

STORAGE CLASSES

STANDARD
— and —
INFREQUENT ACCESS

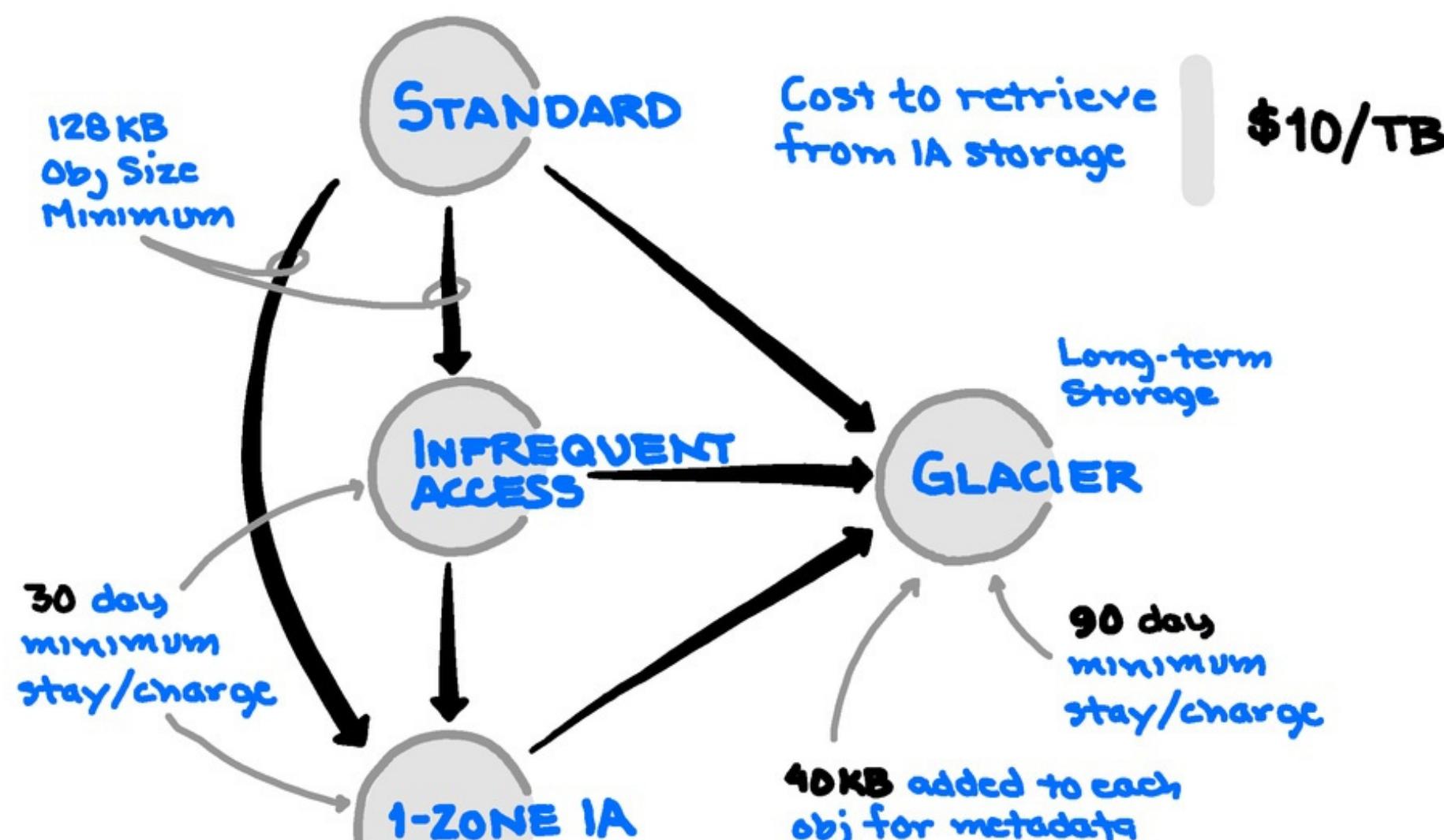
11 NINES DURABILITY

1-ZONE INFREQUENT ACCESS

11 NINES DURABILITY

99.5% / YR AVAILABILITY

STORAGE CLASS TRANSITIONS



SERVER SIDE ENCRYPTION

AES - 256
master key rotation
AWS managed KEYS

audit trail
KMS managed KEYS
more security controls

SELF managed KEYS
you own it!



[all pricing from US West (Oregon)]

REQUESTS (\$USD per 1,000,000 requests)



	GET	POST	PUT	DELETE	SELECT	Other
Standard	0.4	5.0	5.0	5.0	5.0	0.4
Infrequent Access	1.0	10.0	10.0	10.0	1.0	1.0
1-Zone IA	1.0	10.0	10.0	10.0	1.0	1.0

Storage class transitions : 1¢ per 1,000 objects
Transition to Glacier : 5¢ per 1,000 objects

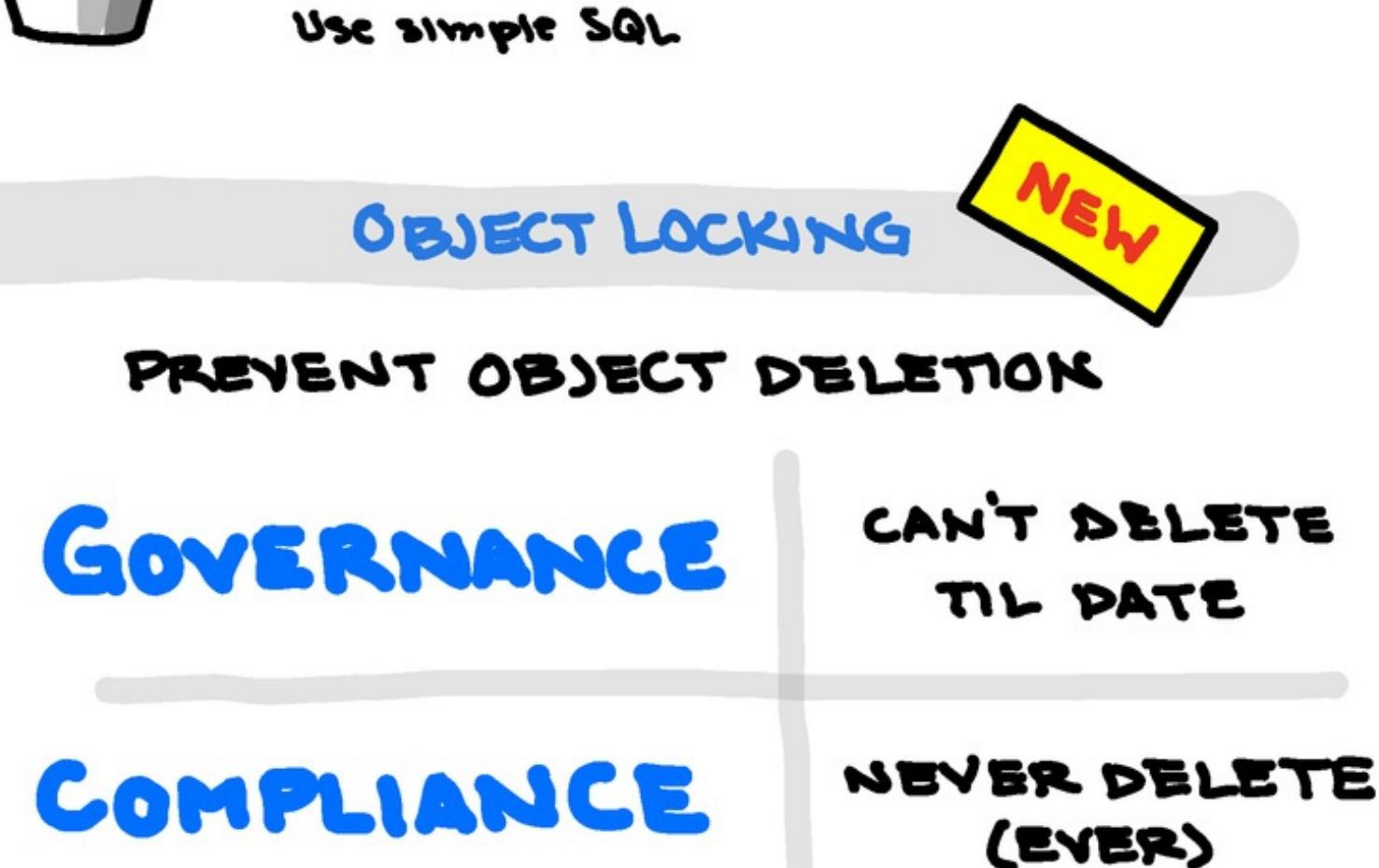
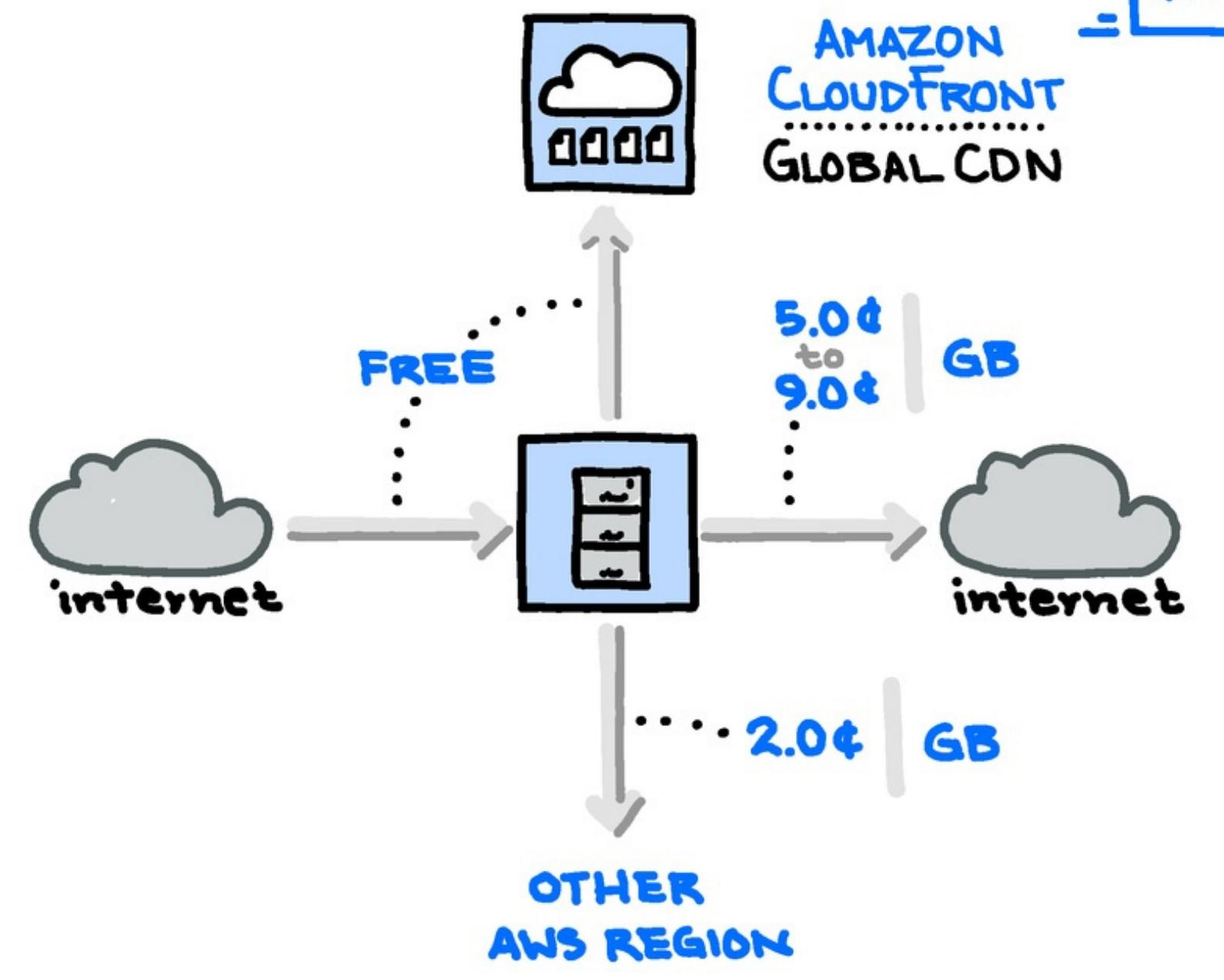
STORAGE

	TB	\$
[0, 50]	2.3¢	
[51, 500]	2.2¢	
[501, ∞)	2.1¢	

per GB/Mo

INFREQUENT ACCESS
STD 1-ZONE
GLACIER

DATA TRANSFER



ENGINES

- ▶ ORACLE
 - ▶ SQL SERVER
 - ▶ MYSQL
 - ▶ MARIADB
 - ▶ POSTGRESQL
 - ▶ AURORA
 - MySQL
 - PostgreSQL
- based on
- commercial
 - open source
 - cloud native by Amazon

