Redpoint.

The InfraRed Report.

June 2024

Cloud infrastructure powers virtually all software.

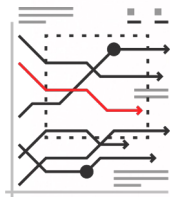| Cybersecurity | Education | Finance | Healthcare | Life Sciences | Manufacturing | Real Estate | Restaurants | Social Media | Transportation | Utilities |

Akamai • ATLASSIAN • aws • Azure • CLOUDFLARE • CONFLUENT • CROWDSTRIKE

DATADOG • elastic • GitLab • GitHub • Google Cloud • HashiCorp • SentinelOne

MongoDB • OpenAI • databricks • paloalto NETWORKS • snowflake • splunk> • zscaler
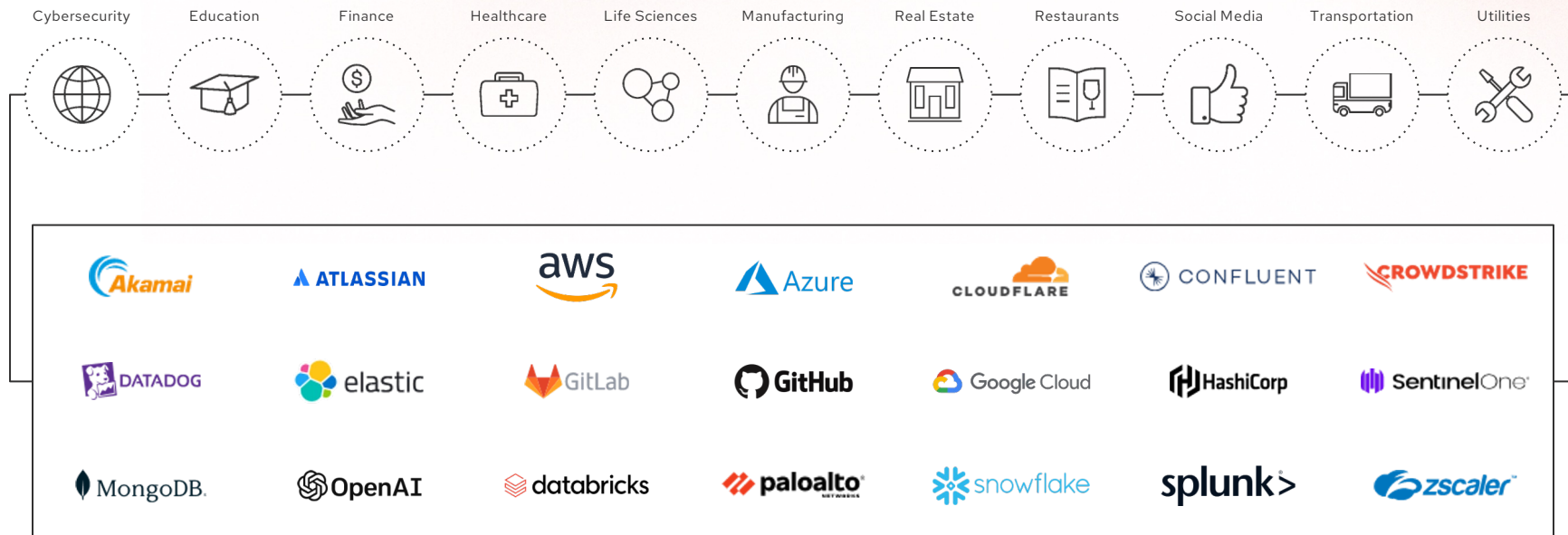
Major cloud infrastructure categories.

| Cybersecurity | Education | Finance | Healthcare | Life Sciences | Manufacturing | Real Estate | Restaurants | Social Media | Transportation | Utilities |

