Actions ▾	0	1	2	3

# Node with single responsibility



N O D E 1

master

N O D E 2

data

N O D E 3

query


# Create index

**PUT** /blog3

```
{  
  "settings": {  
    "number_of_shards": 4,  
    "number_of_replicas": 1  
  }  
}
```

# Replicate data

**blog3**  
size: 460B (460B)  
docs: 0 (0)  
[Info](#) [Actions](#)

 **Unassigned**


0

1

2

3

 **node01**  
[Info](#) [Actions](#)

 **node02**  
[Info](#) [Actions](#)

0

1

2

3

 **node03**  
[Info](#) [Actions](#)

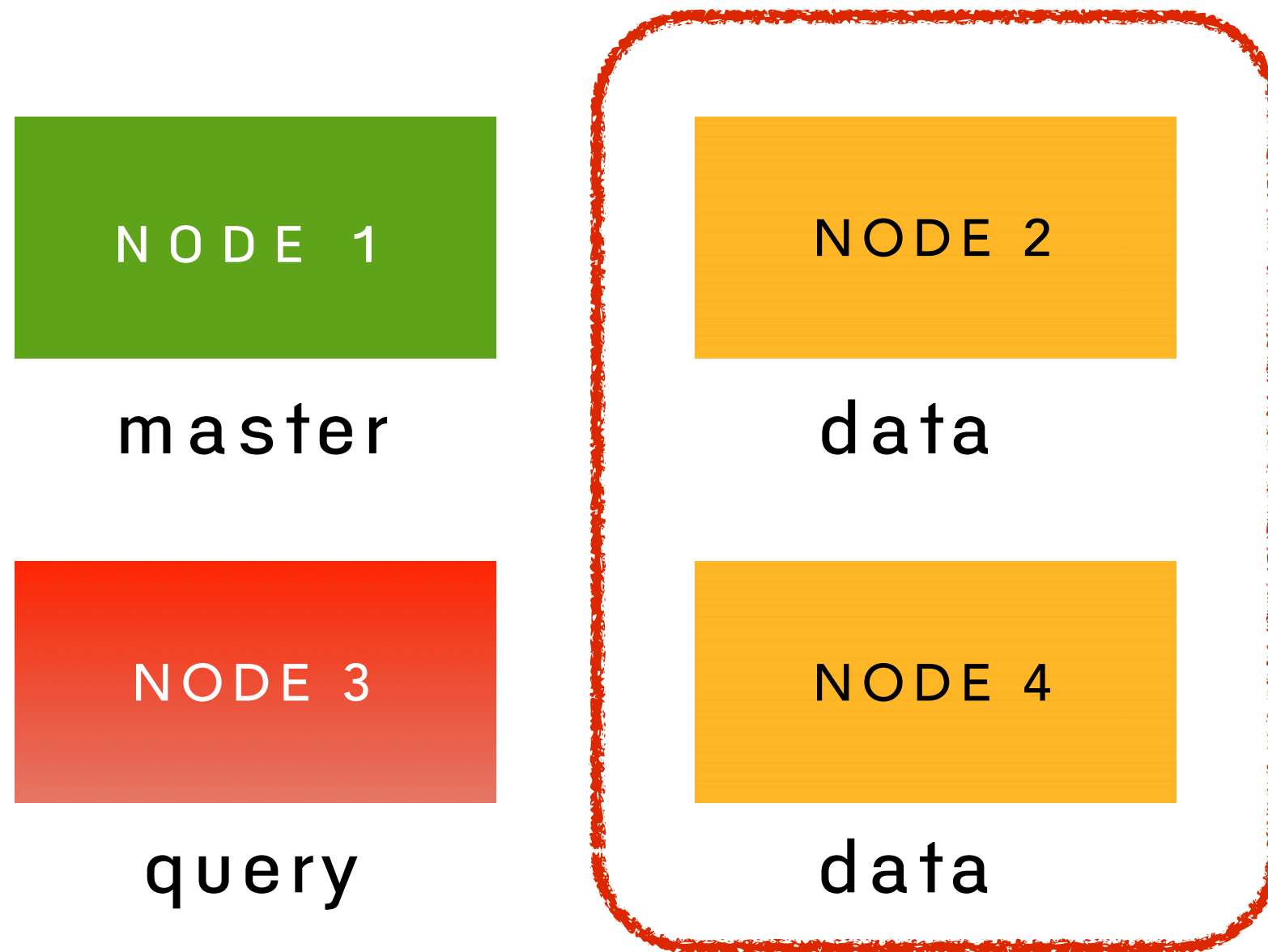
# Cluster health

**GET** \_cluster/health

```
1 {  
2   "cluster_name": "kaidee",  
3   "status": "yellow",  
4   "timed_out": false,  
5   "number_of_nodes": 3,  
6   "number_of_data_nodes": 1,  
7   "active_primary_shards": 4,  
8   "active_shards": 4,  
9   "relocating_shards": 0,  
10  "initializing_shards": 0,  
11  "unassigned_shards": 4,  
12  "number_of_pending_tasks": 0  
13 }
```



# Add data node



# Replicate data

**blog3**  
size: 460B (776B)  
docs: 0 (0)  
[Info](#) [Actions](#)

**node01**  
[Info](#) [Actions](#)

**node02**  
[Info](#) [Actions](#)

0

1

2

3

**node03**  
[Info](#) [Actions](#)

**node04**  
[Info](#) [Actions](#)

0

1

2

3

# Cluster health

**GET** \_cluster/health

```
1 {  
2   "cluster_name": "kaidee",  
3   "status": "green",  
4   "timed_out": false,  
5   "number_of_nodes": 4,  
6   "number_of_data_nodes": 2,  
7   "active_primary_shards": 4,  
8   "active_shards": 8,  
9   "relocating_shards": 0,  
10  "initializing_shards": 0,  
11  "unassigned_shards": 0,  
12  "number_of_pending_tasks": 0  
13 }
```