PRICING

COSTS: (Oregon)

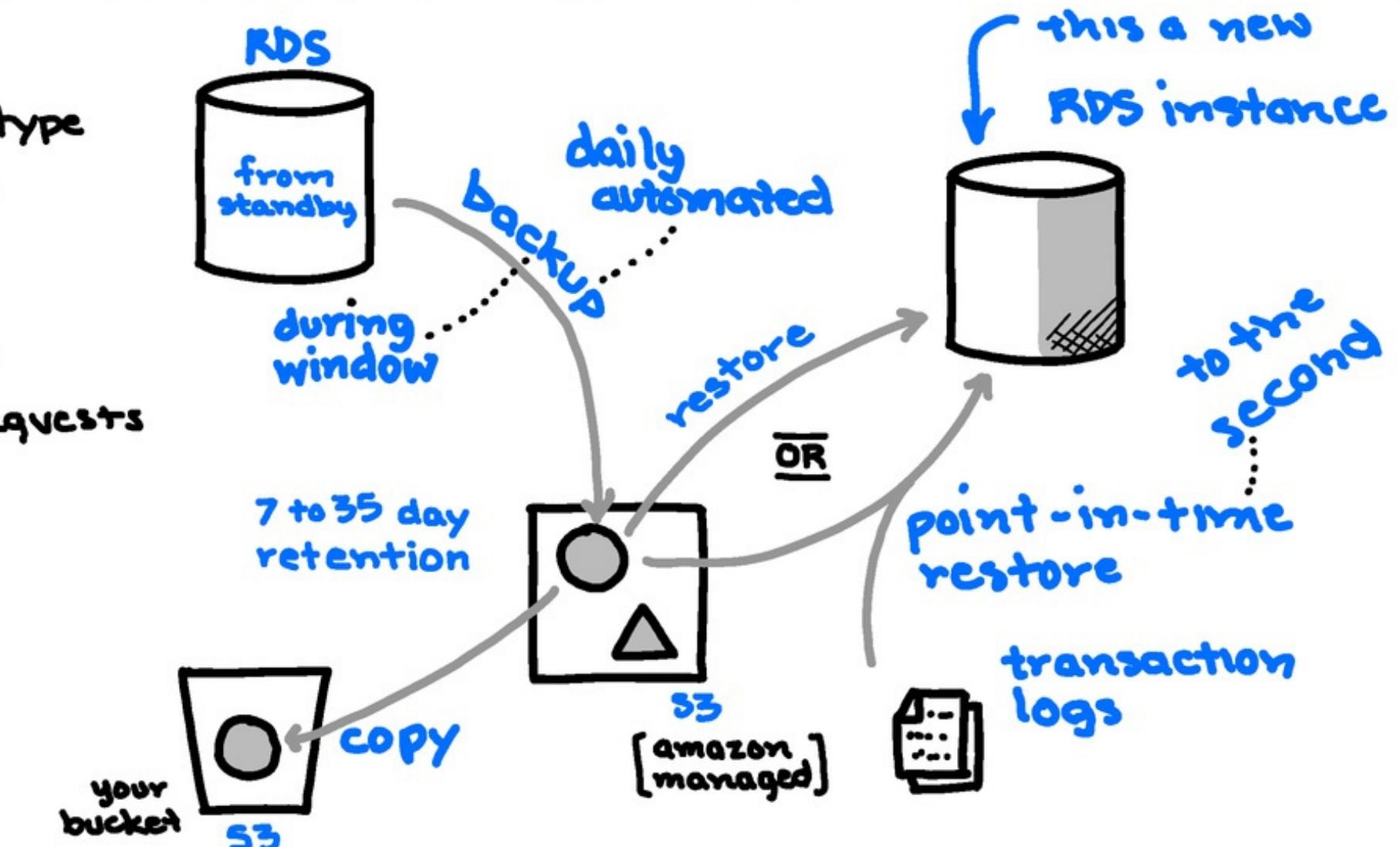
DB INSTANCE HOURS per engine/instance type
billed hourly, round up

STORAGE GP2 ... 11.5¢/GB/Mo
101 ... 12.5¢/GB/Mo + 10¢/10/Mo
Mag ... 10¢/GB/Mo + 10¢/MM Requests

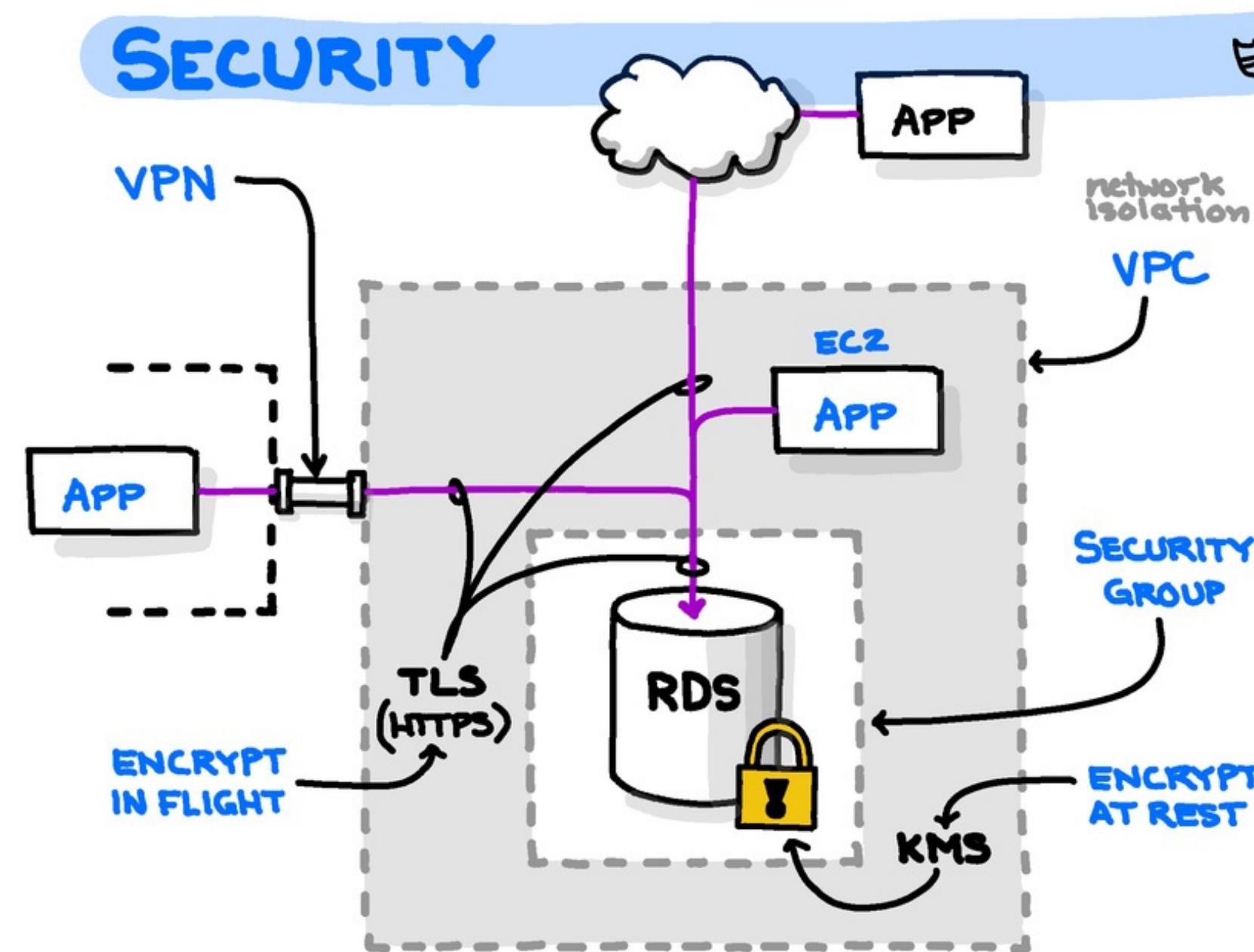
BACKUP STORAGE 100% of DB size free
9.5¢/GB/Mo after

