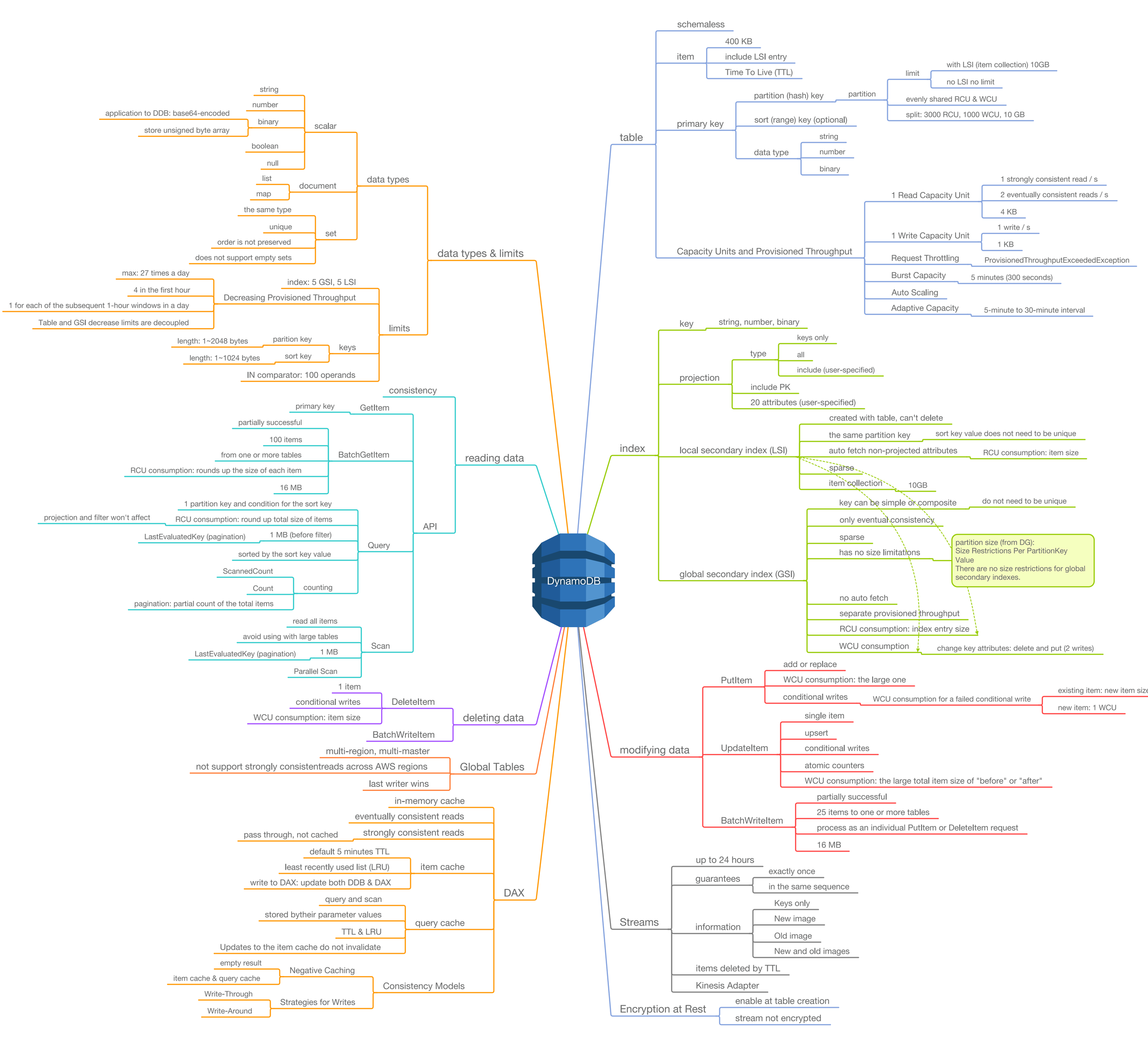
DynamoDB
table
schemaless
item
400 KB
include LSI entry
Time To Live (TTL)
primary key
partition (hash) key
partition
limit
with LSI (item collection) 10GB
no LSI no limit
evenly shared RCU & WCU
split: 3000 RCU, 1000 WCU, 10 GB
sort (range) key (optional)
data type
string
number
binary
Capacity Units and Provisioned Throughput
1 Read Capacity Unit
1 strongly consistent read / s
2 eventually consistent reads / s
4 KB
1 Write Capacity Unit
1 write / s
1 KB
Request Throttling
ProvisionedThroughputExceededException
Burst Capacity
5 minutes (300 seconds)
Auto Scaling
Adaptive Capacity
5-minute to 30-minute interval
index
key
string, number, binary
projection
type
keys only
all
include (user-specified)
include PK
20 attributes (user-specified)
local secondary index (LSI)
created with table, can't delete
the same partition key
sort key value does not need to be unique
auto fetch non-projected attributes
RCU consumption: item size
sparse
item collection
10GB
global secondary index (GSI)
key can be simple or composite
do not need to be unique
only eventual consistency
sparse
has no size limitations
partition size (from DG):
Size Restrictions Per PartitionKey Value
There are no size restrictions for global secondary indexes.
no auto fetch
separate provisioned throughput
RCU consumption: index entry size
WCU consumption
change key attributes: delete and put (2 writes)
modifying data
PutItem
add or replace
WCU consumption: the large one
conditional writes
WCU consumption for a failed conditional write
existing item: new item size
new item: 1 WCU
UpdateItem
single item
upsert
conditional writes
atomic counters
WCU consumption: the large total item size of "before" or "after"
BatchWriteItem
partially successful
25 items to one or more tables
process as an individual PutItem or DeleteItem request
16 MB
Streams
up to 24 hours
guarantees
exactly once
in the same sequence
information
Keys only
New image
Old image
New and old images
items deleted by TTL
Kinesis Adapter
Encryption at Rest
enable at table creation
stream not encrypted
data types & limits
data types
scalar
string
number
binary
application to DDB: base64-encoded
store unsigned byte array
boolean
null
document
list
map
set
the same type
unique
order is not preserved
does not support empty sets
limits
Decreasing Provisioned Throughput
index: 5 GSI, 5 LSI
max: 27 times a day
4 in the first hour
1 for each of the subsequent 1-hour windows in a day
Table and GSI decrease limits are decoupled
keys
parition key
length: 1~2048 bytes
sort key
length: 1~1024 bytes
IN comparator: 100 operands
reading data
consistency
API
GetItem
primary key
BatchGetItem
partially successful
100 items
from one or more tables
RCU consumption: rounds up the size of each item
16 MB
Query
1 partition key and condition for the sort key
RCU consumption: round up total size of items
projection and filter won't affect
1 MB (before filter)
LastEvaluatedKey (pagination)
sorted by the sort key value
counting
ScannedCount
Count
pagination: partial count of the total items
Scan
read all items
avoid using with large tables
1 MB
LastEvaluatedKey (pagination)
Parallel Scan
deleting data
DeleteItem
1 item
conditional writes
WCU consumption: item size
BatchWriteItem
Global Tables
multi-region, multi-master
not support strongly consistentreads across AWS regions
last writer wins
DAX
in-memory cache
eventually consistent reads
strongly consistent reads
pass through, not cached
item cache
default 5 minutes TTL
least recently used list (LRU)
write to DAX: update both DDB & DAX
query cache
query and scan
stored bytheir parameter values
TTL & LRU
Updates to the item cache do not invalidate
Consistency Models
Negative Caching
empty result
item cache & query cache
Strategies for Writes
Write-Through
Write-Around