



How ClickHouse accelerated Innovation at ThriveStack



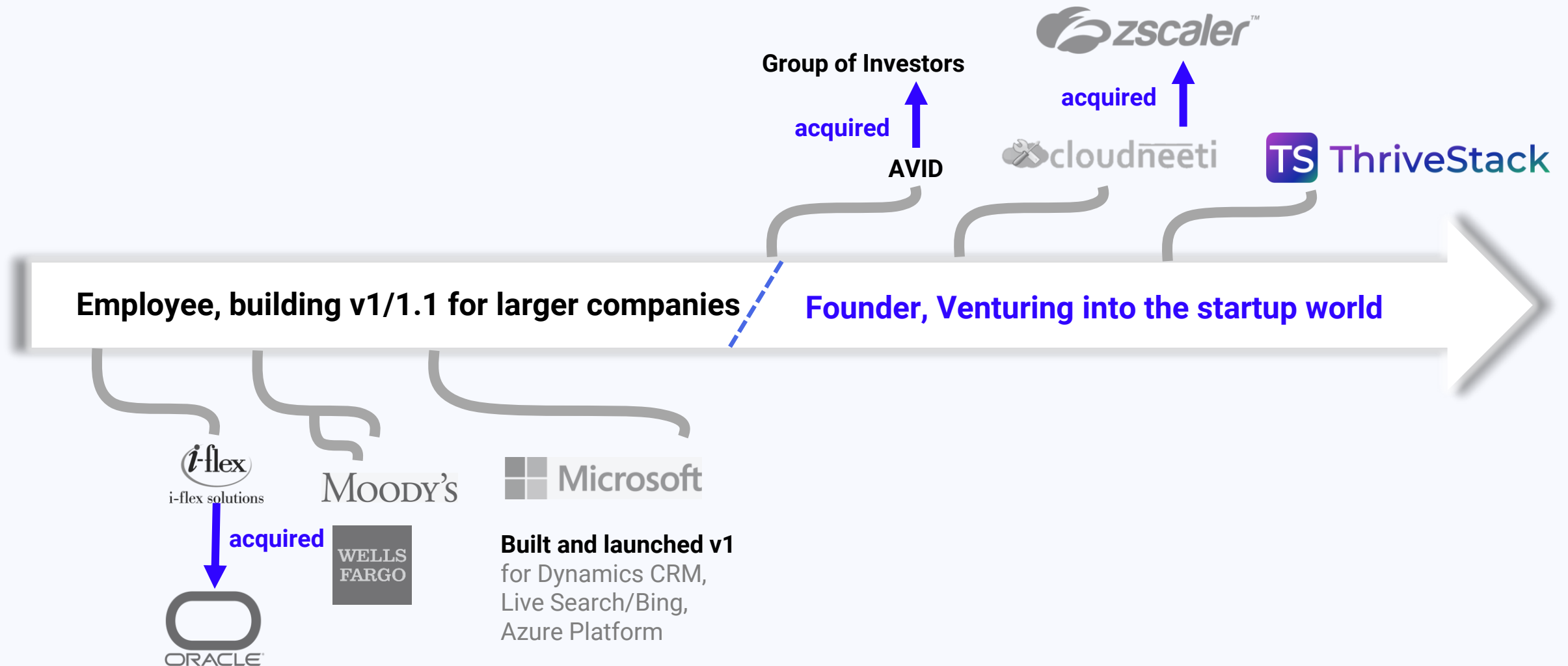
Gururaj Pandurangi
CEO and Founder
ThriveStack
gururajp@thrivestack.ai

Agenda

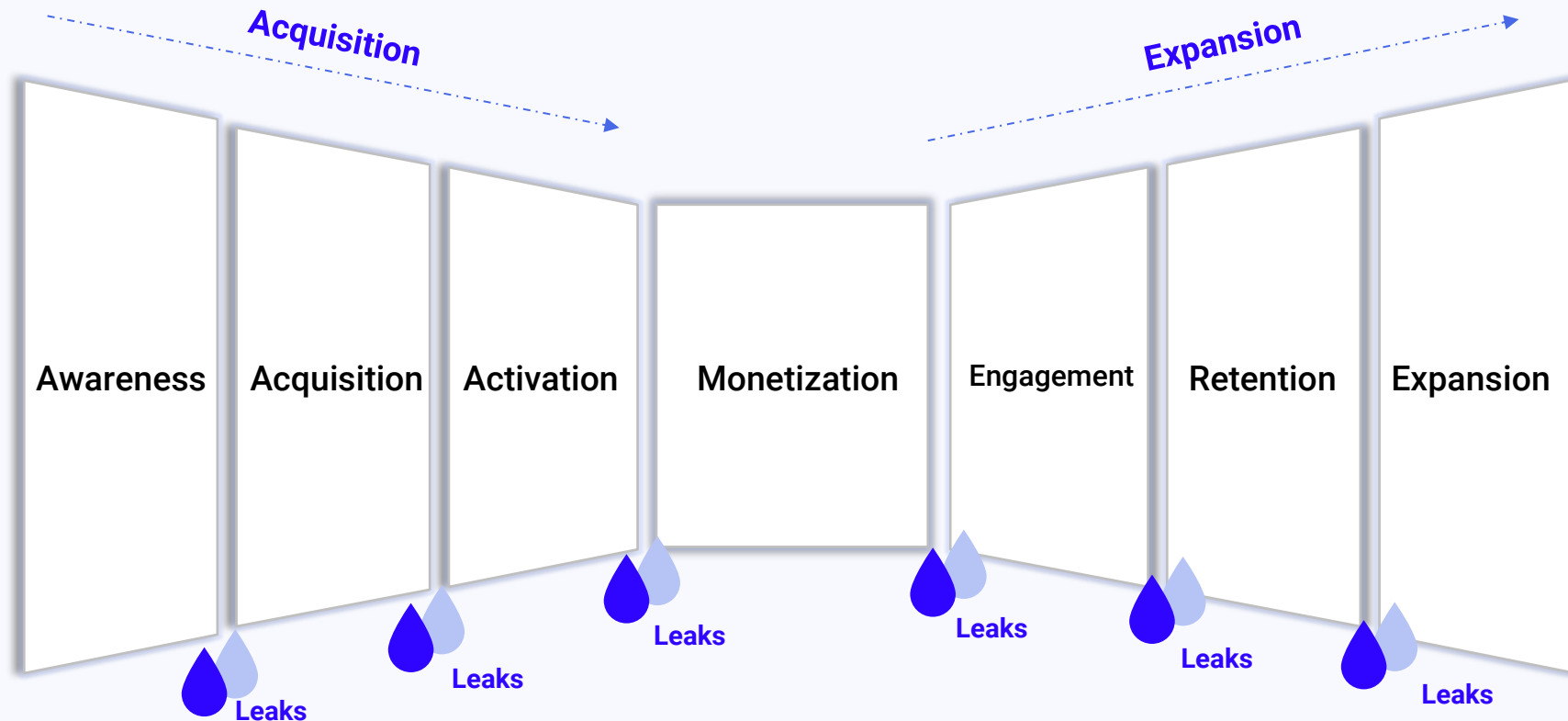
- 1 What is ThriveStack?
- 2 Our Journey using ClickHouse
- 3 Few Results
- 4 What's next for us?