DATA TRANSFER varies by destination

BACKUPS

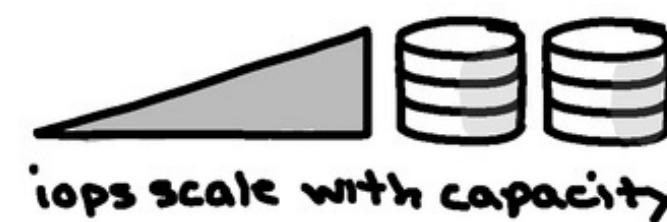


SECURITY

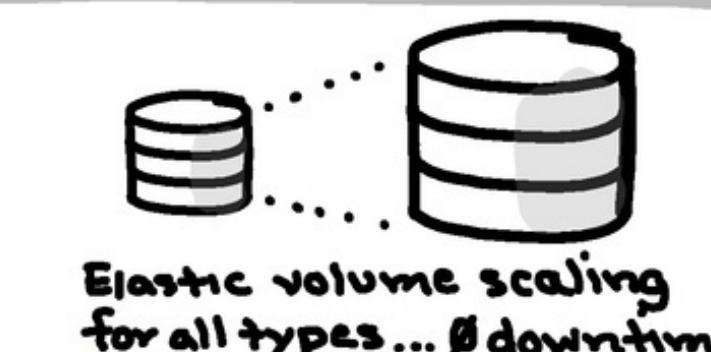


STORAGE

GP2 General Purpose
SSD 16TB Max

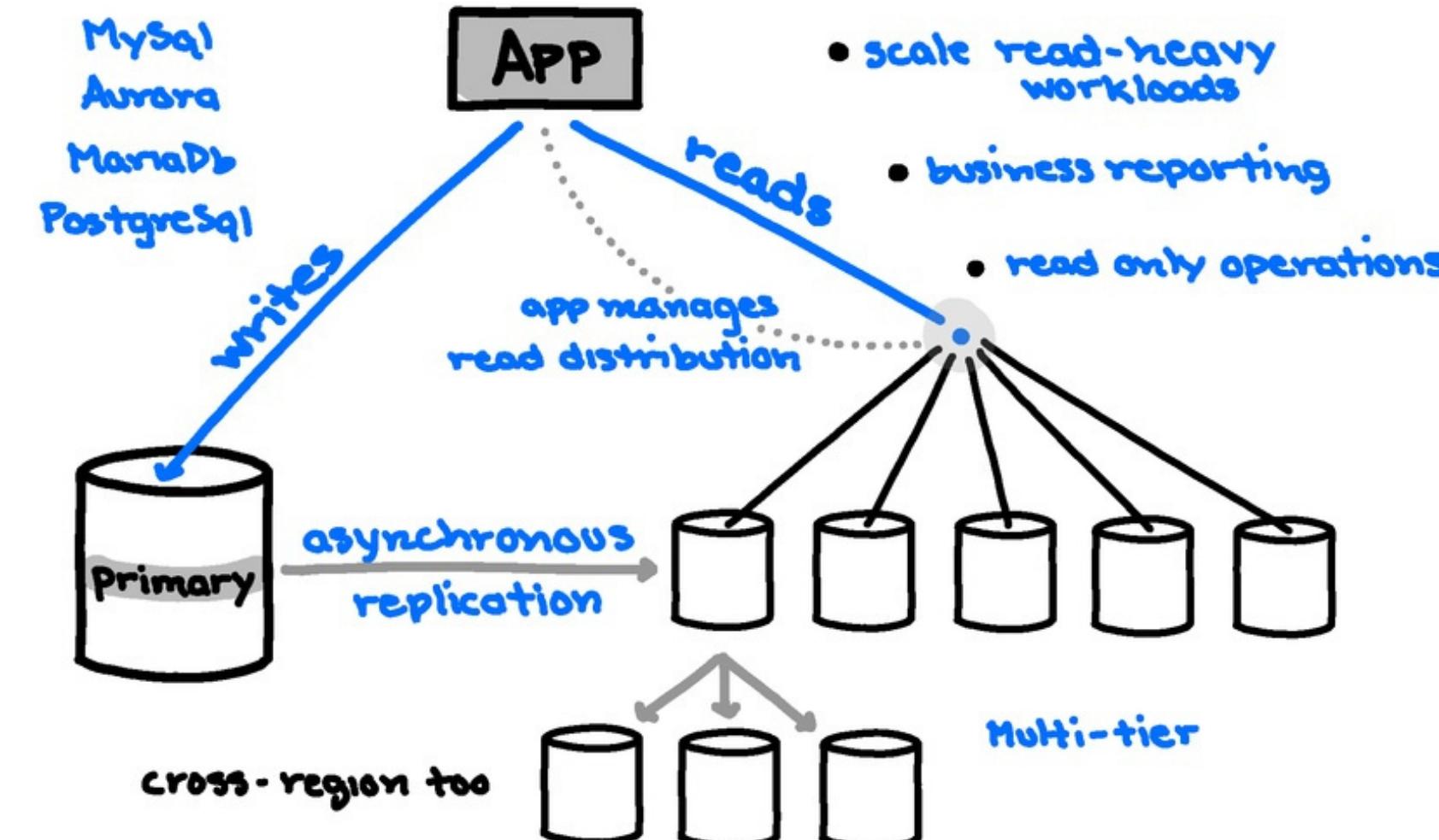


IOP1 Provisioned IOPS
SSD 16TB Max
30K IOPS



Magnetic Legacy 1TB Max

READ REPLICAS



INSTANCES

SMALL WORKLOADS

T2
burst

1 vCPU
1 GB RAM
8 vCPU
32 GB RAM

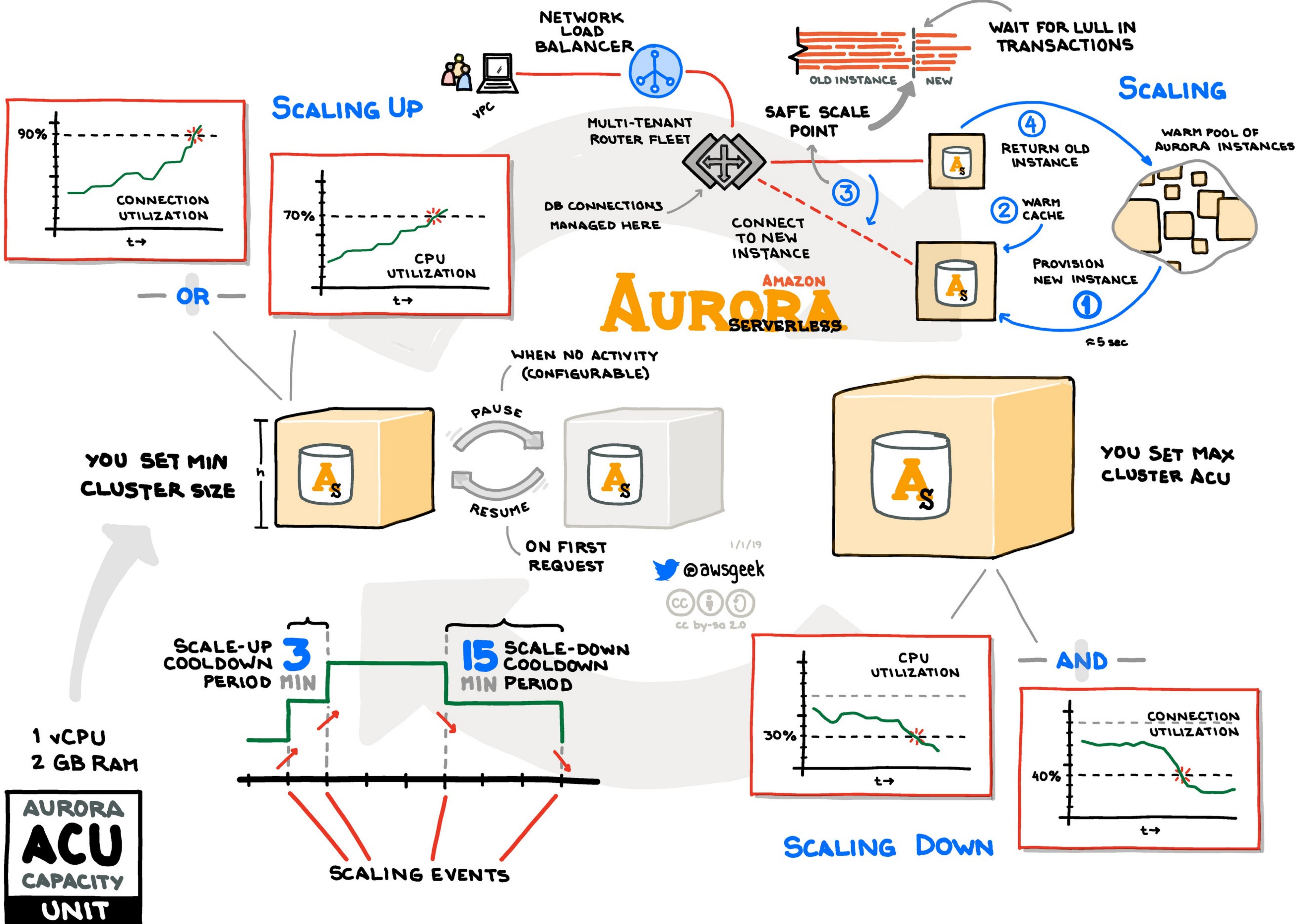
CPU INTENSIVE WORKLOADS

M3/M4
general purpose

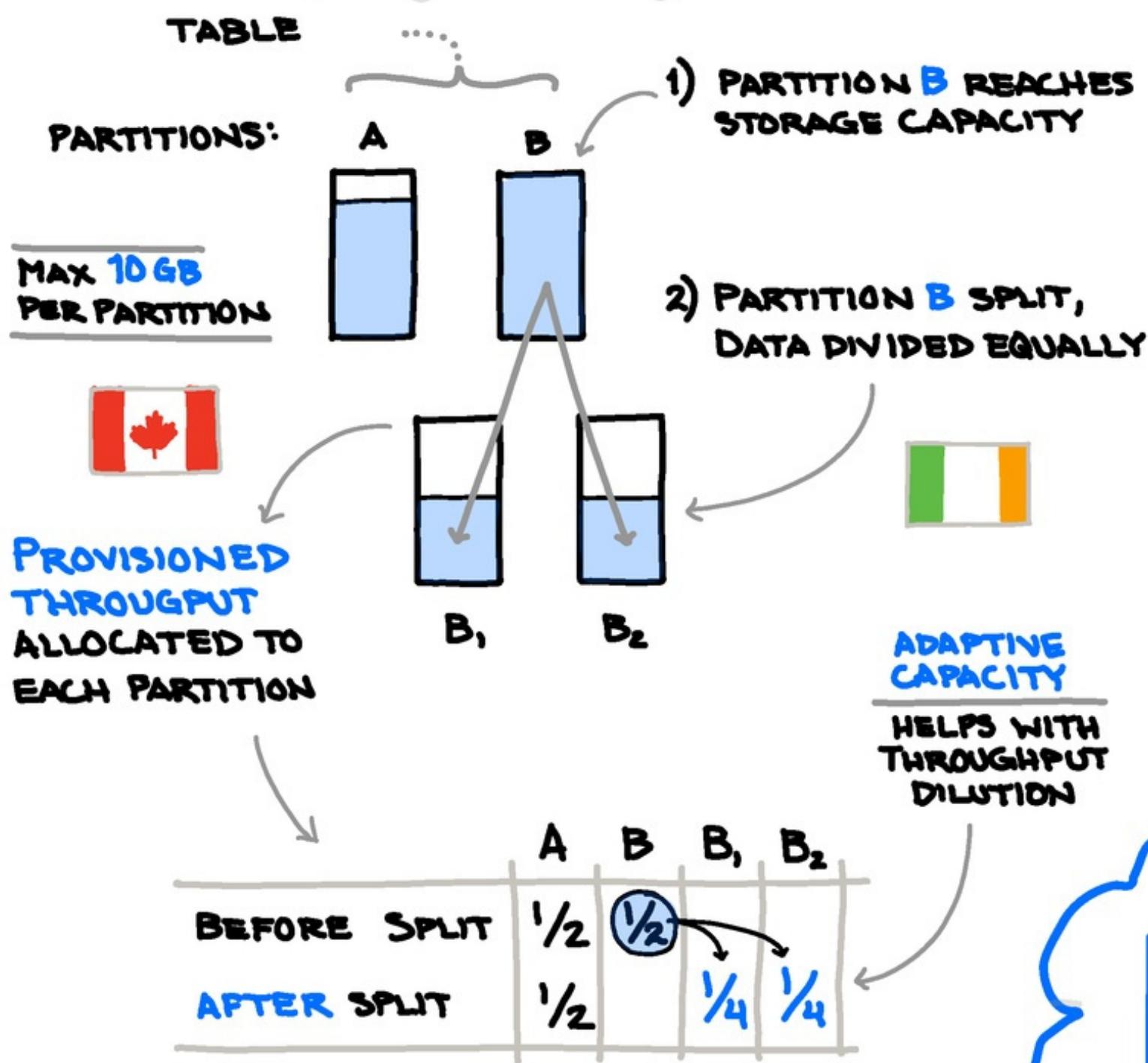
2 vCPU
8 GB RAM
64 vCPU
256 GB RAM

QUERY INTENSIVE WORKLOADS

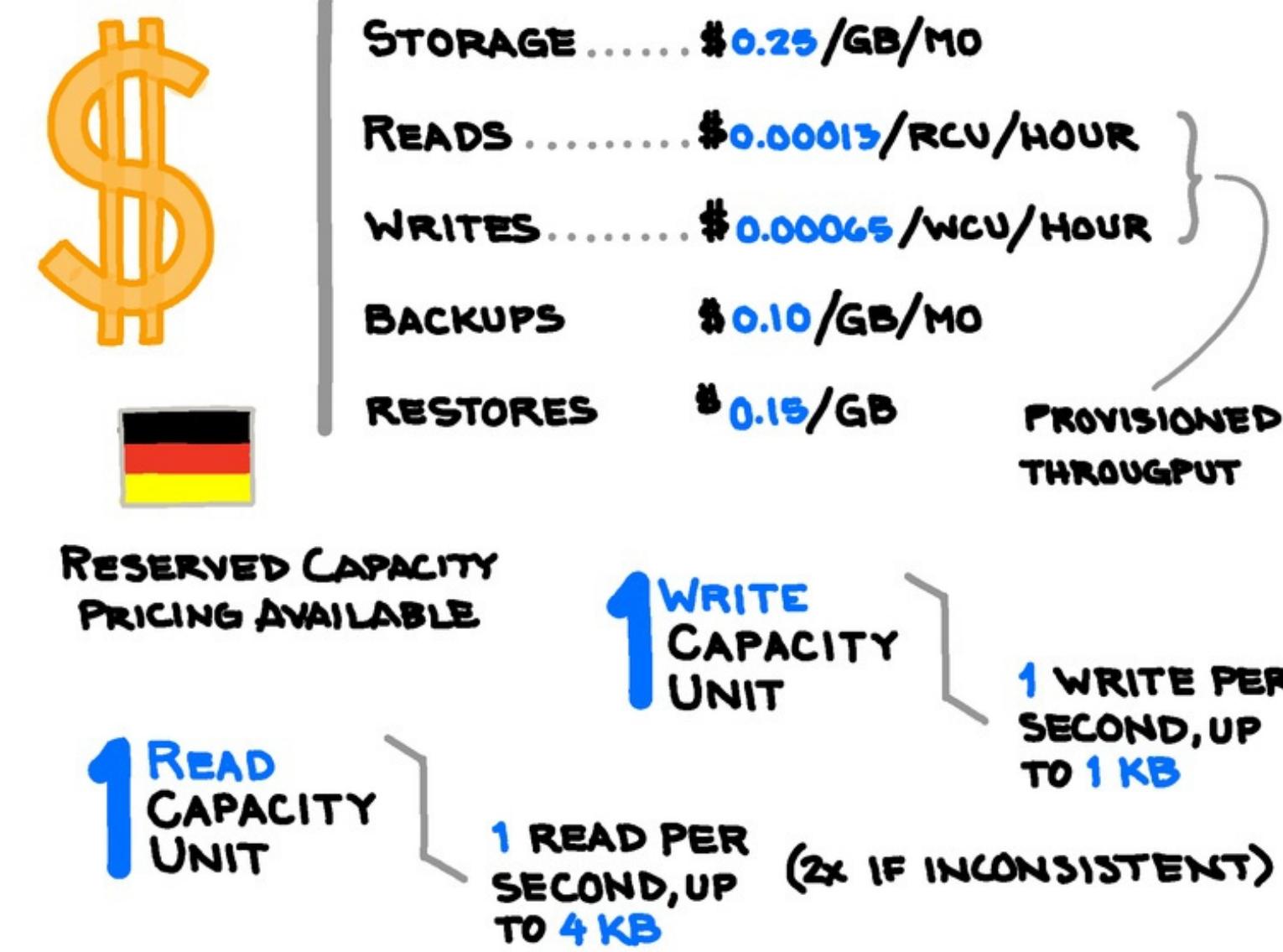
R3/R4/X1(e)
mem optimized
2 vCPU
16 GB RAM
128 vCPU
3904 GB RAM



