

Oracle NoSQL Database

- 18.1 New Features

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Oracle NoSQL Database – 18.1 New Features

Parent-Child
Join

Aggregation

Zone
Affinity

Secure Full
Text Search

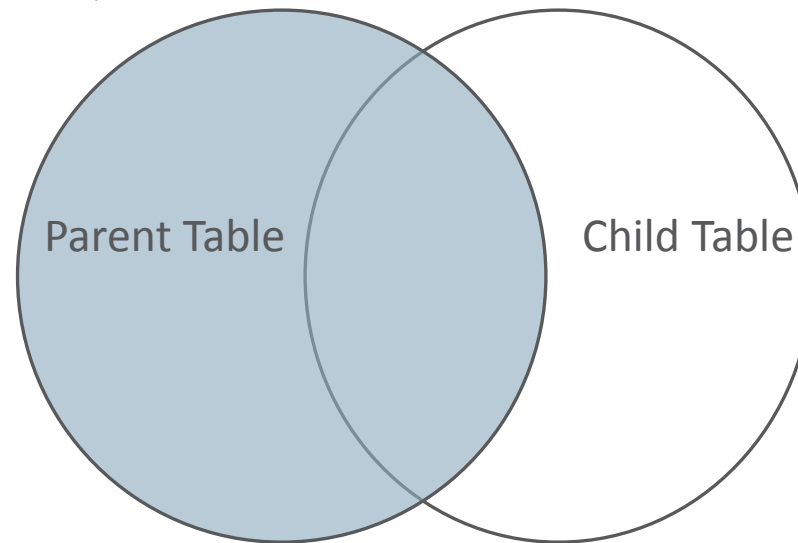
Oracle NoSQL Database – 18.1 New Features



Parent-Child
Join

Query Enhancements: Parent – Child joins

- Oracle NoSQL Database now includes support for a special kind of join among tables that belong to the same table hierarchy.
- This is implemented with a NESTED TABLES clause that is semantically equivalent to the LEFT-OUTER-JOINS defined by standard SQL and supported by all RDBMS implementations.
- The Left Outer Join creates a result set containing pairs of matching rows from the left and right tables and you would see a similar behavior in Oracle NoSQL.



Query Enhancements: Parent – Child join Example

Customer Table schema – customer

id	name	type	nullable	default	shardKey	primaryKey
1	id	Long	N	NullValue	Y	Y
2	email	String	Y	NullValue		
3	phone	String	Y	NullValue		
4	age	Integer	Y	NullValue		

Insurance Quotes Table schema – customer.quotes

id	name	type	nullable	default	shardKey	primaryKey
1	id	Long	N	NullValue	Y	Y
2	qid	Long	N	NullValue		Y
3	quotes	Json	Y	NullValue		

Retrieve all the customers and their insurance quotes where the premium amount is more than 16900

Query:

```
Select c.id, cq.quotes from  
NESTED TABLES (customer c descendants  
(customer.quotes cq on cq.quotes.charges > 16900))
```

Results:

```
{ "id": 10101030, "quotes": { "age": 40, "bmi": 27.9, "charges": 17562.3, "children": 0, "comments": null, "drinksPerWeek": 7, "existingIns": [ { "company": "POP", "premium": 123.4321 }, { "company": "RTI", "premium": 876.98 } ], "milPerWeek": 130, "region": "southwest", "sex": "female", "smoker": false, "trafficVio": 2 } }
```

Query Enhancements: Parent – Child joins key features

- One of the biggest advantages of the Parent-Child Joins is that they are executed as parallel scan's on each shard – which means increased query performance.
- If the Target table has indexed columns which are used in predicates then the index would be used in the query resulting in even faster retrievals.
- If the join/child table has indexed columns which are used as “ON” clause of the ANCESTORS/DESCENDANTS then these indexes would not be included in the query.
- Parent and child table predicates can be included as part of the ON clause (ie. join columns)