Gururaj's Professional Journey



Every Company leaks Customers and Revenue



The questions are...

Where?

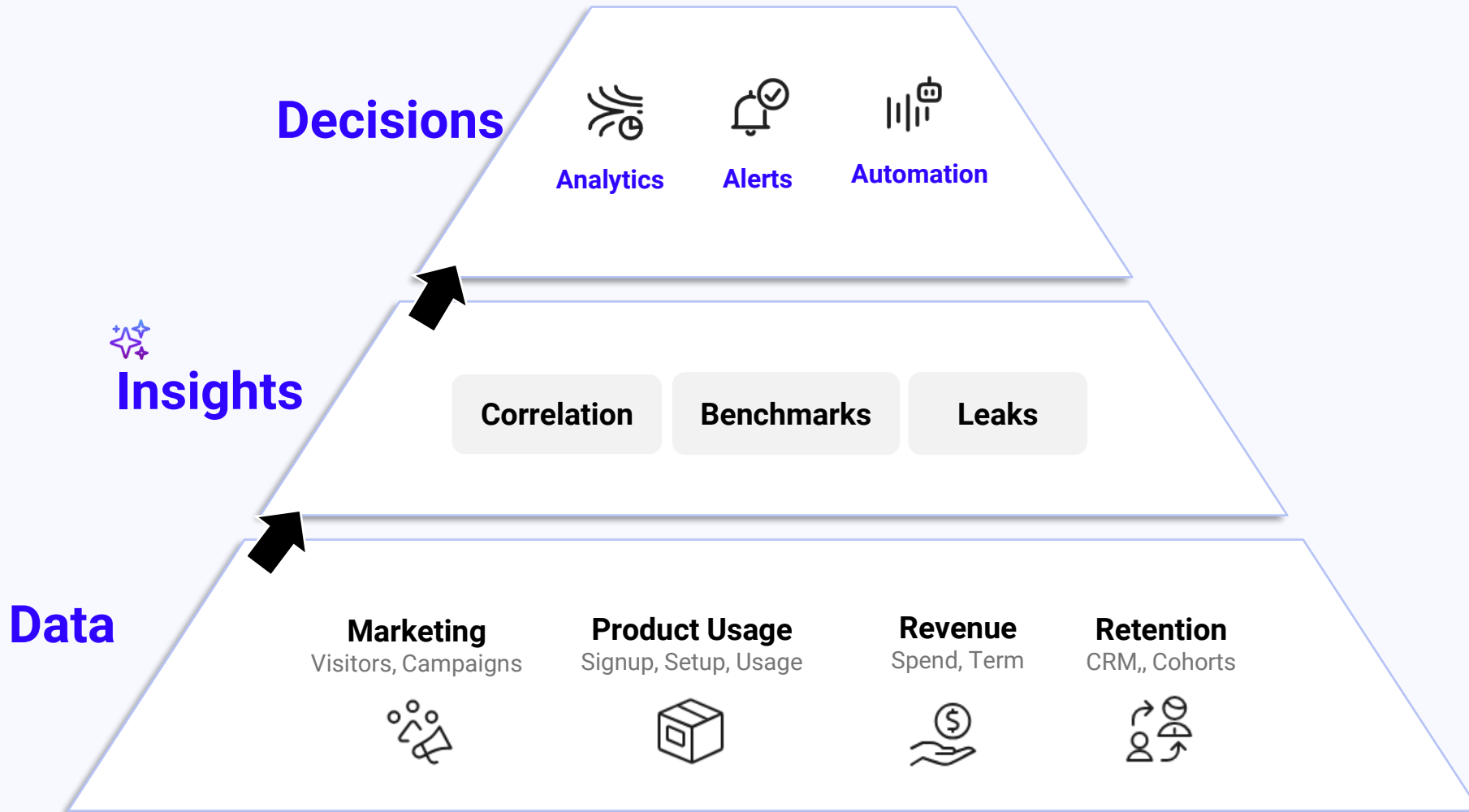
How Much?