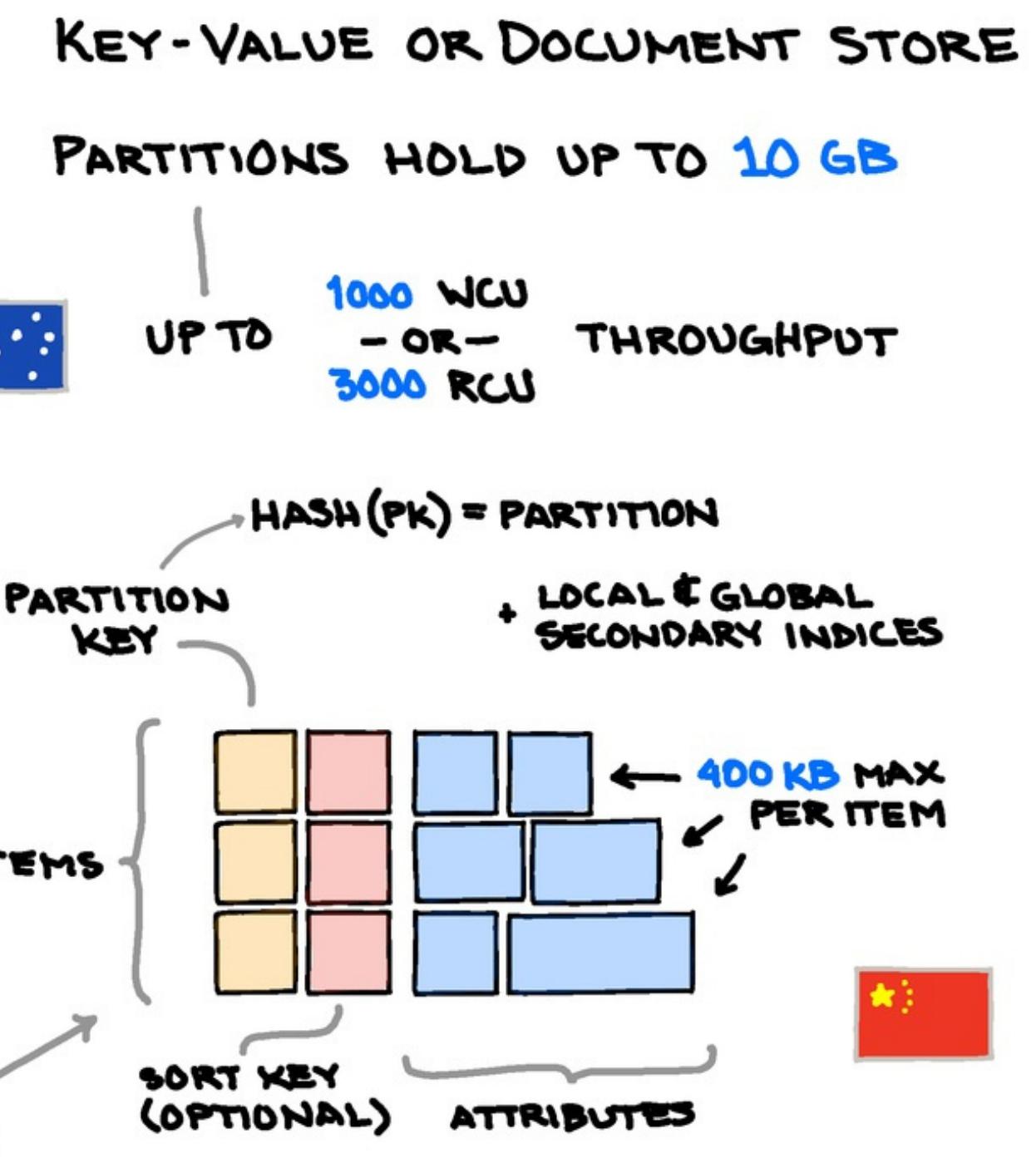
SCALABILITY



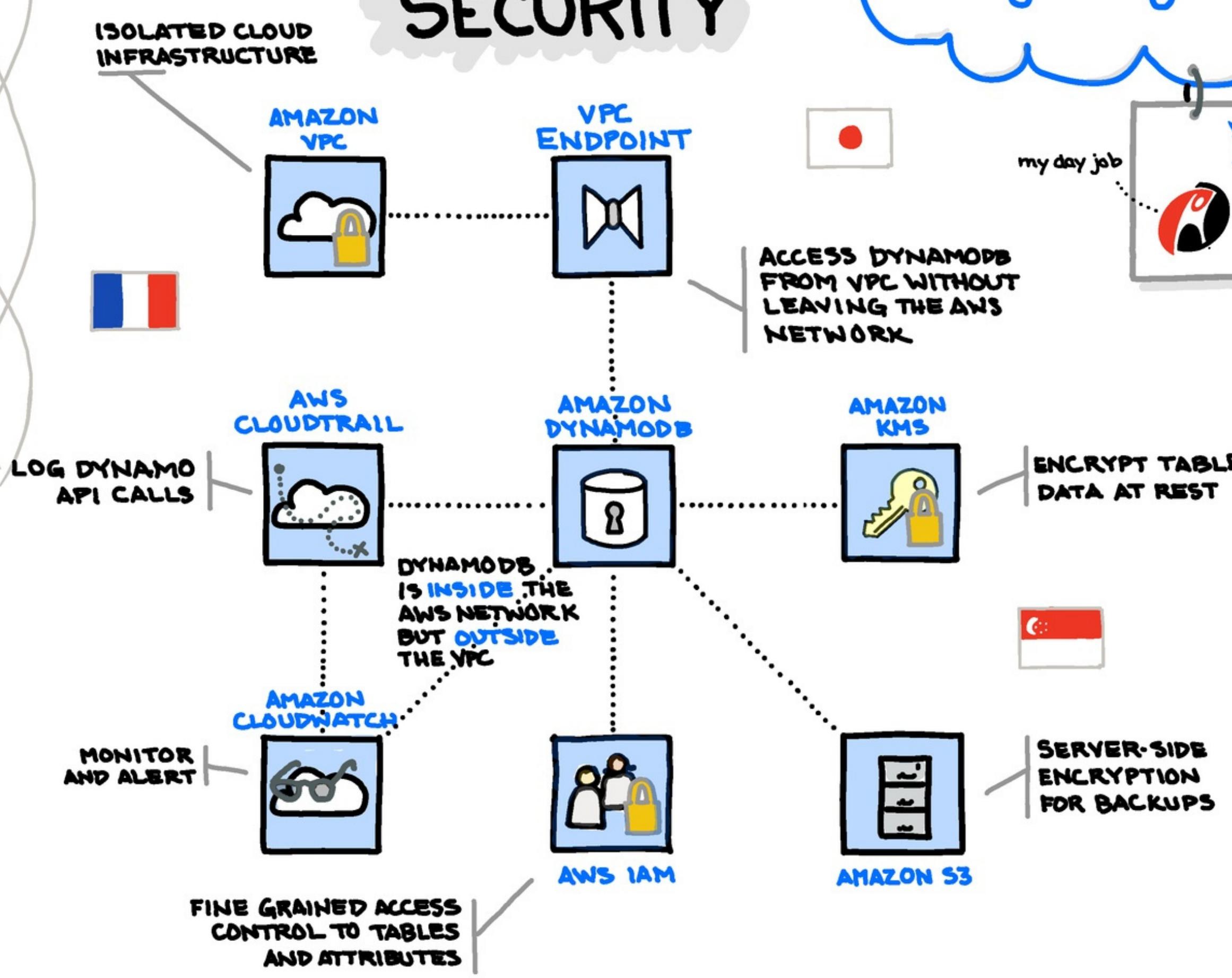
PRICING



ESSENTIALS



SECURITY

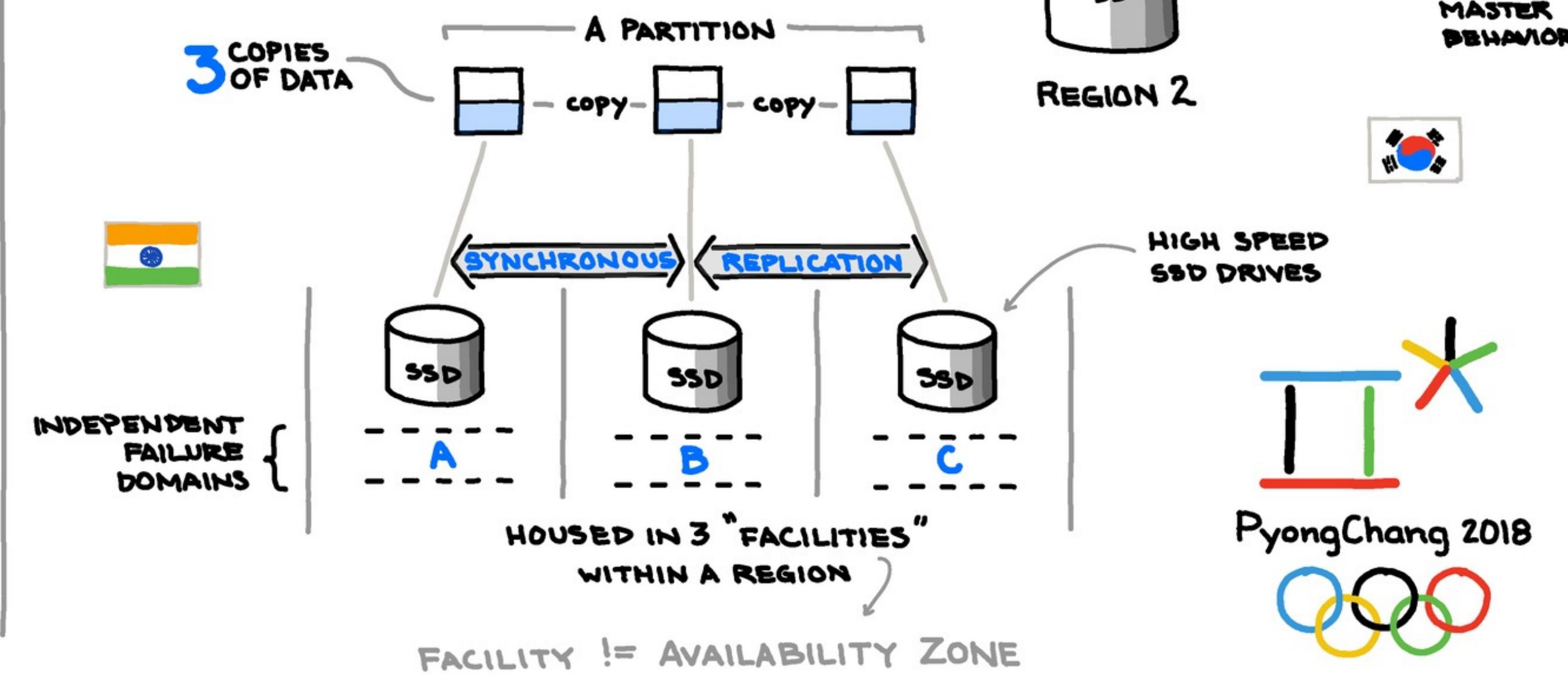


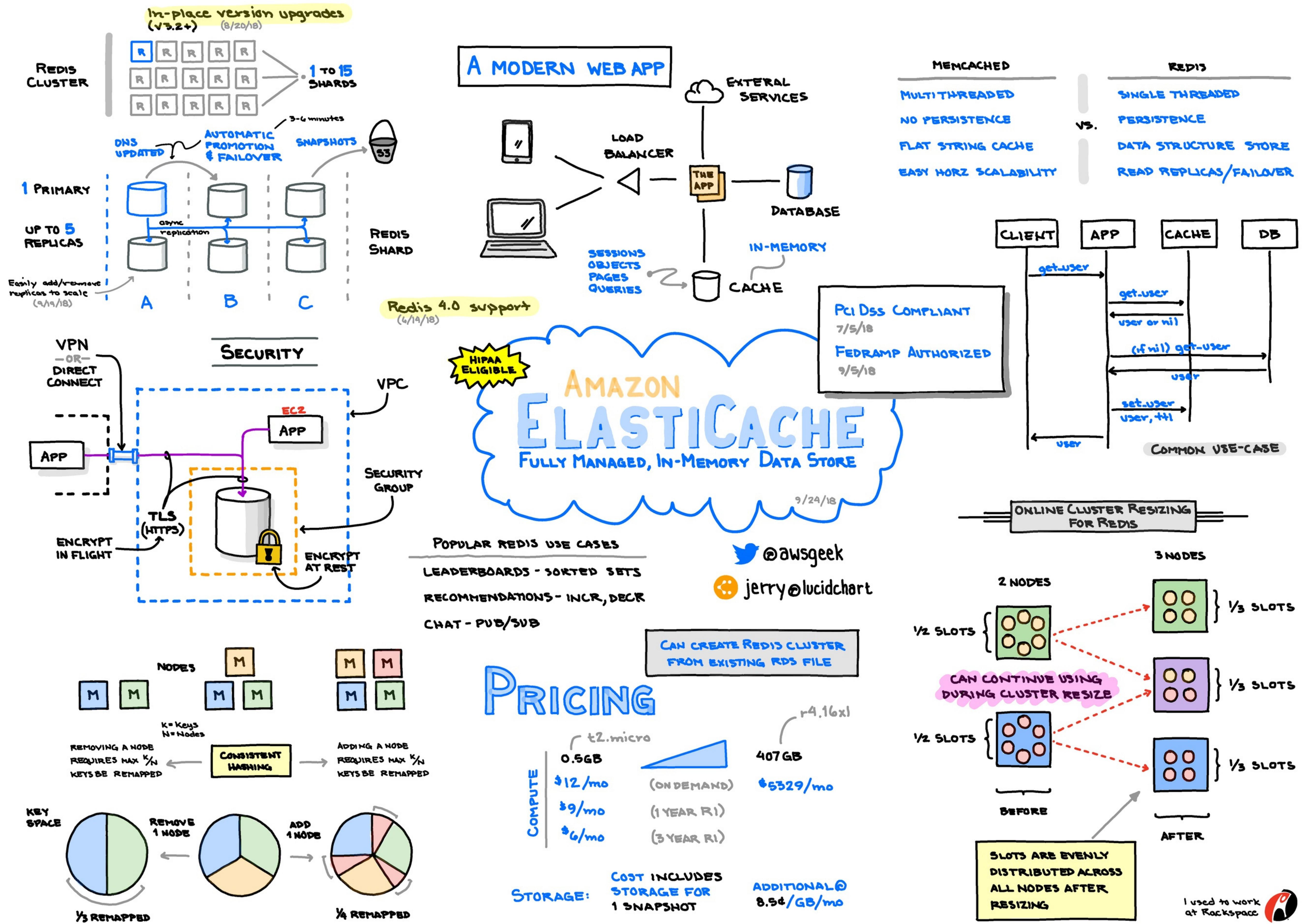
amazon DYNAMO DB

a fast, flexible no-sql database

2/10/18

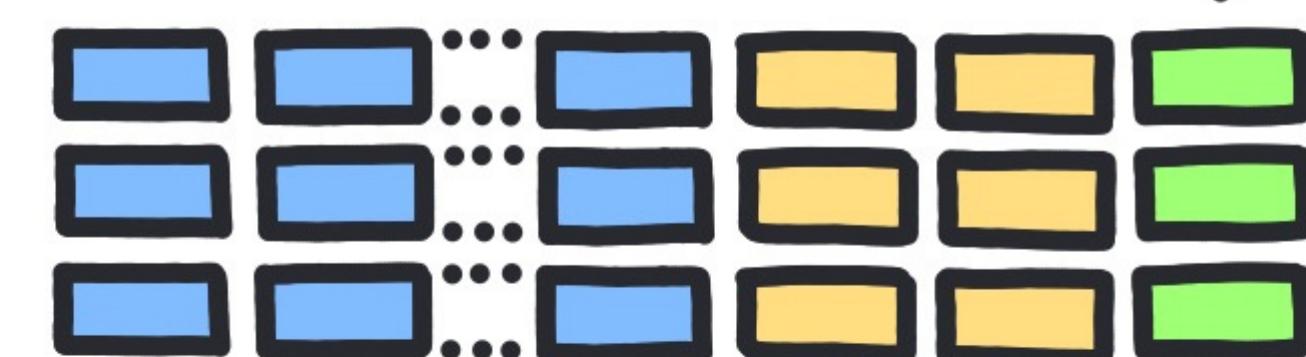
AVAILABILITY





TABLE

DIMENSIONS
up to 128/table

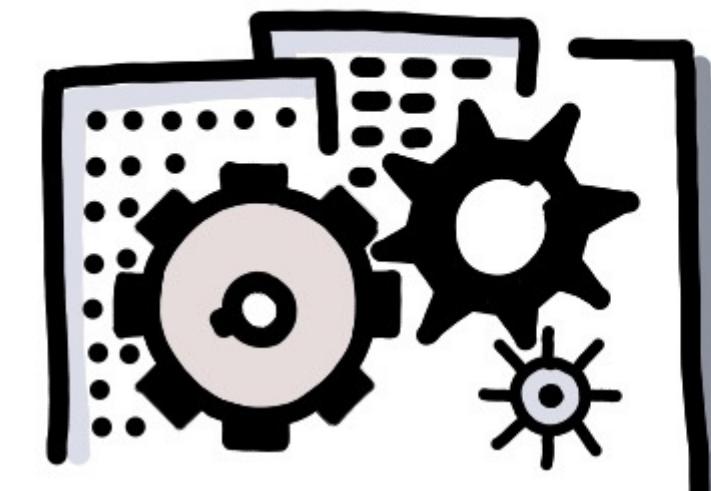


TIMESTAMP

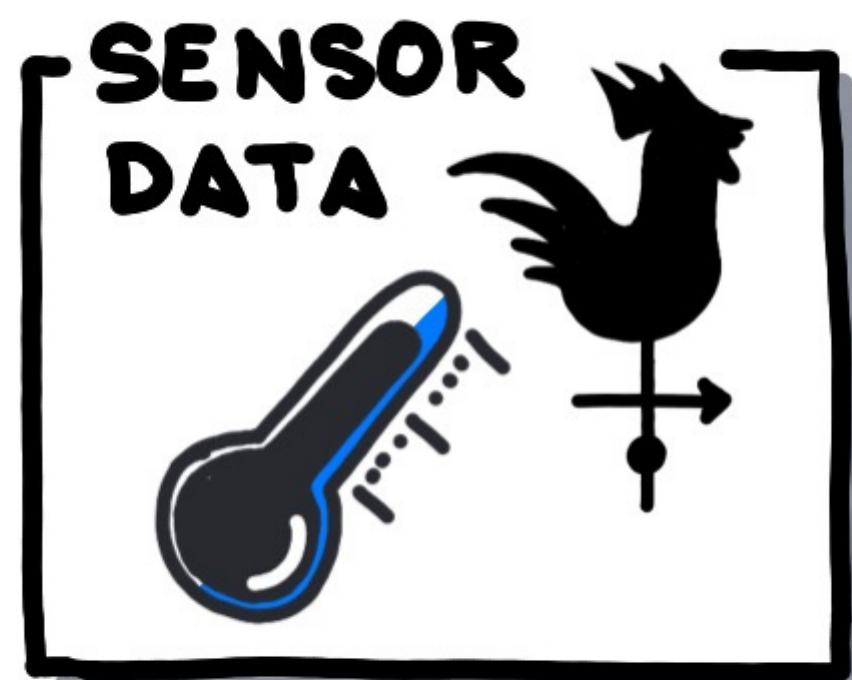
str, bool,
big int, double

MEASURE NAME & VALUE:TYPE

TIME SERIES
DATA



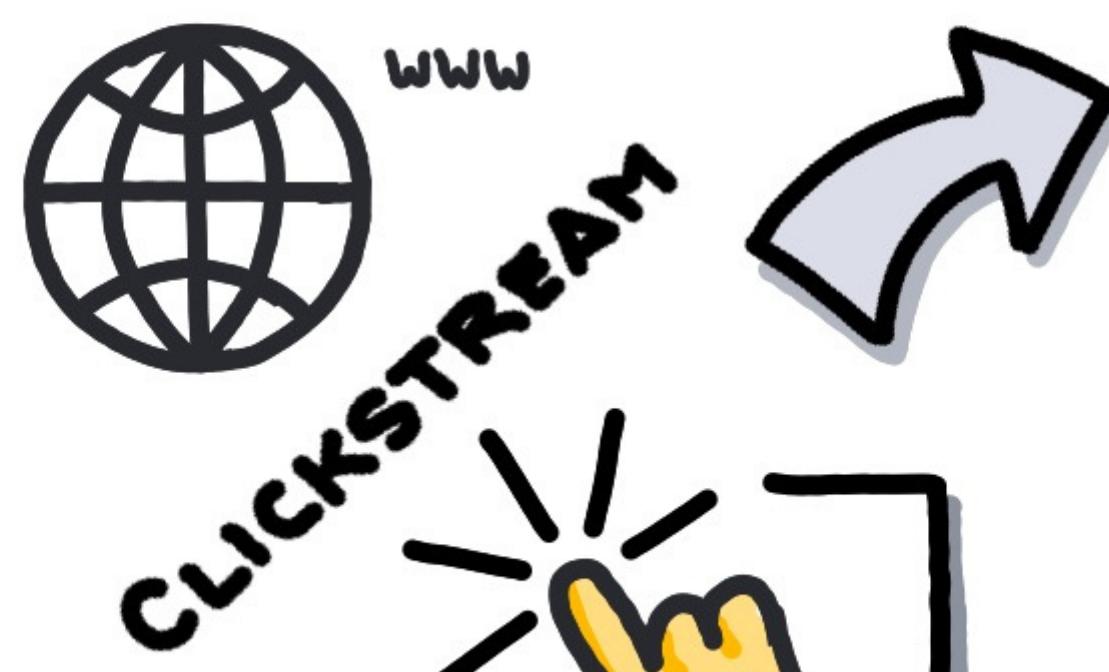
INDUSTRIAL