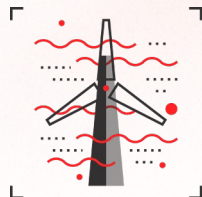**AI**

Data

DevOps

Security
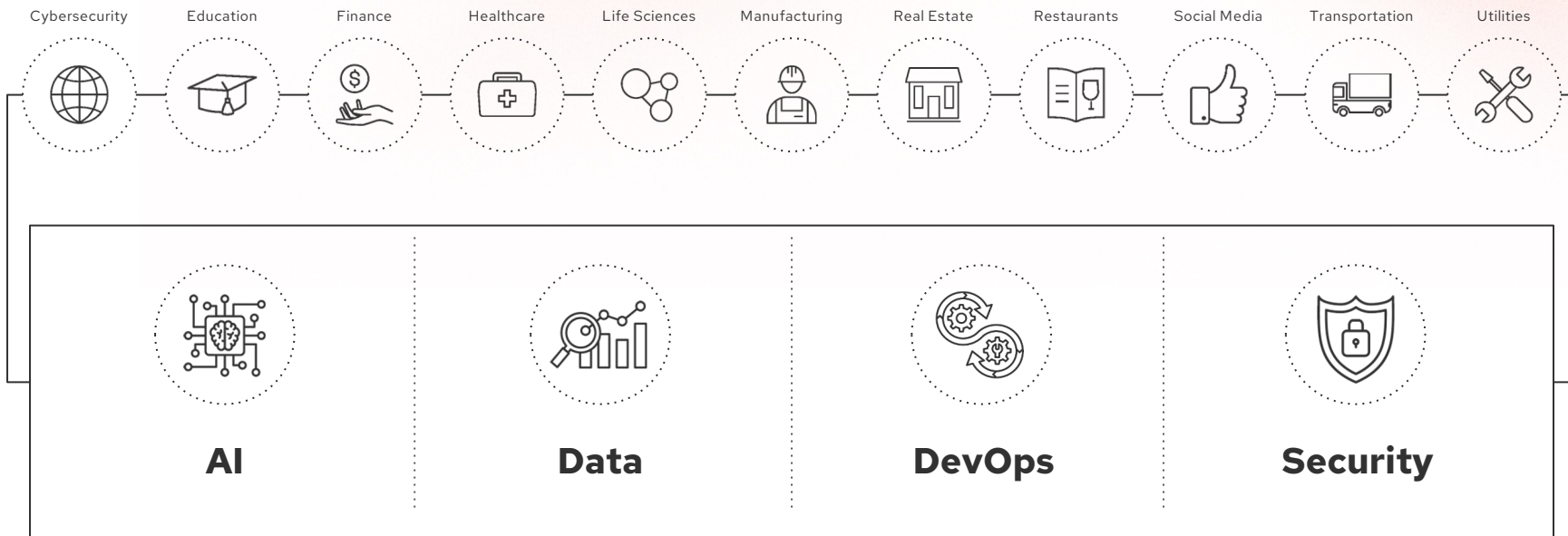
Cloud Infrastructure Macro Update.

Public cloud infrastructure at a glance.

Lowered Guidance

Over the past year, public infrastructure businesses mostly exceeded expectations, but in the last two quarters, more companies have lowered their guidance. The impact was felt broadly across all categories within infra.

Sustained Macro Headwinds

Softer outlook largely due to customers optimizing for cost, elongated sales cycles as large deals are delayed, and GTM changes introducing short-term challenges.
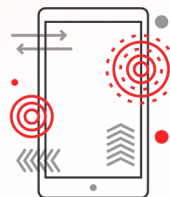
Broad Software Impact

Application software businesses have fared worse in future guidance, with a larger percentage of companies lowering their forecasts compared to infrastructure software businesses.
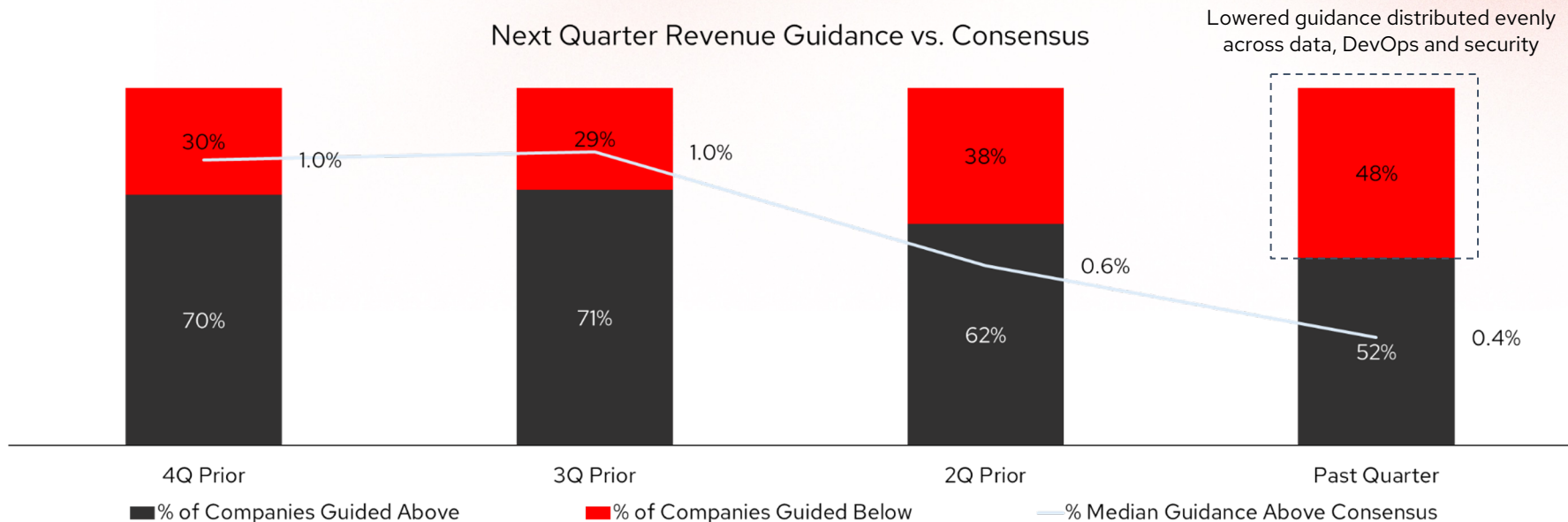
Hyperscaler Rebound