Why?

Can I stop then?

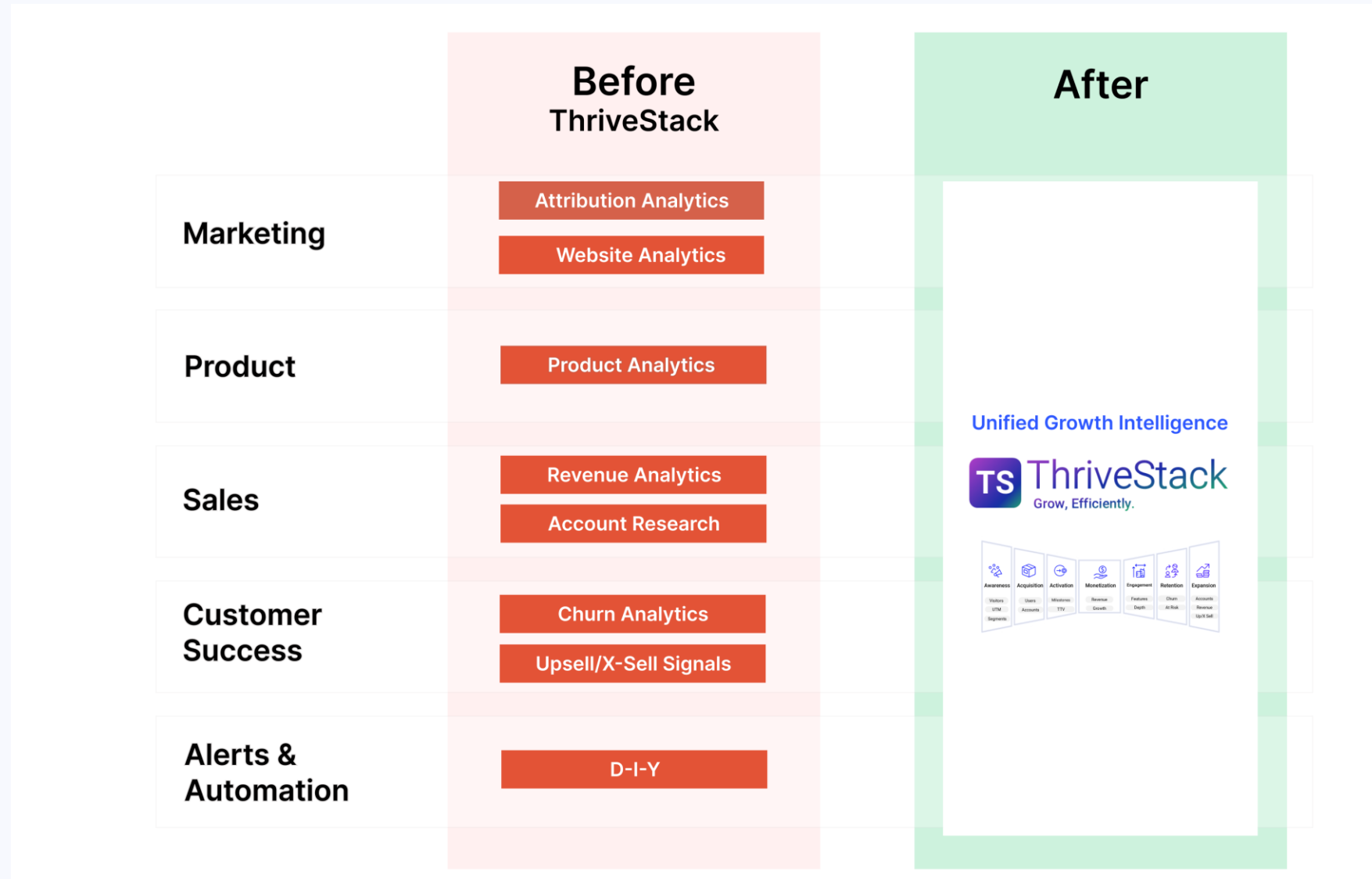
To answer them..