TELEMETRY



SENSOR
DATA



WEATHER



WWW

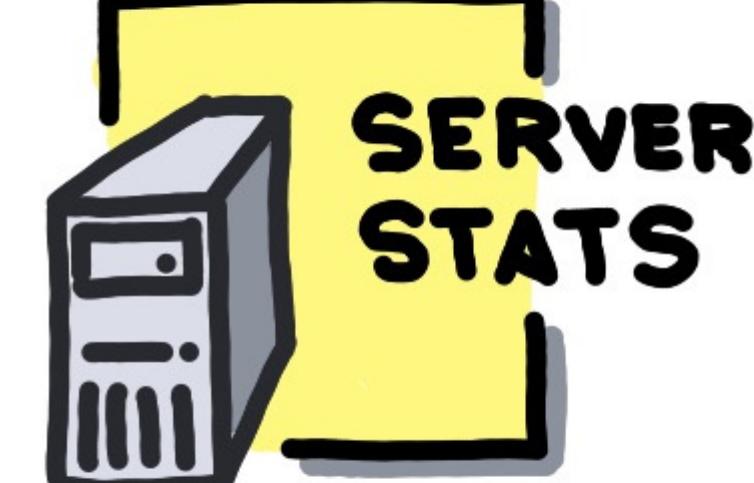
CLICKSTREAM



DATA IS
ALWAYS
ENCRYPTED



→ timestamped
→ deduplicated



SERVER
STATS



MEMORY
STORE

Monitoring
Analytics



FAST
QUERIES

1 hr → 1 yr
RETENTION



SSD
STORE

AI/ML
Biz Intel



USES
a subset
of SQL



MAGNETIC
STORE

HISTORICAL
QUERIES

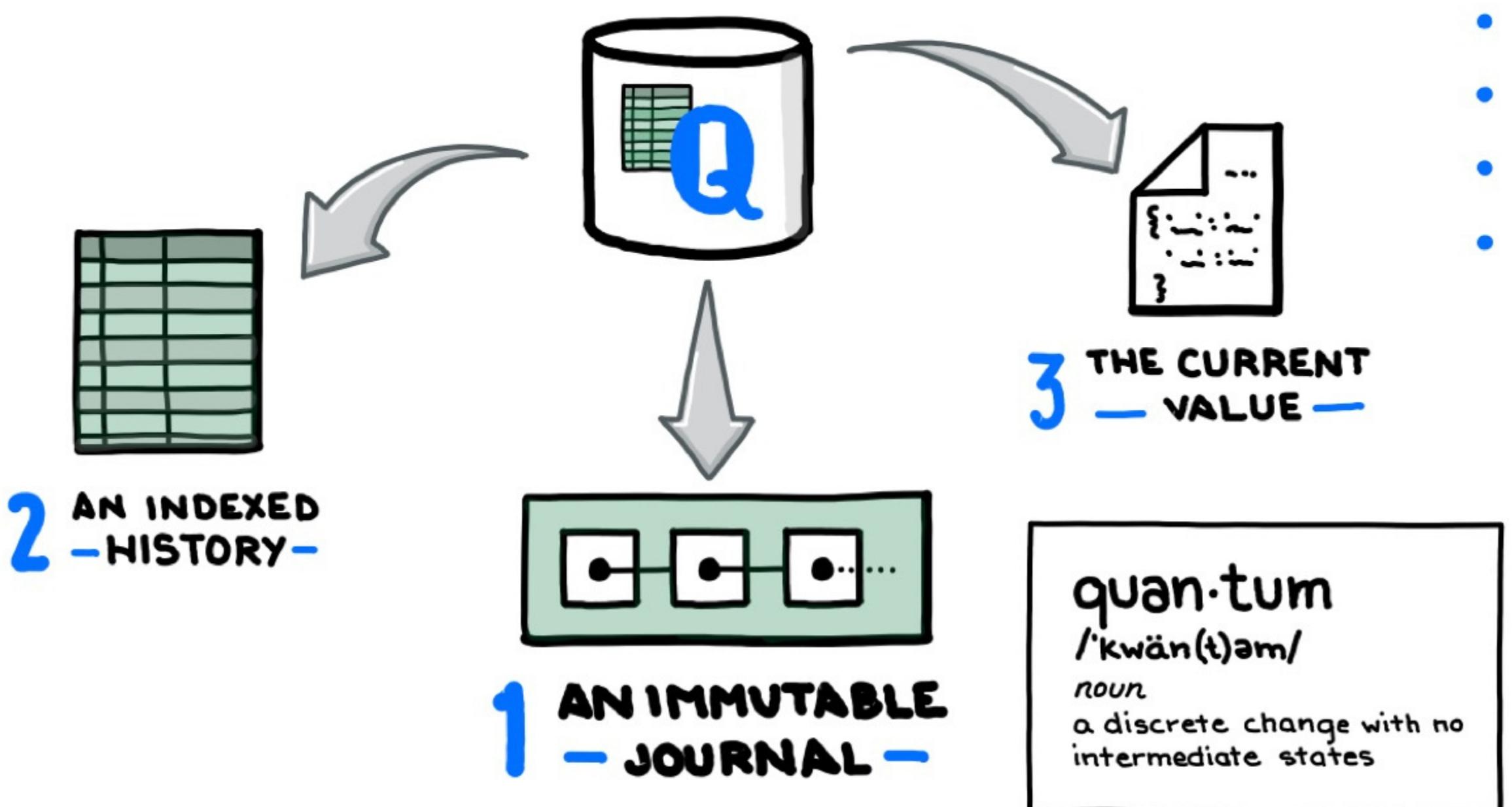
1 day → 20 yr
RETENTION



TIME-BASED
RETENTION
POLICY

TIMESTREAM

WHAT IS A QUANTUM LEDGER DB?



DATABASE

- FULLY TRANSACTIONAL
- ACID FUNCTIONALITY
- DOCUMENT DATA MODEL
- UN/STRUCTURED DATA