The good news is that hyperscaler growth has rebounded over the past three quarters, driven by a surge in AI-related workloads.

Public infra companies are guiding lower.

Next Quarter Revenue Guidance vs. Consensus

Lowered guidance distributed evenly across data, DevOps and security

4Q Prior
- 30% (% of Companies Guided Below)
- 70% (% of Companies Guided Above)
- 1.0% (% Median Guidance Above Consensus)

3Q Prior
- 29%
- 71%
- 1.0%

2Q Prior
- 38%
- 62%
- 0.6%

Past Quarter
- 48%
- 52%
- 0.4%

Legend:
- ■ % of Companies Guided Above
- ■ % of Companies Guided Below
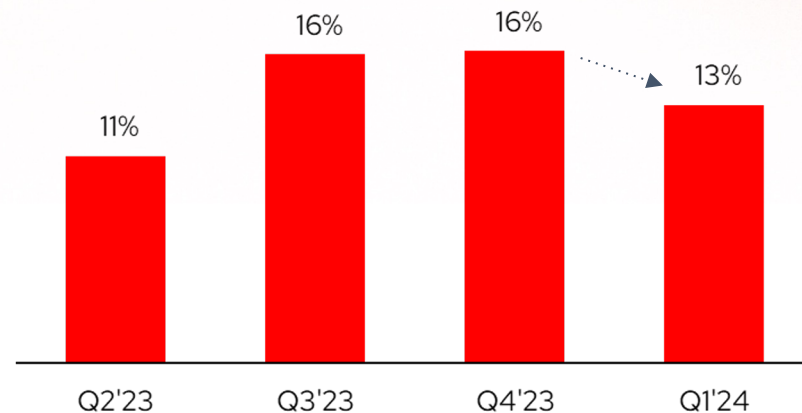- — % Median Guidance Above Consensus

Public infrastructure companies are showing weakness in expectations around future growth, especially in the past few quarters.

As evidenced by declining NDR and billings growth.

Median Net Dollar Retention

Q2'23	Q3'23	Q4'23	Q1'24
120%	119%	116%	116%
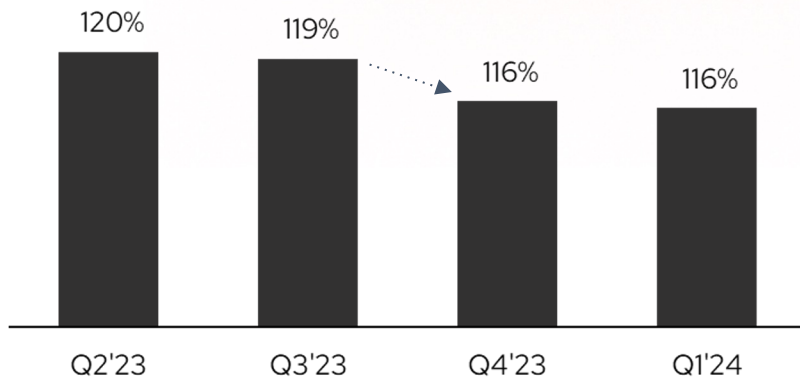
Median New Billings YoY Growth