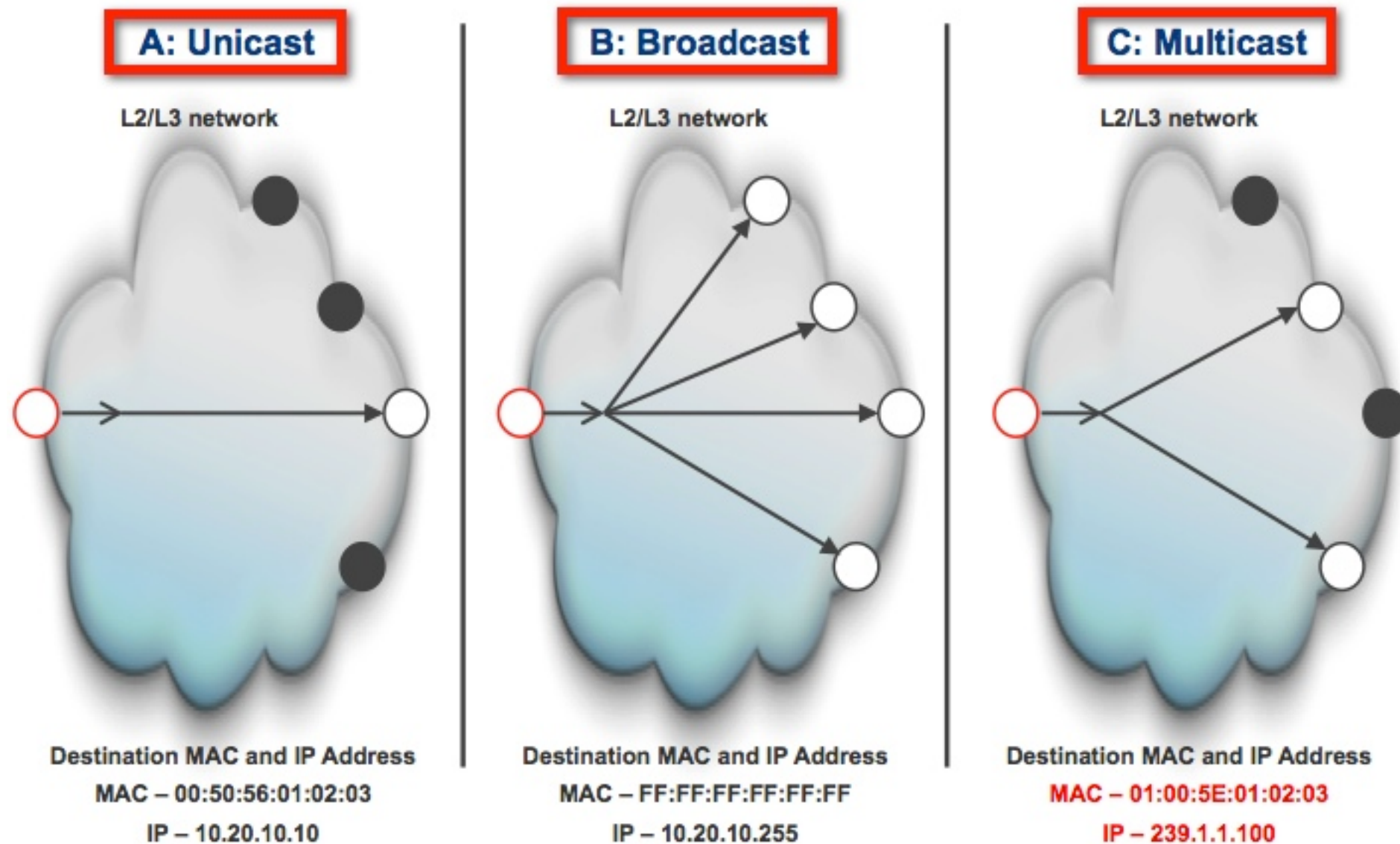
# Zen Discovery

Multicast

Unicast

<http://www.elastic.co/guide/en/elasticsearch/reference/current/modules-discovery-zen.html>