STREAMING

- NEAR REAL TIME
- KINESIS DATA STREAMS

SERVERLESS

- NO NODE PROVISIONING
- NO IO PROVISIONING

How Much Does QLDB Cost?

im·mu·ta·ble
/i(m)'myooðab(ə)b/
 adjective
 unchanging over time or unable to be changed

5¢ TO 9¢
 PER GB

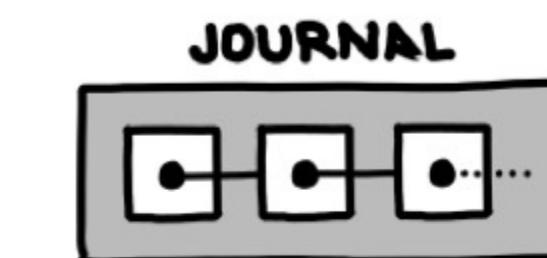
US EAST
 (VIRGINIA)

70¢
 WRITE / MILLION
 REQUESTS

13.6¢
 READ / MILLION
 REQUESTS

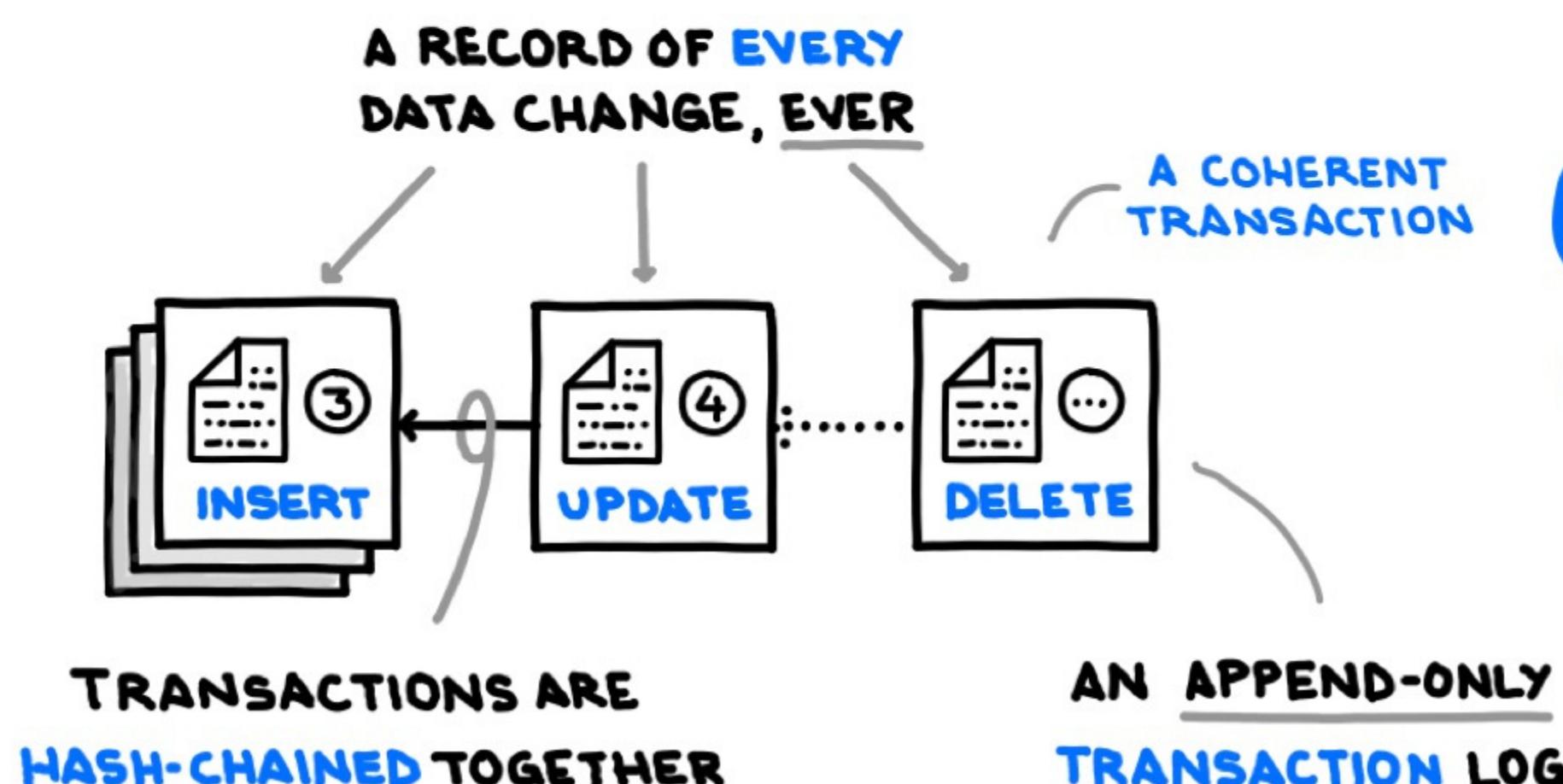


25¢ PER
 GB/MO

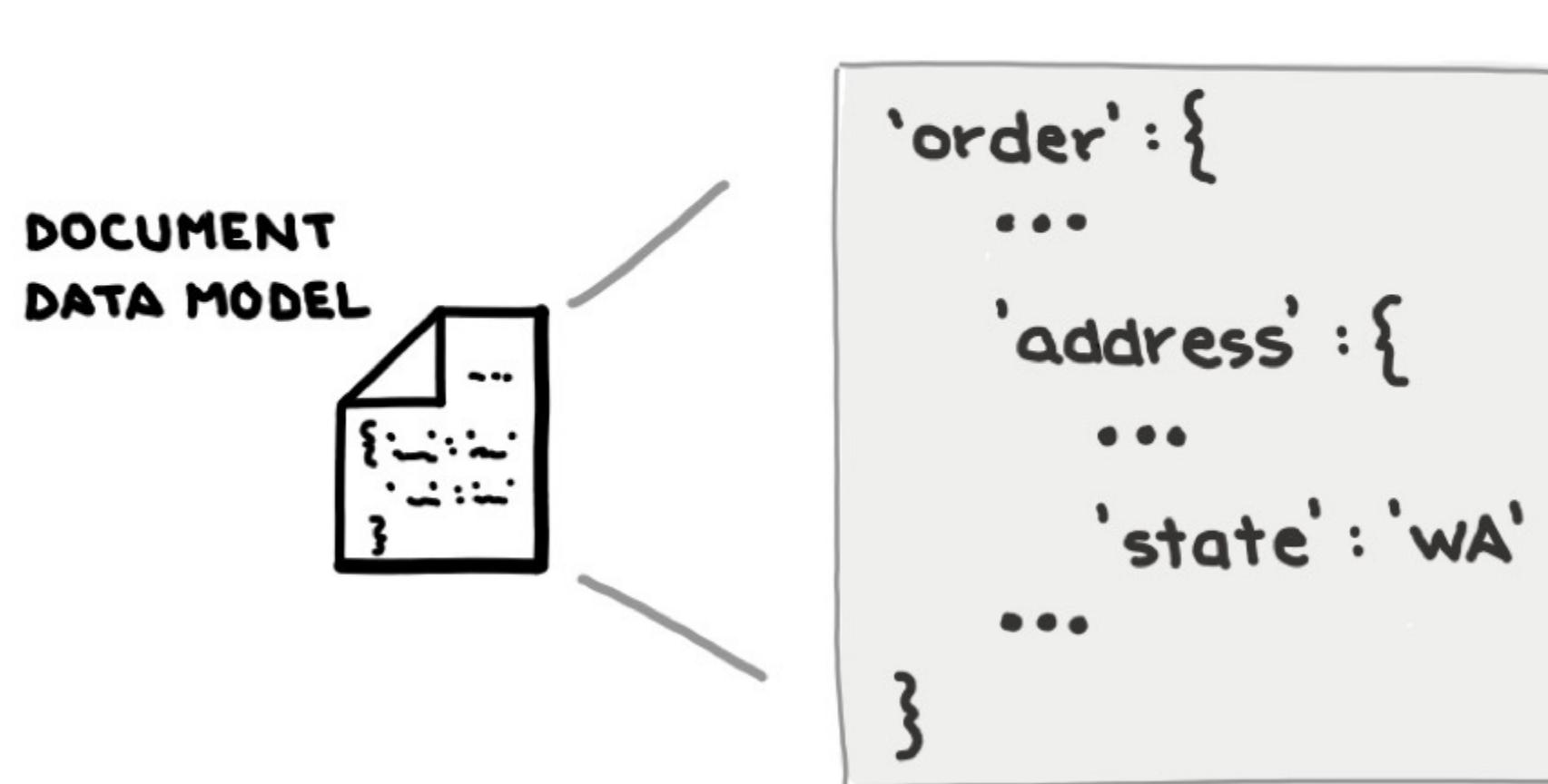


3¢ PER
 GB/MO

WHAT IS AN IMMUTABLE JOURNAL?



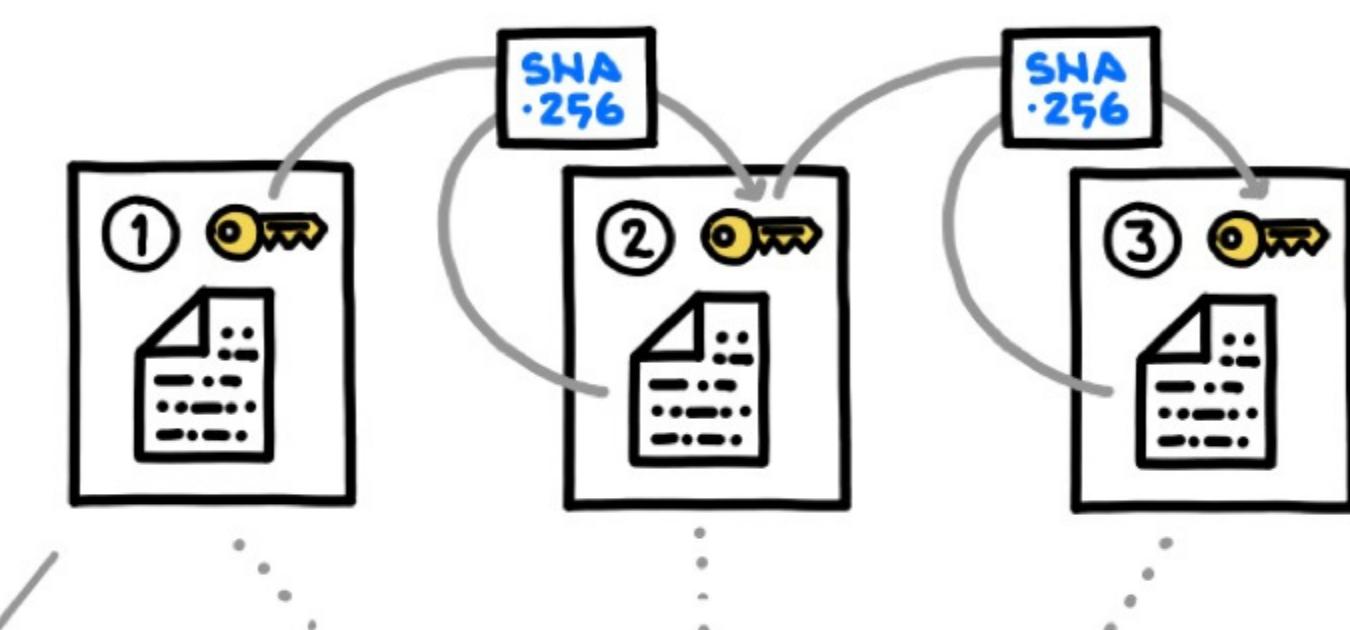
How is Data Stored/Queried?