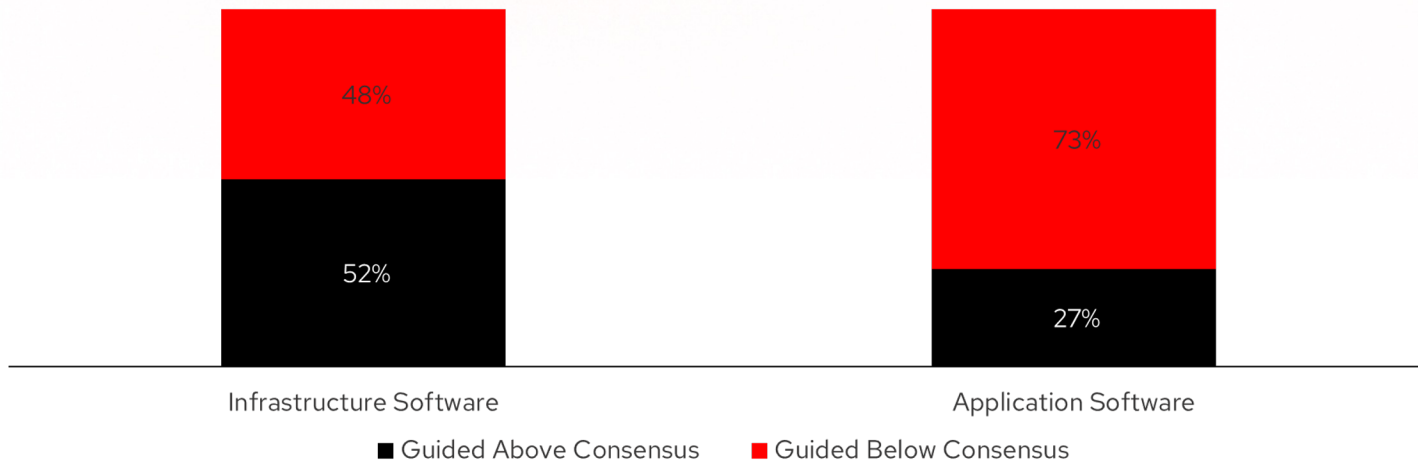| Q2'23	Q3'23	Q4'23	Q1'24
11%	16%	16%	13%

The impact of general macro weakness is showing up as headwinds in reduced net dollar expansions and new billings growth.

Infra software is performing better than application software.

Next Quarter Guidance vs. Consensus

Infrastructure Software — 48% Guided Below Consensus, 52% Guided Above Consensus

Application Software — 73% Guided Below Consensus, 27% Guided Above Consensus

■ Guided Above Consensus   ■ Guided Below Consensus

Hyperscaler growth is rebounding.

Public cloud revenue YoY growth (%)

Growth is rebounding across all public clouds

Legend:
- AWS
- GCP
- Azure

Azure: 40%, 35%, 31%, 27%, 26%, 29%, 30%, 31%
GCP: 36%, 38%, 32%, 28%, 28%, 22%, 26%, 28%
AWS: 33%, 27%, 20%, 16%, 12%, 12%, 13%, 17%

Periods: CYQ2 '22, CYQ3 '22, CYQ4 '22, CYQ1 '23, CYQ2 '23, CYQ3 '23, CYQ4 '23, CYQ1 '24
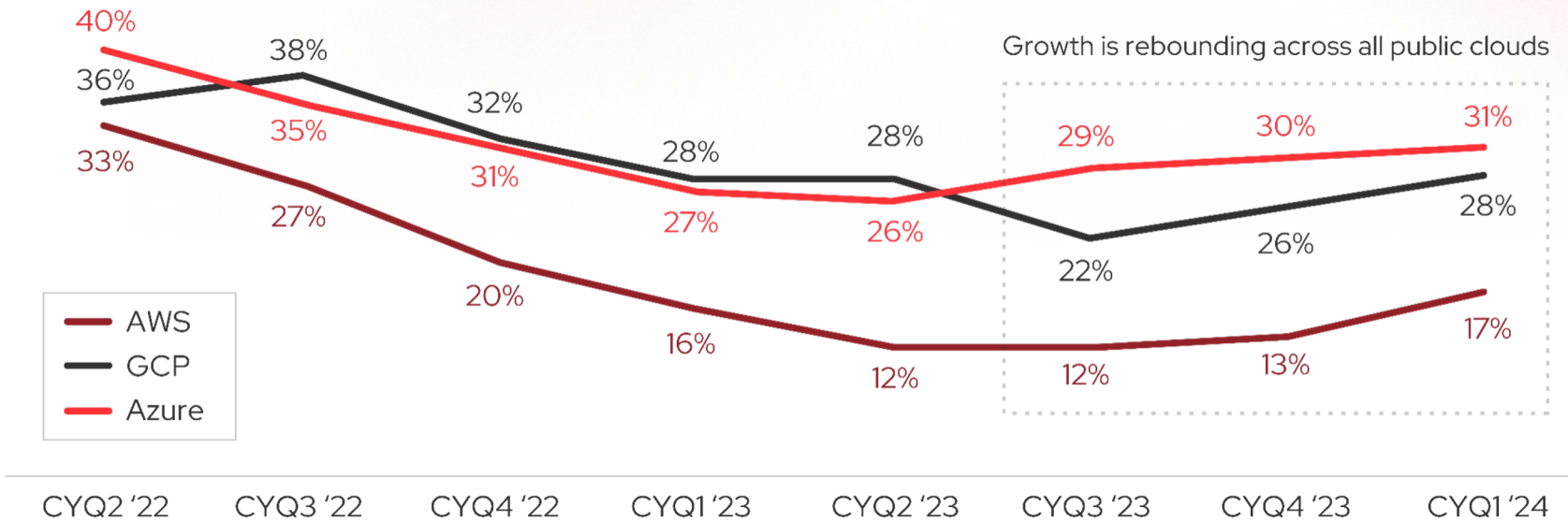
AI is accelerating cloud consumption.