# Multicast vs Unicast



# Use unicast

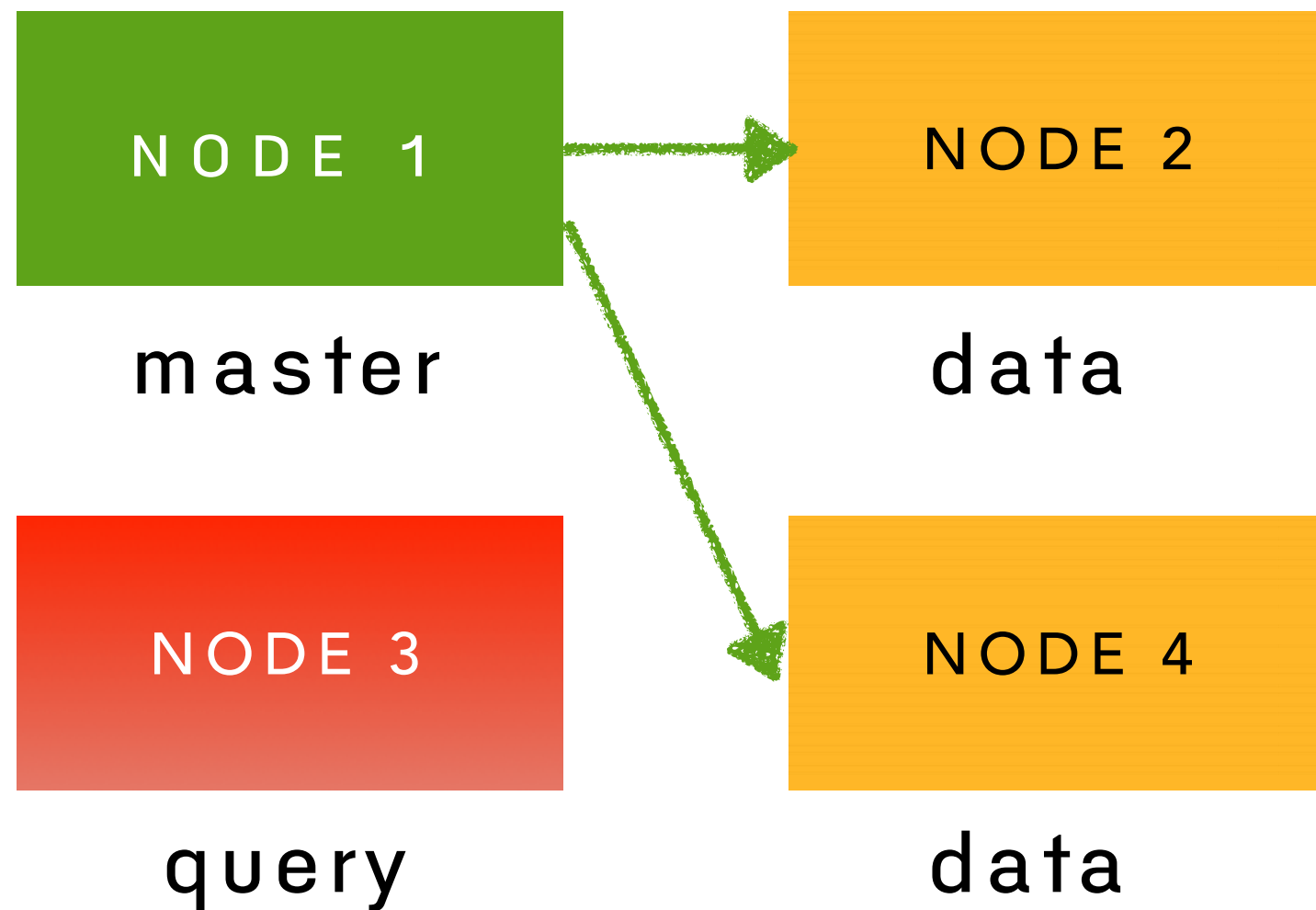
**# elasticsearch.yml**

**cluster.name: kaidee**

**discovery.zen.ping.multicast.enabled: false**

**discovery.zen.ping.unicast.hosts: ["node02:9201",  
"node04:9203"]**

# Unicast



# Master election

MINIMUM  
MASTER NODE

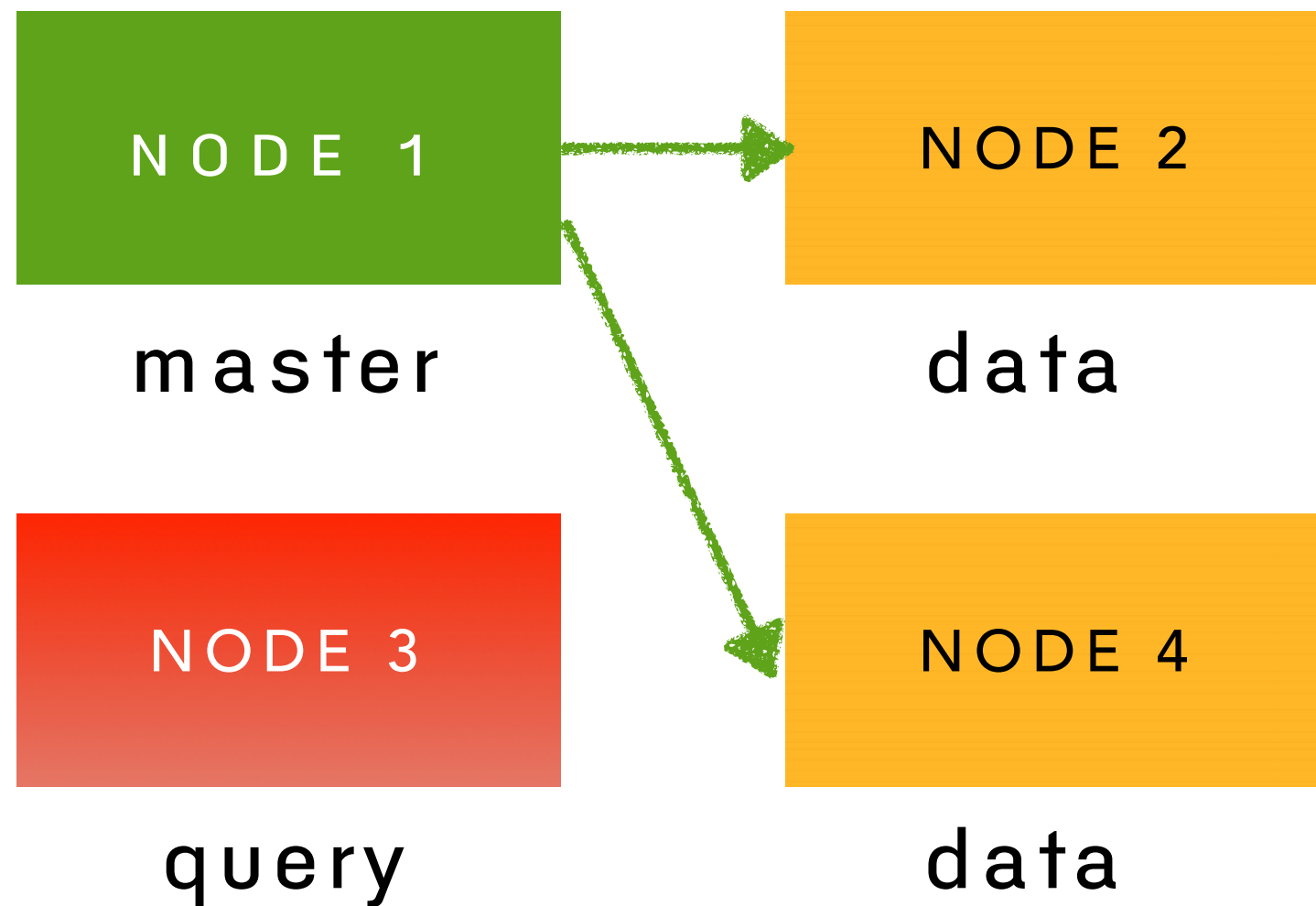