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Aggregation

Query Enhancements: Aggregates

- Aggregate functions in Oracle NoSQL Database iterate over the rows, evaluates an expression for each row, and aggregates the returned values into a single value.
- Syntactically Aggregate functions appear in the SELECT clause.
- Supported Aggregate functions in the 18.1 release are:
 - sum
 - count
 - avg
 - min
 - max

Query Enhancements: Aggregates Example

MAX

Retrieve max of all the insurance premium charges for customer with id = 10101010

Query:

```
select max(cq.quotes.existingIns.premium) from customer.quotes cq where id=10101010;
```

Results:

```
sql-> select max(cq.quotes.existingIns.premium) from customer.quotes cq where id=10101010;
{"Column_1":876.98}
```

1 row returned

SUM

Retrieve max of all the insurance premium charges for customer with id = 10101010

Query:

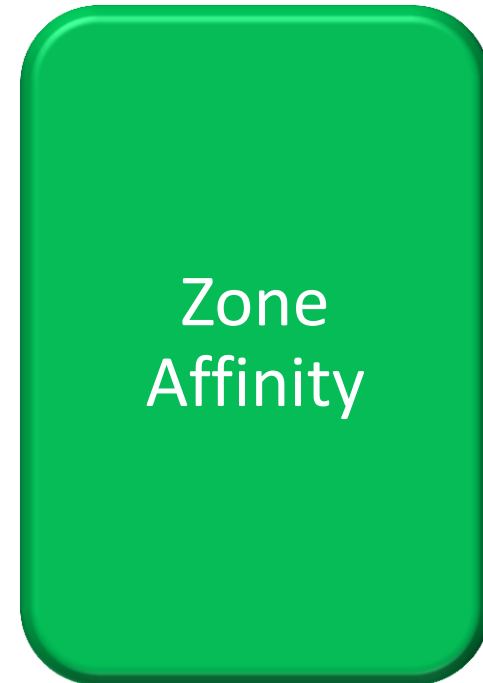
```
select sum(cq.quotes.existingIns.premium) from customer.quotes cq where id=10101010;
```

Results:

```
sql-> select sum(cq.quotes.existingIns.premium) from customer.quotes cq where id=10101010;
{"Column_1":1000.4121}
```

1 row returned

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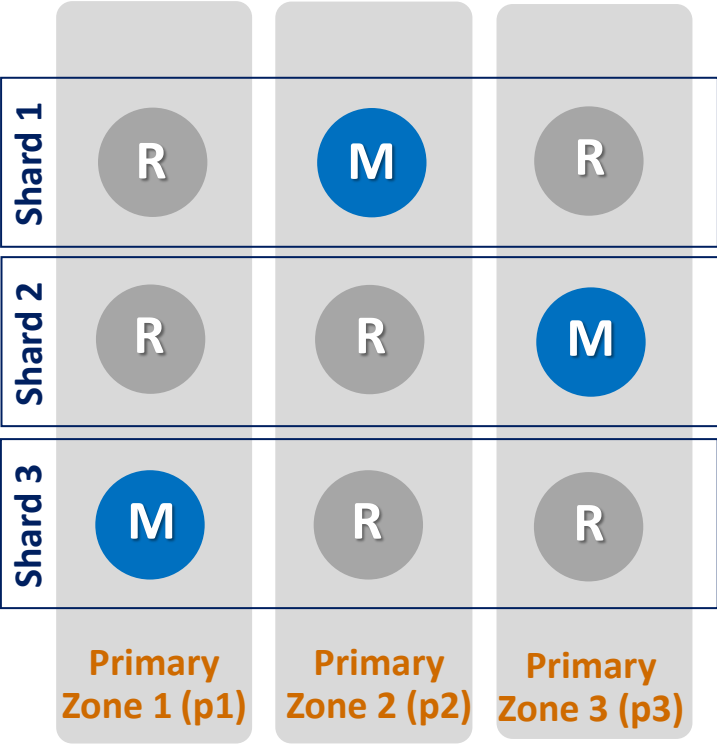


Master Affinity Zone Feature Overview

- Allows the administrator to place master nodes of a KVStore in primary zones that are in close network proximity to the user applications. This helps users to get predictable latency for write operations to the KVStore.
- Administrator assigns master affinity to selected primary zones. Master nodes are then distributed among the primary zones with master affinity by the system.
- If a master affinity zone is down, all master nodes are redistributed to other master affinity zones by the system.