One needs to **Unify** Data, Insights and Decisions



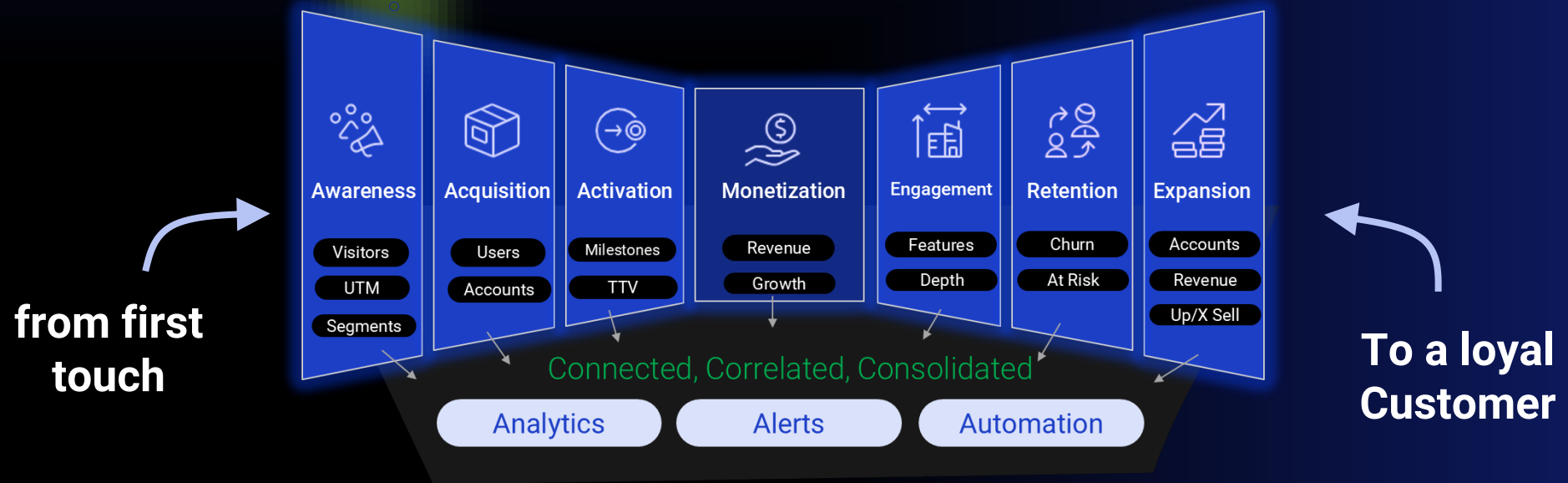
Traditionally it took

8+ tools
\$400K+
3-7 individuals

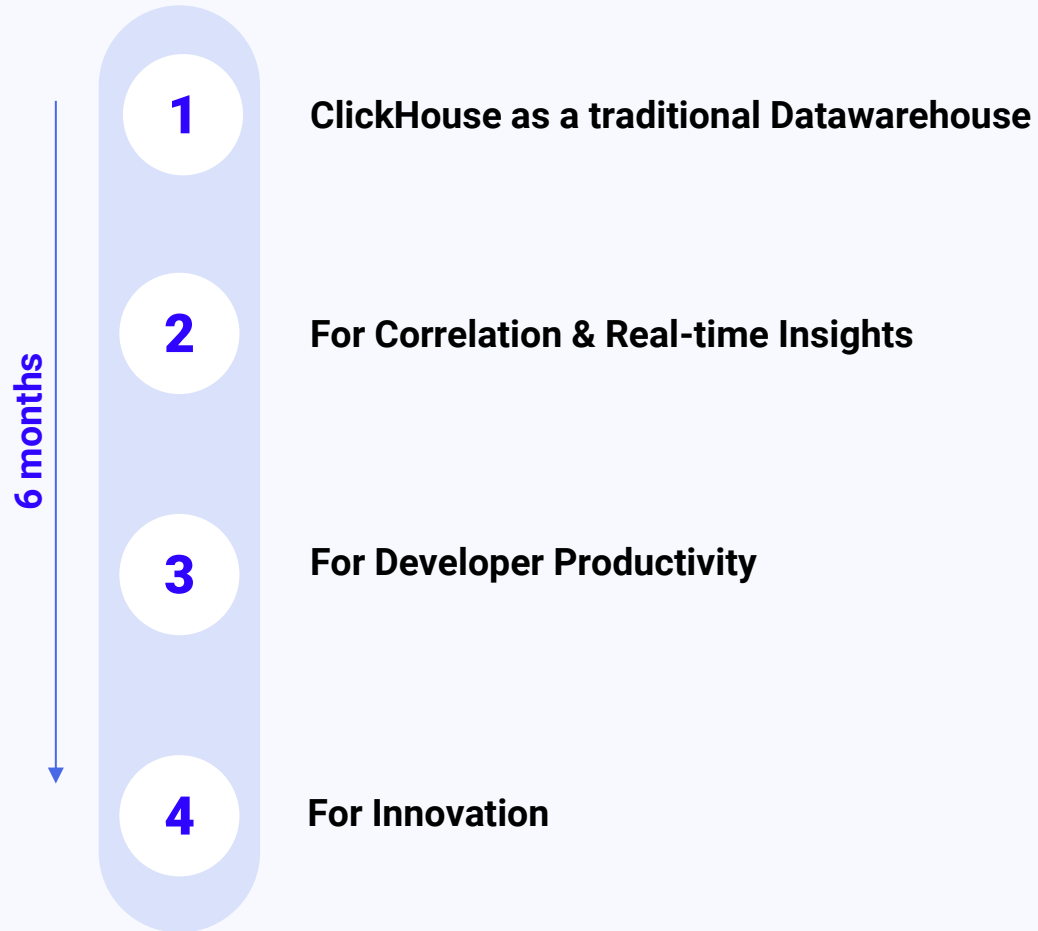


ThriveStack

Full Journey Growth Intelligence



Our ClickHouse journey



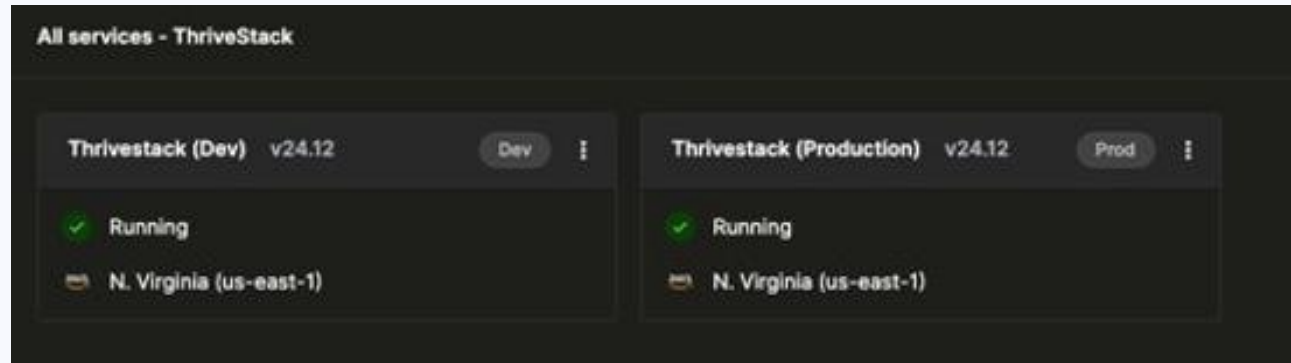
ClickHouse as a traditional Data warehouse

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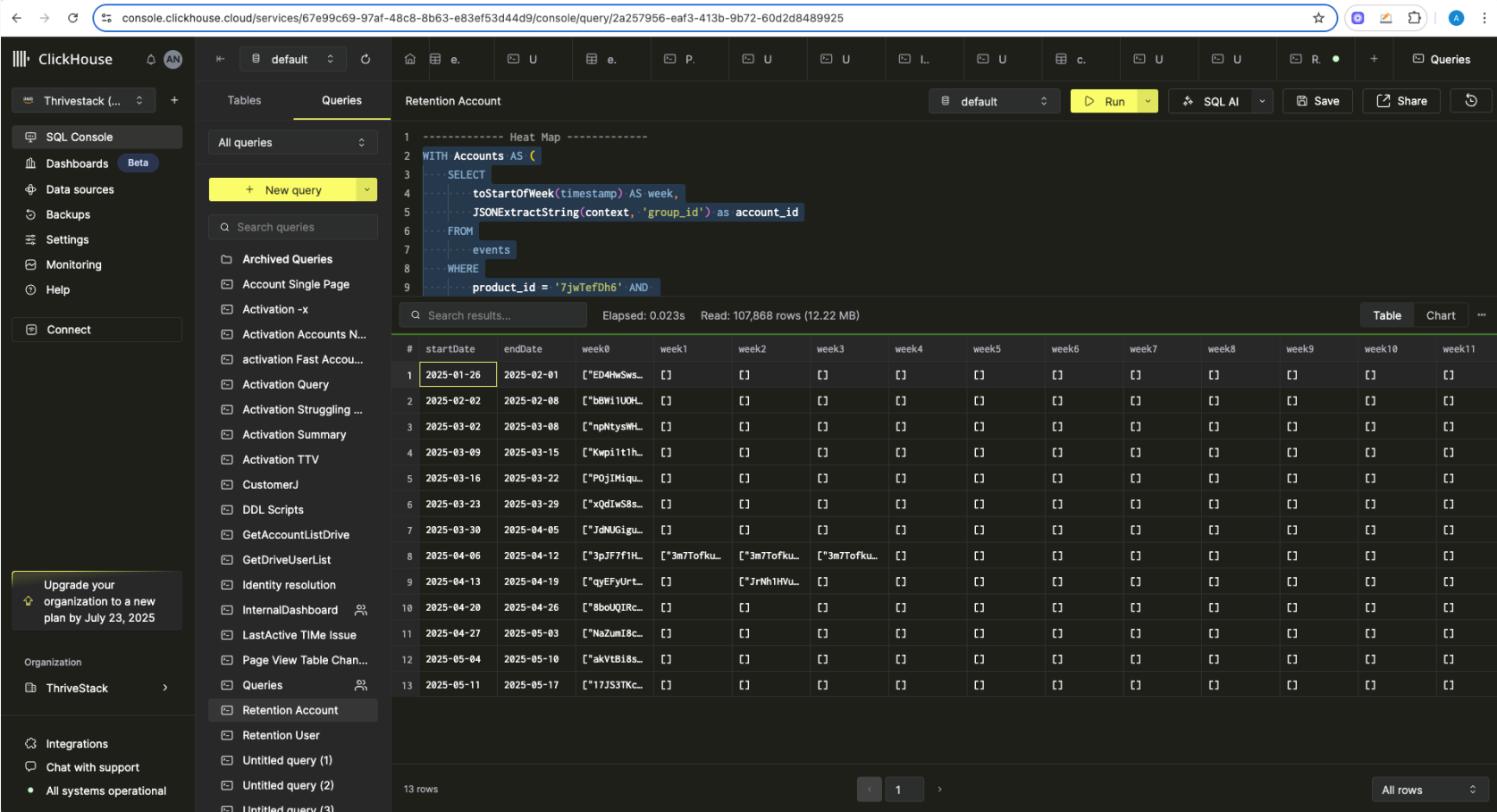


1. Separate instances for R&D vs Production
2. Both configured for Idle timeouts
3. Scalable Data Ingestion pipeline



Traditional Data warehouse...

Sub millisecond Queries due to Column Storage



Execute complex GROUP BY queries across terabytes of data efficiently, as column storage drastically reduces I/O operations by reading only relevant columns.

Traditional Data warehouse...

Clickhouse Table Engine Types

ReplacingMergeTree Engine automatically handles data deduplication during background merges, eliminating the need for complex upsert logic in ourGo services.