FOR SYSTEM OF RECORD APPS

- MANUFACTURING • HR
- INSURANCE • FINANCE
- SUPPLY CHAIN • PAYROLL

CHANGES
 IMMEDIATELY
 DETECTABLE



TRANSACTIONS RECORDS ARE CRYPTOGRAPHICALLY VERIFIABLE

SOCIAL NETWORKING

GROUP FRIENDS WHO LIKE OR DISLIKE SIMILAR THINGS

RECOMENDATION ENGINE
MAKE PURCHASE SUGGESTIONS BASED ON OTHER USERS
WITH SIMILAR INTERESTS

FRAUD DETECTION
DETECT CONNECTIONS TO KNOWN FRAUD SCENARIOS

KNOWLEDGE GRAPHS

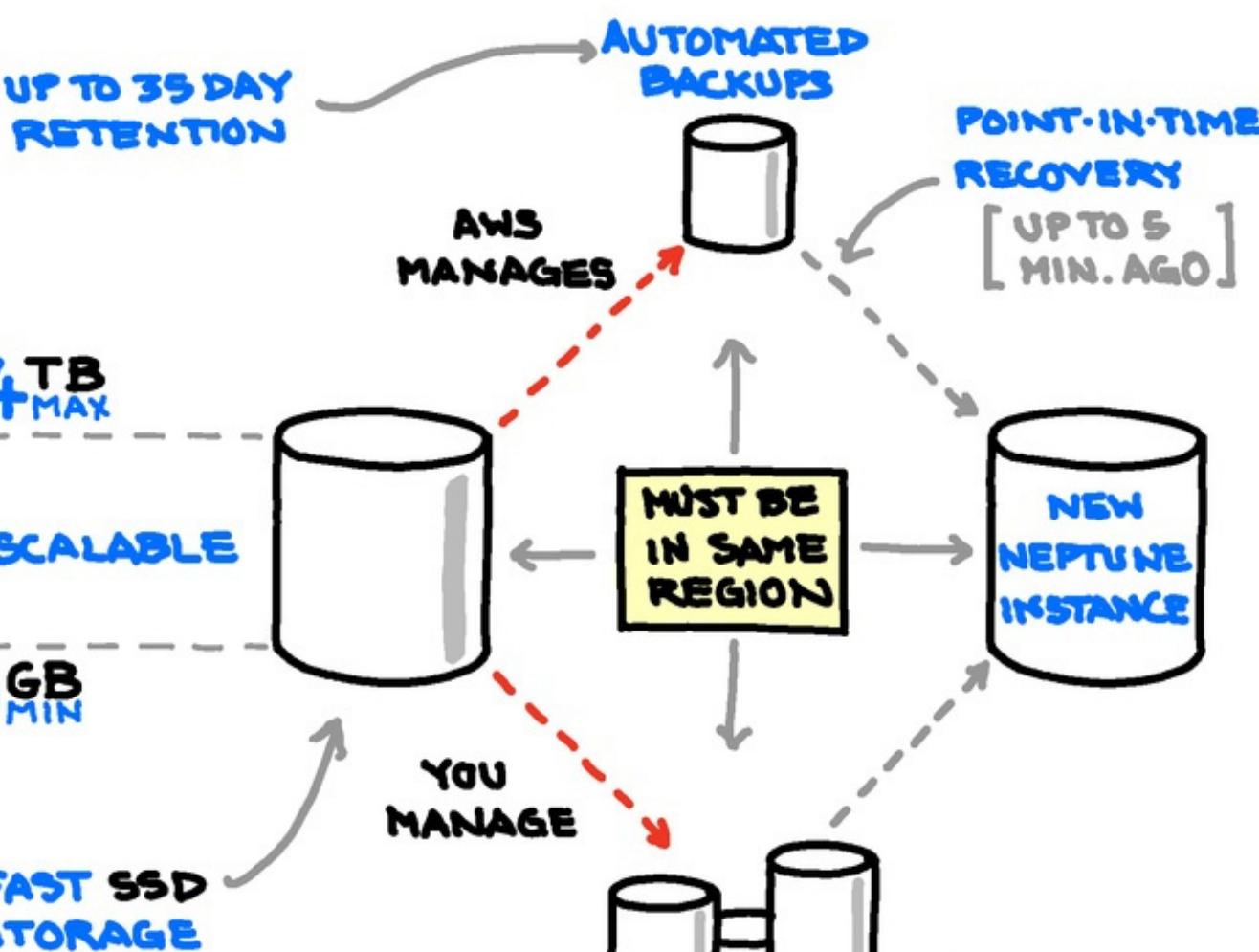
STORE AND QUERY INFO & RELATIONSHIPS BETWEEN USERS

LIFE SCIENCES

SECURELY STORE AND PROCESS PATIENT & HEALTHCARE DATA

