Unassigned Shards

Problem Box

First, we'll poll for

a) cluster nodes themselves are ok

> CAT Nodes (code)
>
> ```
> GET _cat/nodes?v&s=name&h=name,id,master,node.role,type,jdk,heap.percent,disk.used_percent,cpu
> ```
>
> (Alt)
>
> ```
> $ jq ['.nodes|input.master_node as $master|input.nodes as $ns|to_entries[]|{id:.key , ip:.value.ip , host:.value.host , name:.value.name , roles:.value.roles , is_master:(if .key == $master then true else false end) , disk_avail:$ns[.key].fs.total.free , dup: ((100*($ns[.key].fs.total.total_in_bytes-$ns[.key].fs.total.free_in_bytes)/$ns[.key].fs.total.total_in_bytes)|round), heap_percent:$ns[.key].jvm.mem.heap_used_percent , cpu:$ns[.key].os.cpu.percent , loads:$ns[.key].os.cpu.load_average }'] nodes.json cluster_state.json nodes_stats.json
> ```

b) overall cluster health:

> Cluster Health (code)
>
> ```
> GET _cluster/health
> ```

This will return `status:[yellow, red]` & `unassigned_shards:>0`. If `initializing_shards:>0`, the cluster is actively recovering and issue may be transient.

Resolve

Transient

If `initializing_shards:0`, we'll investigate root cause, but to eliminate transient errors, I frequently start by running

> Cluster ReRoute
>
> ```
> POST _cluster/reroute
> ```
>
> or more specifically when fixing allocation issues
>
> ```
> POST _cluster/reroute?retry_failed=true
> ```

While `initializing_shards:>0` we can watch recovery via

> CAT Recovery (code)
>
> ```
> GET _cat/recovery?v&active_only=true&h=idx,sh,ty,st,time,bp,top,snode,tnode
> ```
>
> where
>
> - `ty:[store, snapshot, replica, relocating]`
> - `st:[init > index > verify_index > translog > finalize > done]`
>
> (Alt)
>
> ```
> $ ct recovery.json | jq -r --sort-keys 'to_entries[]|.key as $k|[.value.shards[]]|map_values(.+{index_name:$k})|.[]|{time:.total_time, index_name:.index_name, shard:.shard, primary:.primary, type:.type, stage:.stage, repository:.source.repository?, source_node:.source.node?, target_node:.target.node?, translog_percent:.translog.percent, bytes_percent:.index.percent}'
> ```

This can help us gauge recovery time.

Persistent

To determine if we have non-transient errors, we'll read

> CAT Shards, (code)
>
> ```
> GET _cat/shards?v&h=i,s,pr,n,st,dc,ur,ud
> ```
>
> (Alt)
>
> ```
> GET _cluster/state/routing_table?filter_path=routing_table.indices.*.shards.*.unassigned_info
> ```

This returns columns `ur` & `ud` (unassigned reason & description) to explain the shards' allocation issues.

We can use this info to resolve or investigate further via

> Cluster Allocation Explain
>
> ```
> GET _cluster/allocation/explain
> ```
>
> ```
> GET _cluster/allocation/explain
> {
>   "index": "INDEX_NAME",
>   "shard": NUMBER,
>   "primary": BOOL
> }
> ```