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ClickHouse

Thrivestack (...)

SQL Console

Dashboards

Data sources

Backups

Settings

Monitoring

Help

Connect

Upgrade your organization to a new plan by July 23, 2025

Organization

ThriveStack

Integrations

Chat with support

All systems operational

default

Tables

Queries

New table

Search resources

Tables (5)

events

events_s3_queue

groups

page_events

users

Materialized Views (4)

page_events

#	uuid	sb_id	product_id	environmen...	type	event_na
1	a3d8a459-3...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
2	ab911782-d...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
3	7a9e3c88-9...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
4	16f54017-c...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
5	f7b5f38e-d...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
6	a0180a5b-7...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
7	740a616a-2...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
8	97b70902-a...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
9	2db036c5-f...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
10	b5f78328-4...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
11	739573e6-7...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
12	70543d8f-b...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
13	2a6e24af-9...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
14	b33e3344-2...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
15	317969d1-8...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
16	3bbe52ef-9...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
17	cd89d340-1...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
18	65a5e56e-a...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
19	5a0fe2f2-c...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
20	40071673-4...	gz1IocGF2	0kyHmUmtz	LwxU0f8SX	track	page_vis...
21	d244656b-0...	GzJHRuAfk	0pMCESuK	6bqsRI1hL	track	page_vis...
22	1e69c91-2...	GzJHRuAfk	0pMCESuK	6bqsRI1hL	track	page_vis...
23	02f1370a-9...	GzJHRuAfk	0pMCESuK	6bqsRI1hL	track	page_vis...
24	cfdf71851-0...	GzJHRuAfk	0pMCESuK	6bqsRI1hL	track	page_vis...

83,826 rows

Table inspector

```
9 'user_id' String,
10 'group_id' String,
11 'thrivestack_id' String,
12 'device_id' String,
13 'source' String,
14 'session_id' String,
15 'timestamp' DateTime64(3, 'UTC'),
16 'properties' String CODEC(ZSTD(3)),
17 'context' String CODEC(ZSTD(3)),
18 'page_title' String,
19 'page_url' String,
20 'page_path' String,
21 'page_referrer' String,
22 'platform' String,
23 'os_name' String,
24 'os_version' String,
25 'device_brand' String,
26 'device_model' String,
27 'carrier' String,
28 'country' String,
29 'region' String,
30 'city' String,
31 'language' String,
32 'utm_source' String,
33 'utm_medium' String,
34 'utm_campaign' String,
35 'utm_term' String,
36 'utm_content' String
37
38 ENGINE = SharedReplacingMergeTree('/clickhouse/tables/{uuid}/{shard}', '{replica}')
39 PARTITION BY toYYYYMM(timestamp)
40 ORDER BY (product_id, toDate(timestamp), event_name, cityHash64(user_id), cityHash64(uuid))
41 SETTINGS index_granularity = 8192
```

Traditional Data warehouse...

Parametric Functions

Leverage ClickHouse's compilation optimizations for parametric functions, which can outperform equivalent inline SQL when called repeatedly with different parameters.

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ClickHouse

Thrivestack [...]

SQL Console

Dashboards Beta

Data sources

Backups

Settings

Monitoring

Help

Connect

Upgrade your organization to a new plan by July 23, 2025

Organization

ThriveStack

Integrations

Chat with support

All systems operational

Tables

Queries

All queries

New query

Search queries

Archived Queries

Account Single Page

Activation -x

Activation Accounts N...

activation Fast Accou...

Activation Query

Activation Struggling ...

Activation Summary

Activation TTV

CustomerJ

DDL Scripts

GetAccountListDrive

GetDriveUserList

Identity resolution

InternalDashboard

LastActive TIme Issue

Page View Table Chan...

Queries

Retention Account

Retention User

Untitled query (1)

Untitled query (2)

Untitled query (3)

Untitled query

default

Run

SQL AI

Save

Share

Refresh

1 SELECT

2 user_id,

3 retention(toDate(timestamp) = '2024-10-20', toDate(timestamp) = '2024-11-20', toDate(timestamp) = '2024-12-20') AS r

4 FROM events

5 WHERE toDate(timestamp) IN ('2024-10-20', '2024-11-20', '2024-12-20')

6 GROUP BY user_id

7 ORDER BY user_id ASC

8 LIMIT 20

Search results...

Elapsed: 0.004s Read: 70,250 rows (83.88 KB)

Table Chart

#	user_id	r
5	OqBUKCESP	["1","0","0"]
6	dsdsfsde	["1","0","0"]
7	dsfsdfsd	["1","0","0"]
8	gdYcNCdFe	["1","0","0"]
9	j3yIwfmJg	["1","0","0"]
10	wgLIXTASX	["1","0","0"]
11	yxjImUnFg	["1","0","0"]
12	yxjImsdUnFg	["1","0","0"]
13	yxsdjImsdUnFg	["1","0","0"]

13 rows

1

All rows

Correlation & Real-time Insights

Materialized Views

Implement change data capture (CDC) patterns by creating materialized views that track and persist changes to our source tables for audit and history features and eliminating expensive on-the-fly calculations when rendering React dashboards.

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ThriveStack (...)

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Queries

Tables

event...