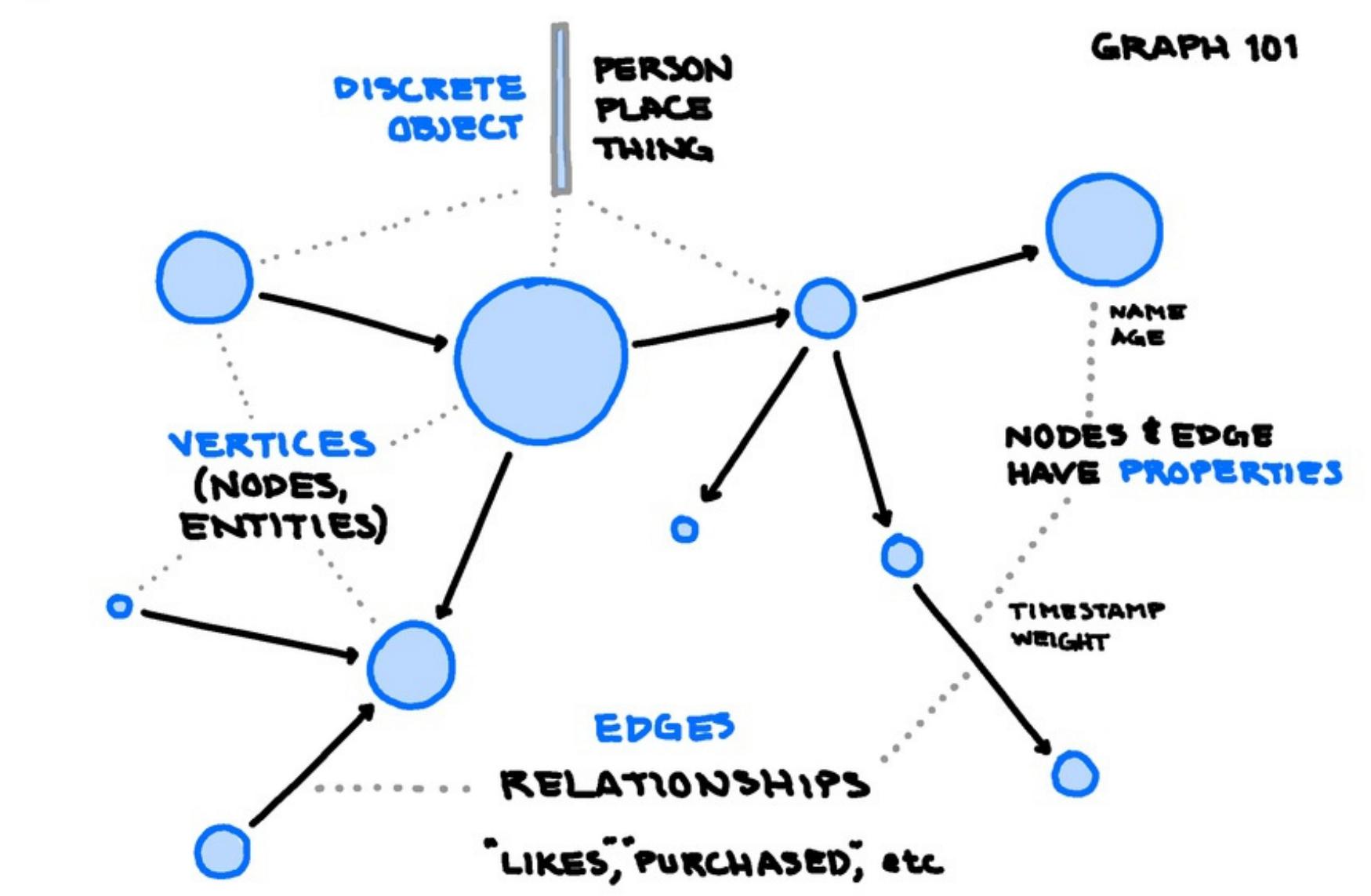
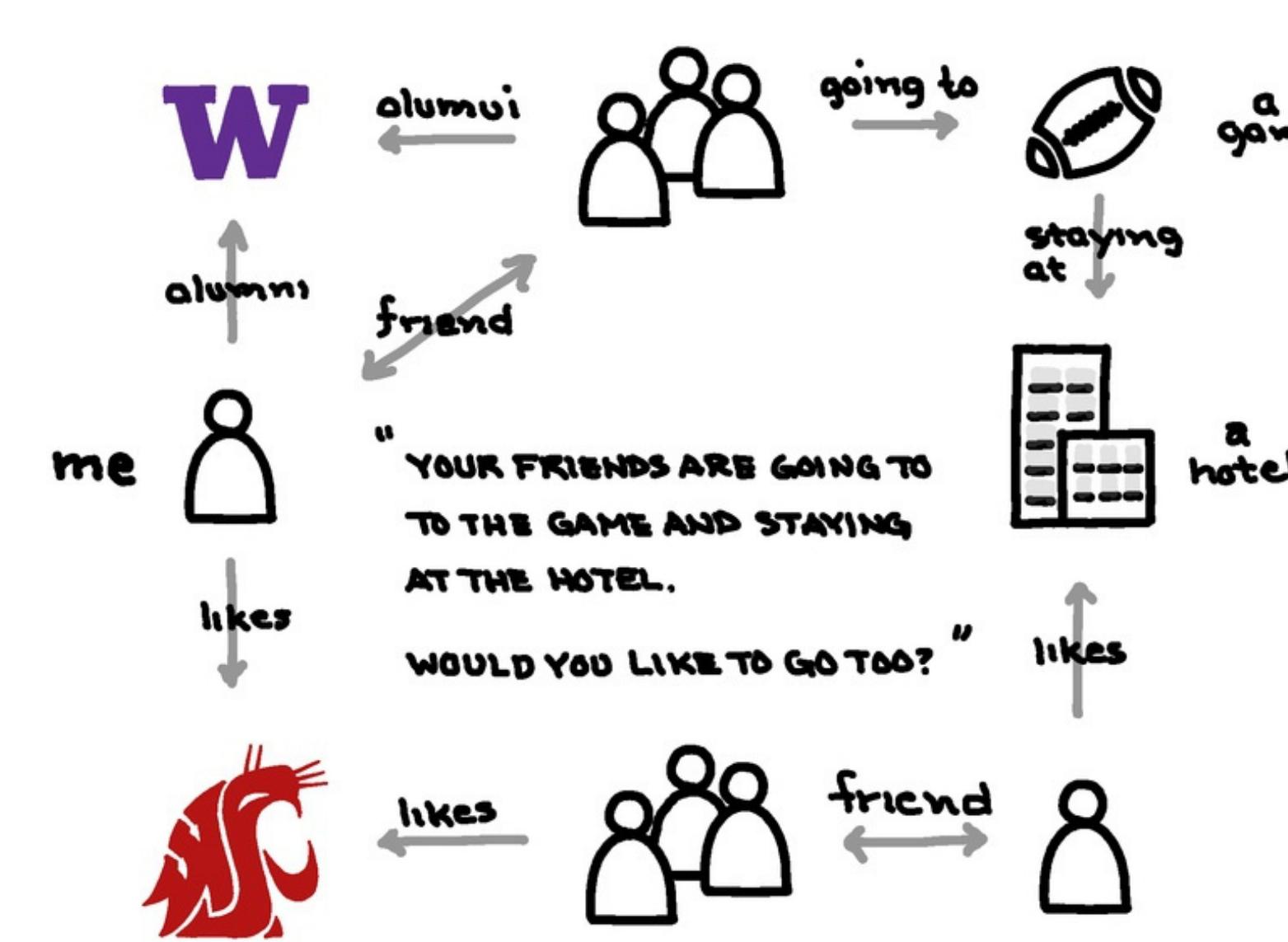
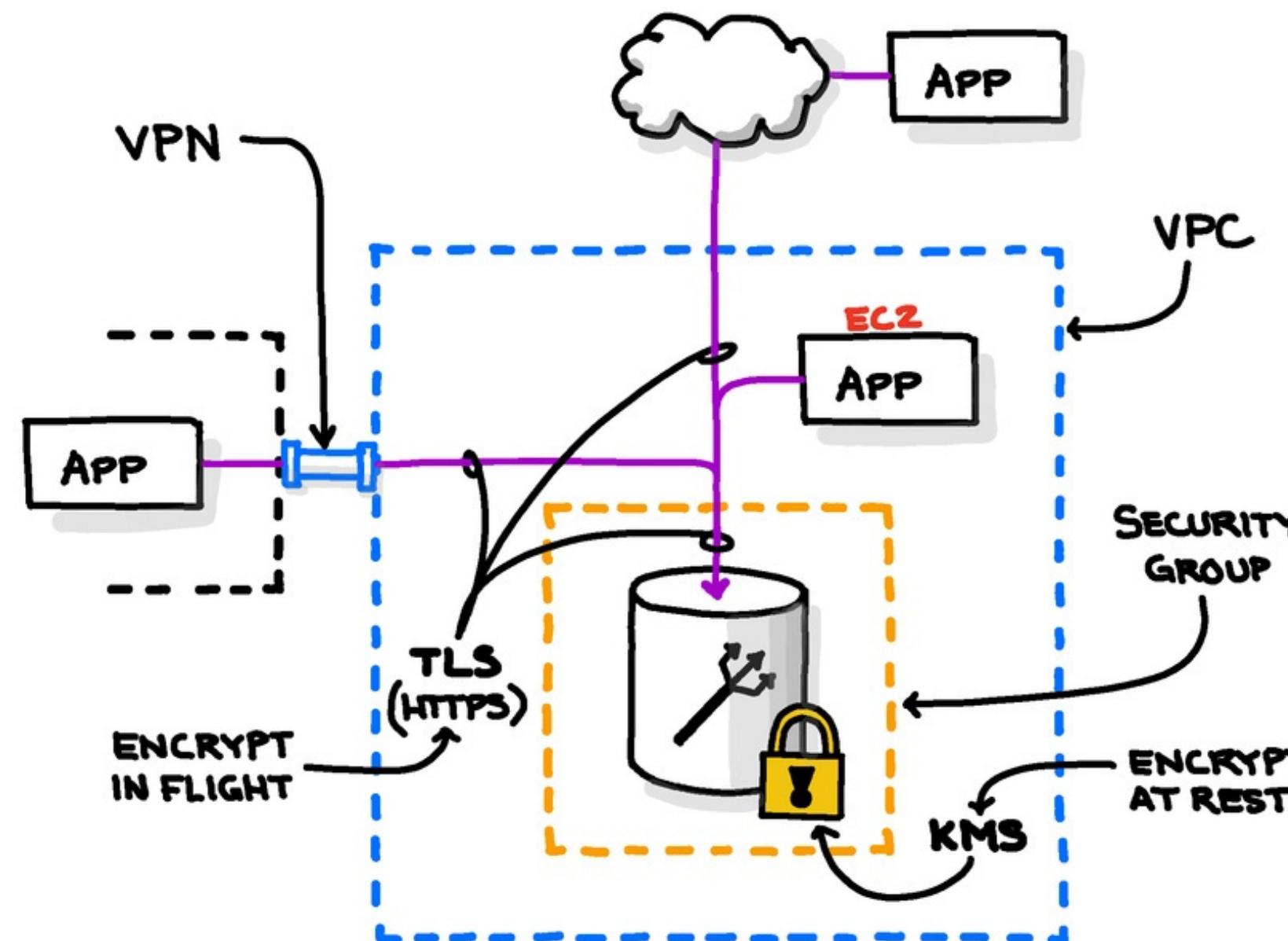
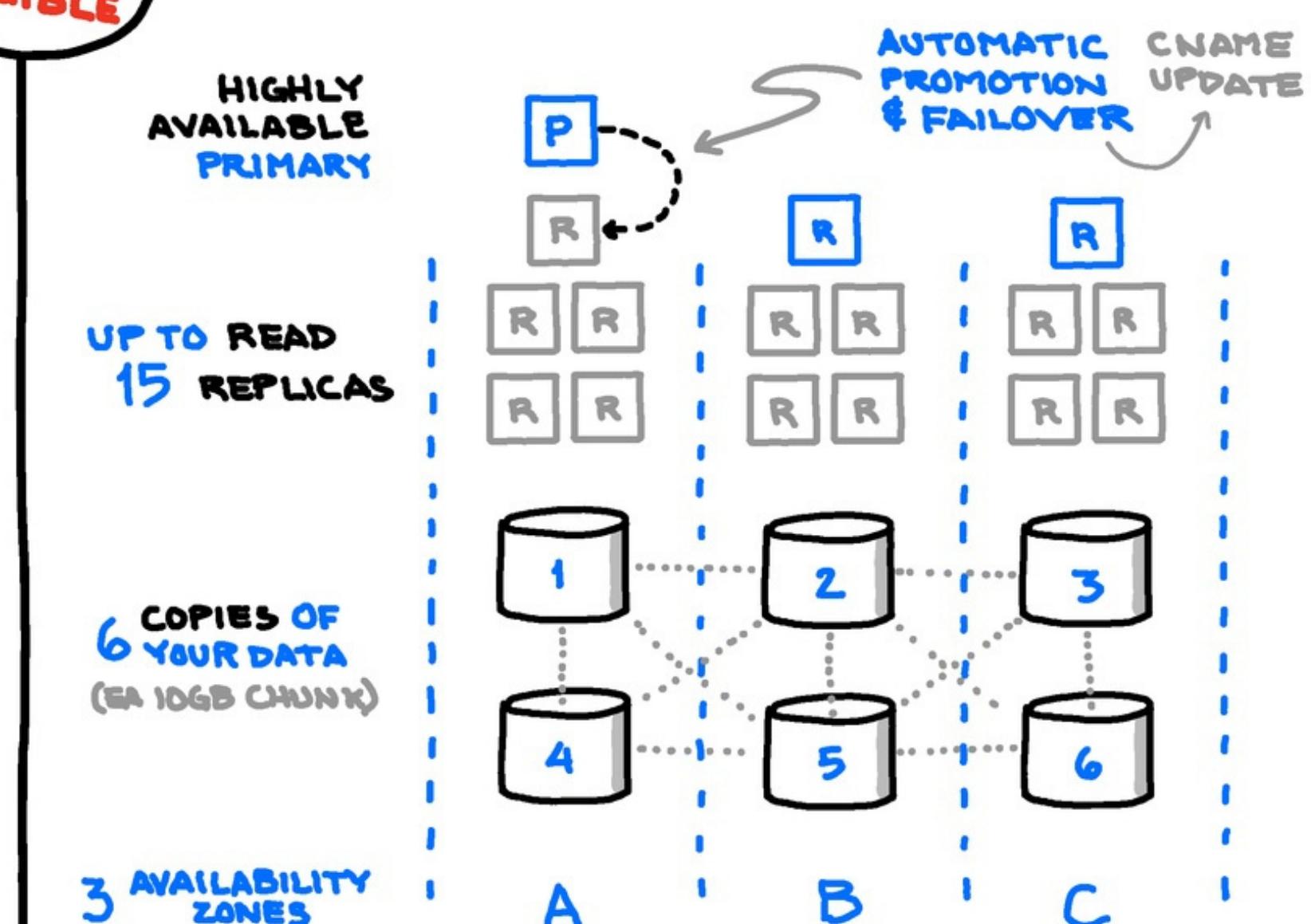
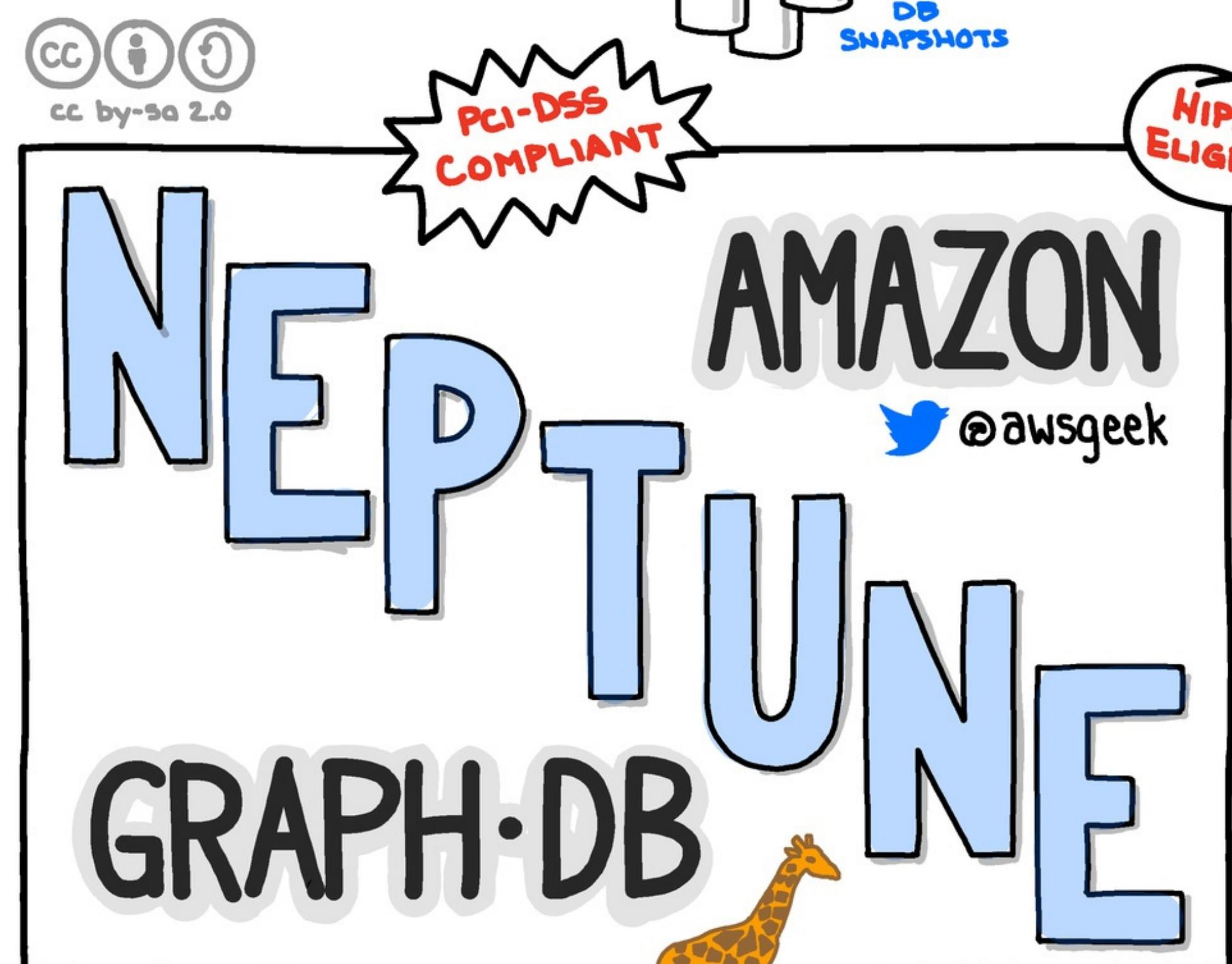
NETWORK/IT OPS

STORE NETWORK TOPOLOGY & DISCOVER RELATIONSHIPS
BETWEEN HOSTS



PRICING

ON-DEMAND	PRIMARY - PER HOUR REPLICAS - SAME	STARTING AT 35¢/HR FOR R4.LG
STORAGE	10¢/GB/MO	
I/O	20¢/MILLION REQUESTS	per 16 KB read 4 KB write
BACKUPS	UP TO DB SIZE, FREE S3 RATES AFTER	
DATA TRANSFER	IN .. FREE OUT .. 2¢/GB TO OTHER REGION .. 9¢/GB TO INTERNET	



— AMAZON — DocumentDB

with MongoDB compatibility