Master Affinity Zone Configuration

A 3x3 KVStore with 3 primary zones before master affinity zone configuration



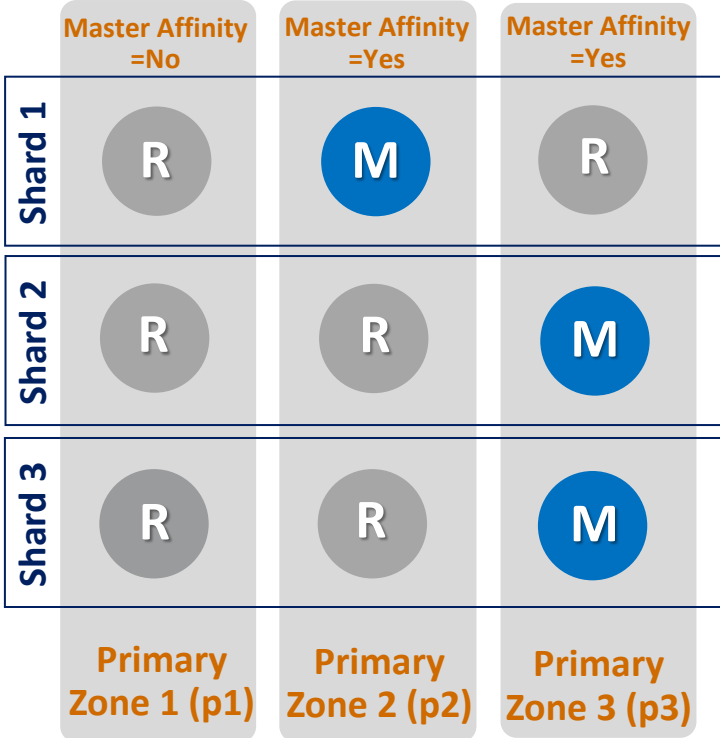
timstore
BEFORE



```

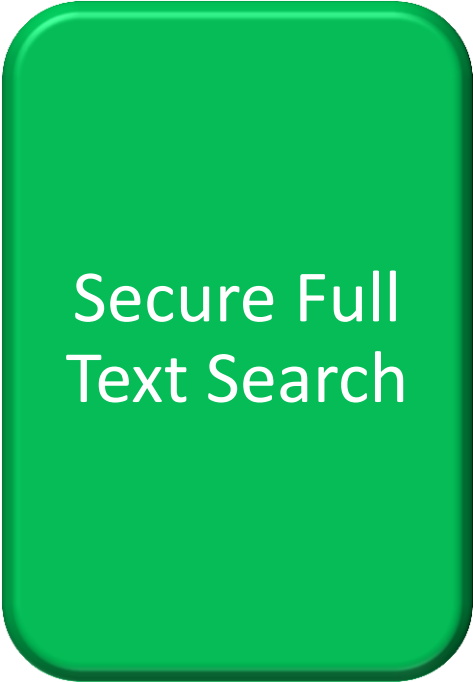
configure -name timstore
plan deploy-zone -name p1 -rf 1 -no-master-affinity -wait
plan deploy-zone -name p2 -rf 1 -master-affinity -wait
plan deploy-zone -name p3 -rf 1 -master-affinity -wait
    
```

A 3x3 KVStore with 2 master affinity zones after configuration. System distributes master nodes to zones 2, 3.