Tables (5)

events

events_s3_queue

groups

page_events

users

Materialized Views (4)

events_mv

groups_mv

page_events_mv

users_mv

#	uuid	sb_id	product_id	environmen...	type	group_id	event_name	user_id
1	fc43e14b-8...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	66789
2	5453b9fc-4...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	55678
3	64e615ec-a...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	77890
4	7ac3d2f8-2...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	77889
5	27be6de6-8...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	22345
6	f3732269-0...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	99001
7	29aa5898-c...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	33456
8	9b6f67b1-e...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	11234
9	3aca618e-3...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	88990
10	ee495575-b...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	44567
11	0c12d855-b...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	88901
12	2fbf889c-1...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	11901
13	445e96bf-4...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	33789
14	4b58d4dd-1...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	66445
15	710fbccd-c...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	99112
16	877849bf-0...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	44678
17	1fe7f60a-e...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	99022
18	8fed25ee-a...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	77334
19	44cd8dab-2...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	88223
20	6cee8d29-c...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	55567
21	e3c29e79-b...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Vi...	22890
22	ff23db98-3...	XjKhmUBT1	vXPT2fdSR	26guAfeHk	track		Feature Us...	0123434
23	72a913eb-7...	1XecrFrtJ	4PyIXt0uY	e6KtJHbSj	track		account_ad...	f35512f7
24	4a248928-7...	1XecrFrtJ	4PyIXt0uY	e6KtJHbSj	track		signed_up	f35512f7

31 rows

Table inspector

Properties

Engine

Sorting key

Primary key

Total rows

Size

Size uncompressed

Create table SQL

1 CREATE MATERIALIZED VIEW default.events_mv TO default.events

2 (

3 'uuid' UUID,

4 'sb_id' String,

5 'product_id' String,

6 'environment_id' String,

7 'type' String,

8 'group_id' String,

9 'event_name' String,

10 'user_id' String,

11 'session_id' String,

12 'properties' String,

13 'traits' String,

14 'timestamp' DateTime64(3, 'UTC'),

15 'context' String

16)

17 AS SELECT *

18 FROM default.events_s3_queue

19 WHERE event_name != 'page_visit'

For Developer Productivity

SQL AI Assistant

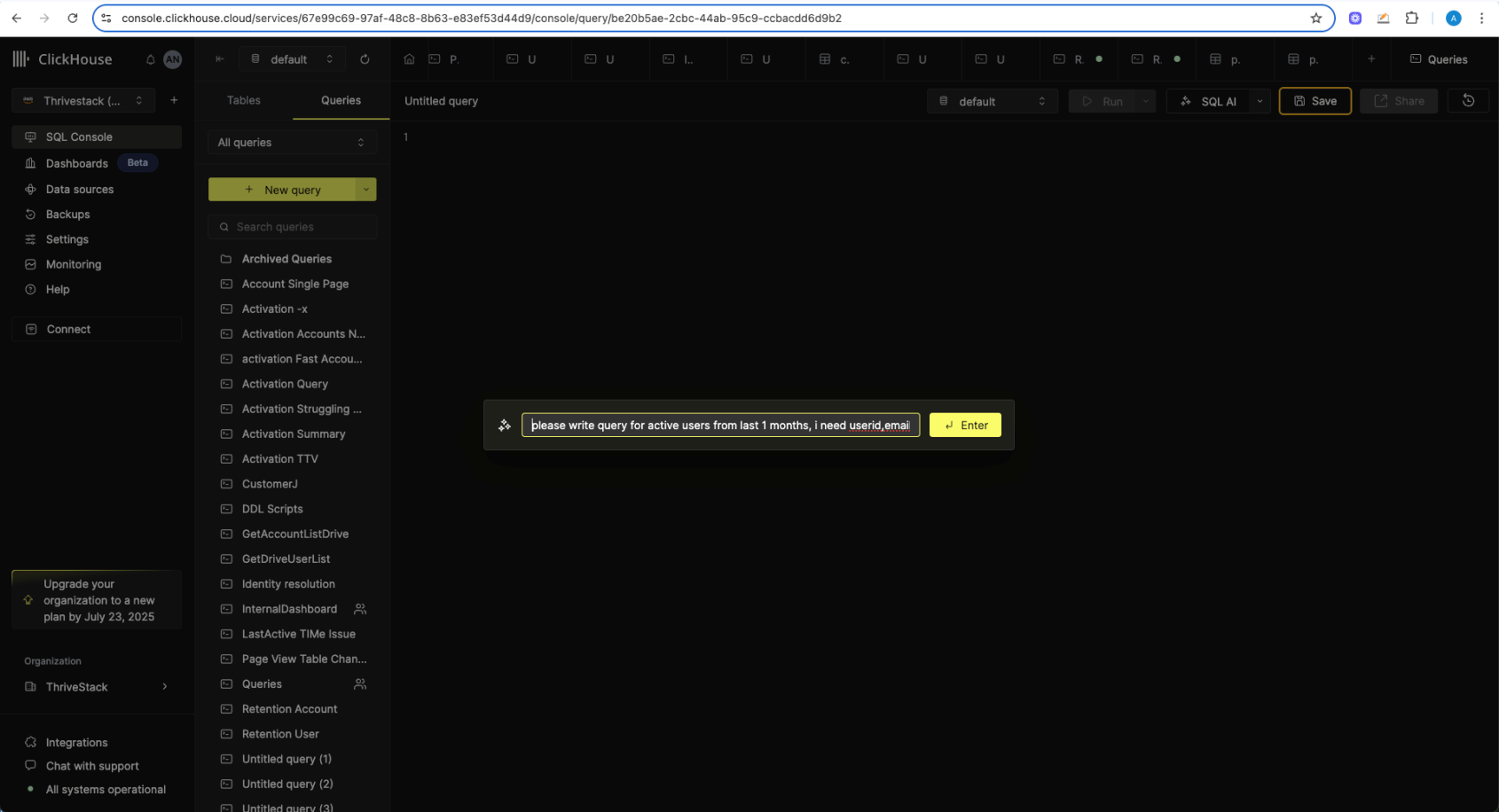
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Query ClickHouse data using natural language prompts instead of complex SQL, accelerating development workflows and reducing the learning curve.