$\geq$

TOTAL NODE / 2



# Topology

$$4 / 2 = 2$$



# Minimum master node

## **# elasticsearch.yml**

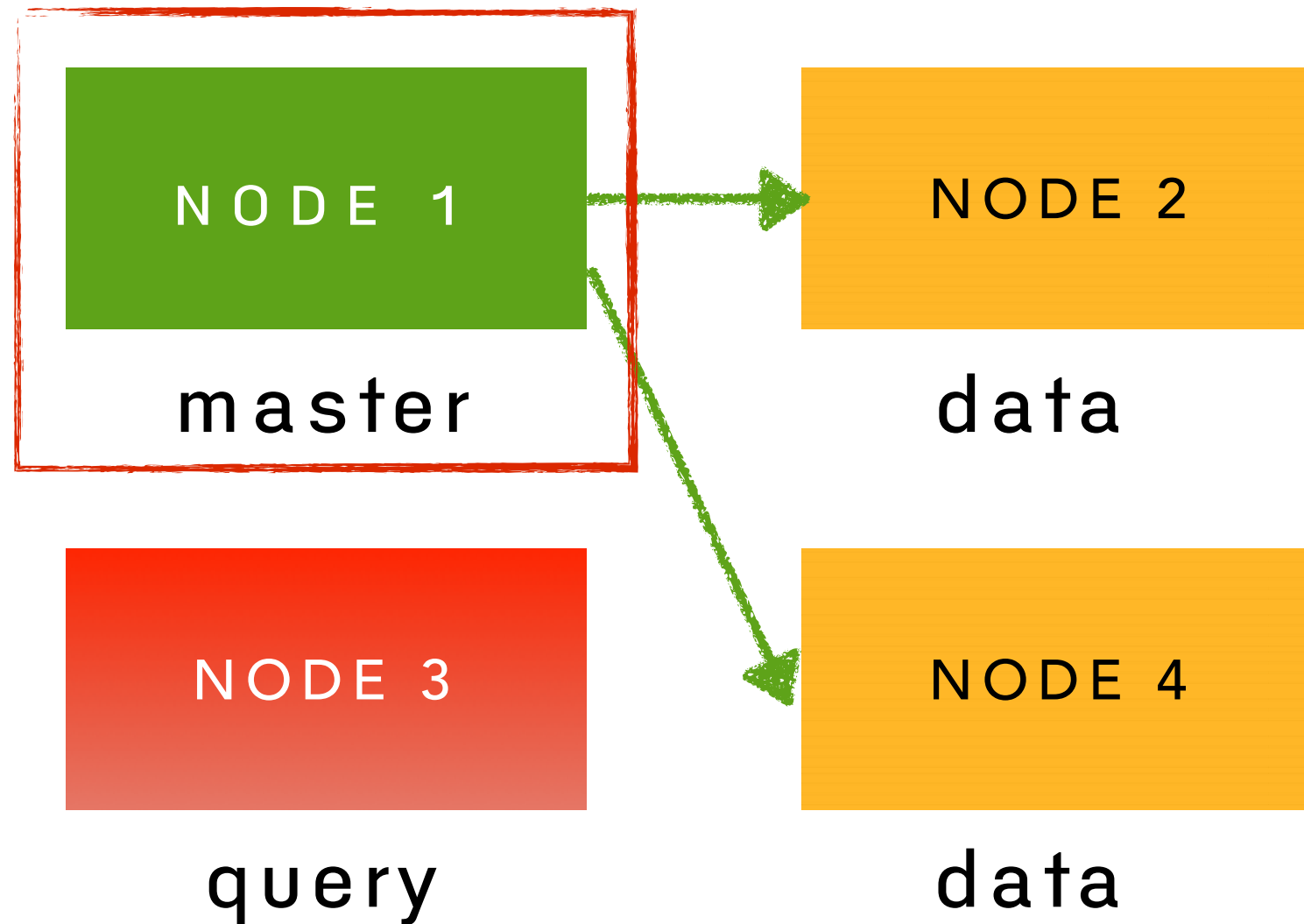
cluster.name: kaidee

discovery.zen.ping.multicast.enabled: false

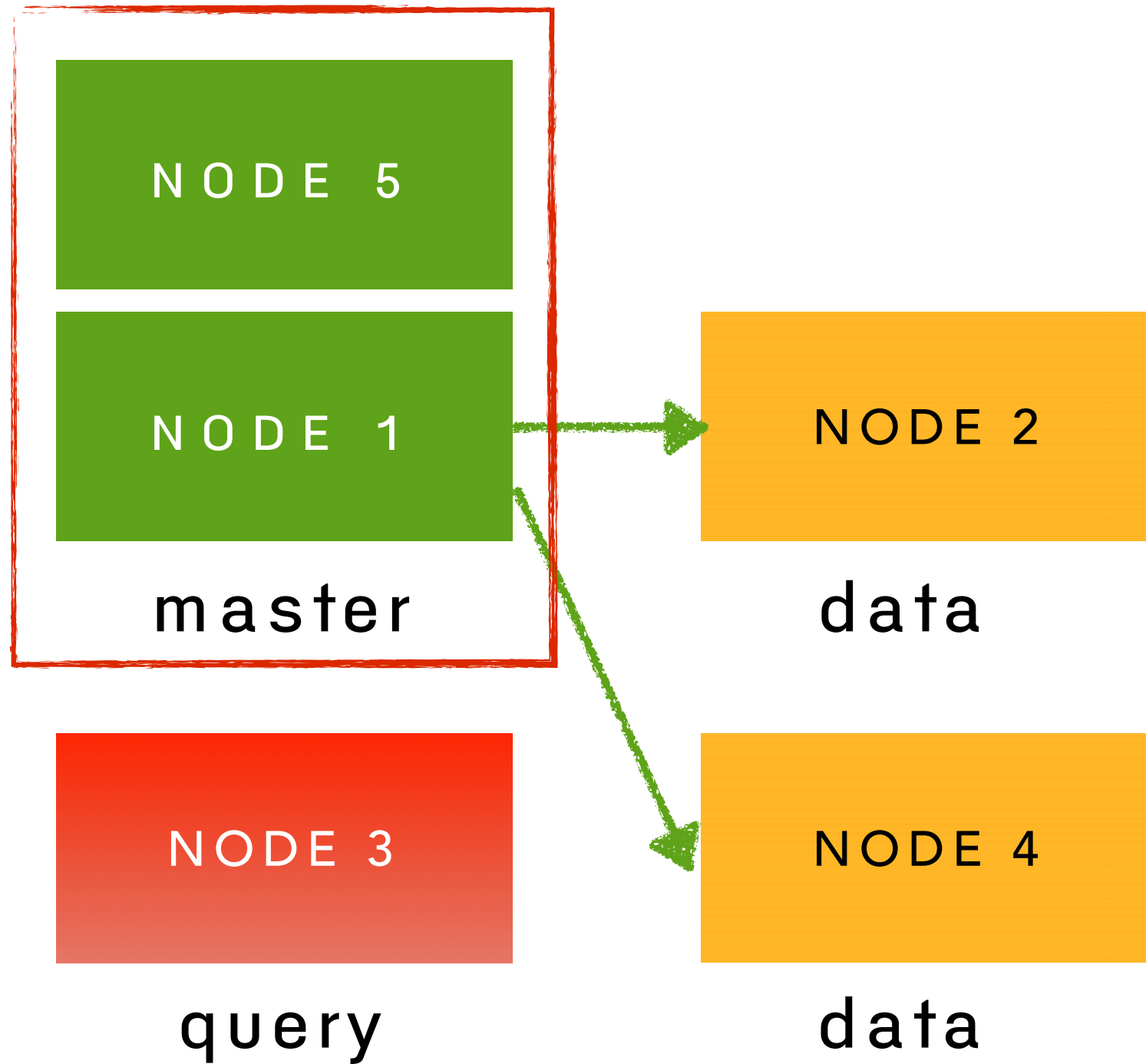
discovery.zen.ping.unicast.hosts: ["node02:9201",  
"node04:9203"]

**discovery.zen.minimum\_master\_nodes: 2**

# Not valid ?



# Add master node



# Restart node in cluster

อย่า shutdown หรือ stop service

# Restart node in cluster

Need rolling restart node by node

<http://www.elastic.co/guide/en/elasticsearch/reference/1.5/modules-cluster.html>

# Step by step

## 1. Stop rebalance for this node

PUT \_cluster/settings

{

  "transient": {

**"cluster.routing.allocation.enable": "none"**

  }

}

# Step by step

## 2. Shutdown node



# Step by step

3. Restart node to join in cluster

# Step by step

## 4. Enable rebalance

PUT \_cluster/settings

{

  "transient": {

**"cluster.routing.allocation.enable": "all"**

  }

}