timstore
AFTER

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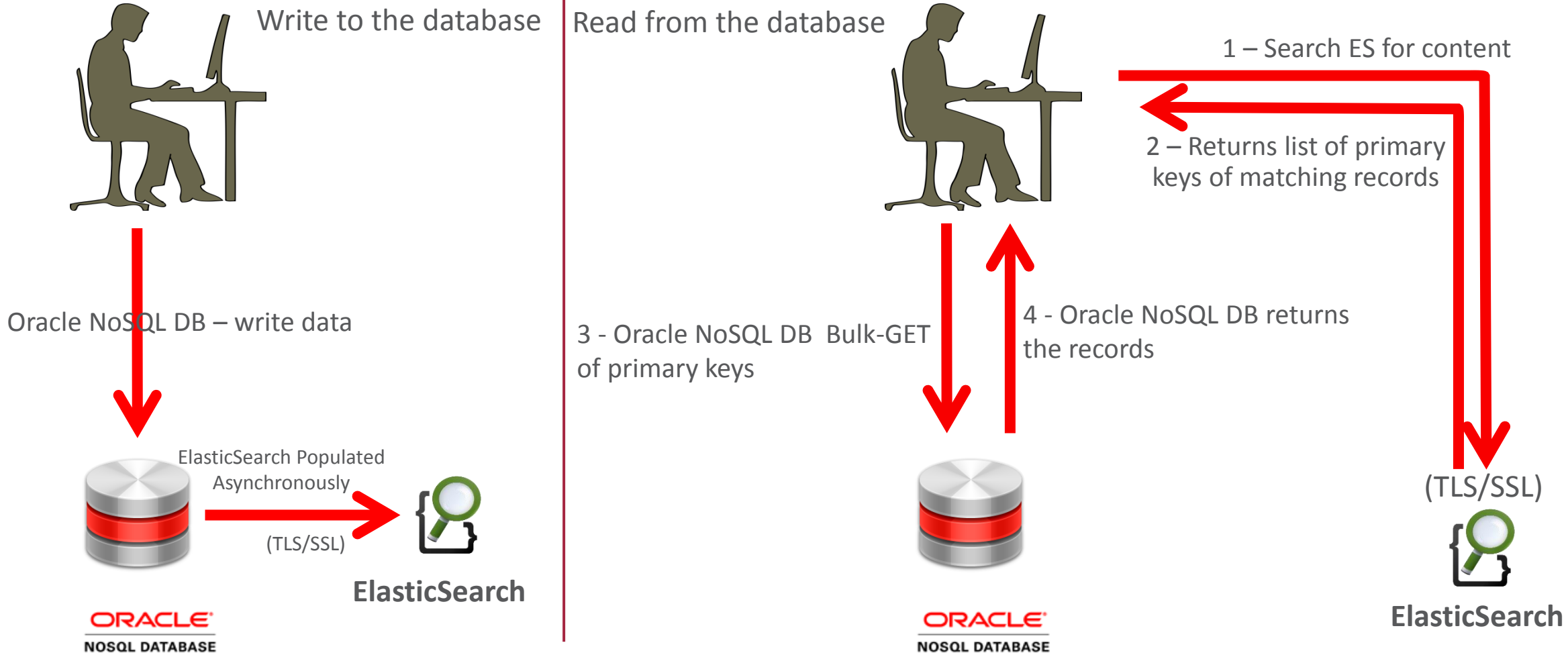


Secure Full
Text Search

Full Text Search (FTS)

- Combine the TABLE interface with Elasticsearch (ES) for a powerful way to find documents that satisfy a query.
- Provides a high performant, secure full-text search of Tables stored in Oracle NoSQL Database.
- Text indexes maintained by a remote service (Elasticsearch) hosted on other nodes.
- Connect to Elasticsearch using various security plugins (i.e. Shield, X-Pack, Kerberos/SPNEGO)

Oracle NoSQL Database – Full Text Search (FTS) w/secure connection



Customer Benefit: Richer Searching for Text Data



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