For Innovation

ClickHouse MCP integration with Claude AI

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Build full-stack data applications combining your TypeScript/React frontend with Claude-powered dashboards querying billions of rows in ClickHouse within milliseconds.

The screenshot displays the Claude AI interface with a TypeScript configuration for ClickHouse MCP on the left, a chat log in the center, and a bar chart on the right.

Left Panel (TypeScript Configuration):

```
1 {
2   "mcpServers": {
3     "mcp-clickhouse": {
4       "command": "uv",
5       "args": [
6         "run",
7         "--with",
8         "mcp-clickhouse",
9         "--python",
10        "3.13",
11        "mcp-clickhouse"
12      ],
13      "env": {
14        "CLICKHOUSE_HOST": "xxxxxxxx.us-east-1.aws.clickhouse.cloud",
15        "CLICKHOUSE_PORT": "8443",
16        "CLICKHOUSE_USER": "xxxxxxx",
17        "CLICKHOUSE_PASSWORD": "xxxxxxxxxxx",
18        "CLICKHOUSE_SECURE": "true",
19        "CLICKHOUSE_VERIFY": "true",
20        "CLICKHOUSE_CONNECT_TIMEOUT": "30",
21        "CLICKHOUSE_SEND_RECEIVE_TIMEOUT": "30"
22      }
23    }
24  }
25 }
```

Center Panel (Chat Log):

I'll check all tables to find one that might contain user signup information:

L list_tables

Now let me check what kind of events are in the `events` table to see if there are signup events:

R run_select_query

Great! I found that the `events` table contains a "signed_up" event. Now let me get the new users who signed up in the last 7 days:

R run_select_query

Now let me get a count of unique users who signed up in the last 7 days:

R run_select_query

Let me also check the signup counts by day:

R run_select_query

Right Panel (Bar Chart):

New User Signups - Last 7 Days

Total unique signups: 64

Date	New Users
05-09	9
05-10	3
05-11	1
05-12	16
05-13	12
05-14	14
05-15	10
05-16	9

The Results...

Product Development

20% Reduction

in Engineering Resources

Product Experimentation

3x faster

in release velocity

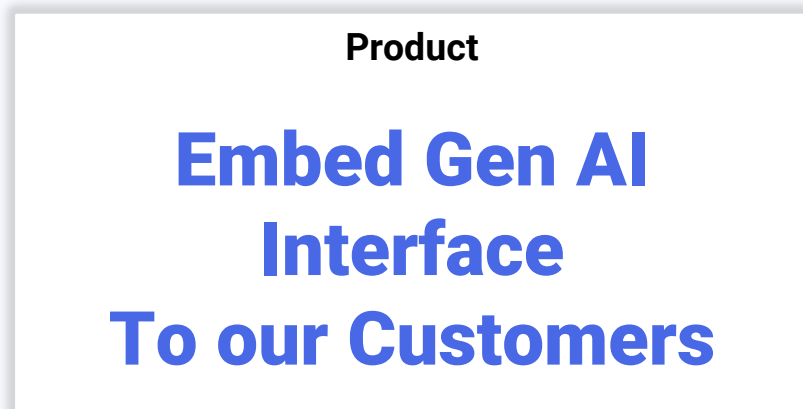
Develop - > Release --> Feedback

COGS Costs

40% higher

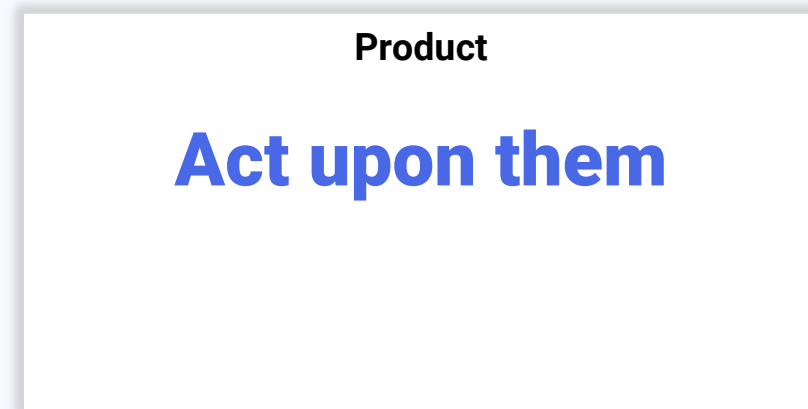
More engineering resources now use
ClickHouse as opposed to only Backend /
Data engineers

What's next for us?



Show me

- Enterprise Accounts (A Segment)
- that have not completed
- Activation for last 4 days



Automate a trigger

- when the condition is true



Thank you



Give it a spin

Experience it yourself, at your own pace

Signup & try

<https://www.thrivestack.ai/>

Try the demo mode

After you signup, try the demo mode at the top of the screen



Schedule a demo/Onboarding

Bring in your team for a Demo/product onboarding

- Learn how to get the best out of the product
- Customize it to the stage of the company

Schedule a call