2023 — $13B (AI Consumption) / $207B (Cloud Provider)
2024 — $60B / $255B
2025 — $95B / $308B
2026 — $150B / $369B
2027 — $210B / $430B

74% CAGR
16% CAGR

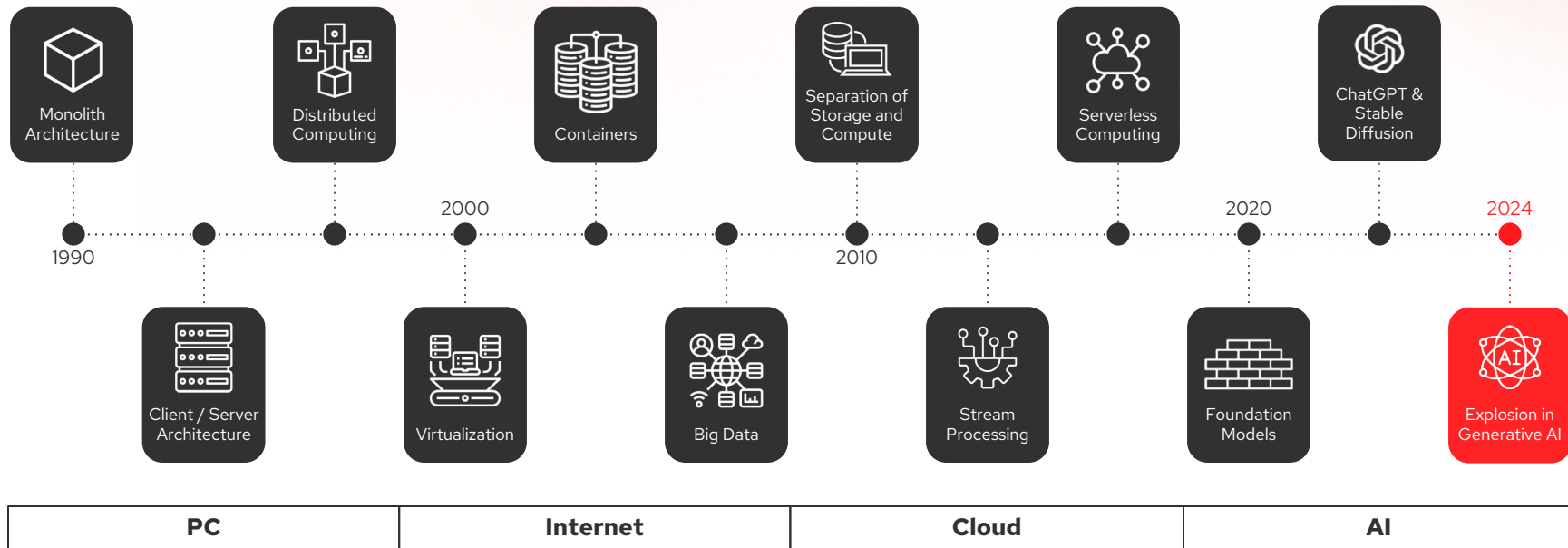■ Cloud Provider Forecast   ■ AI Consumption Forecast
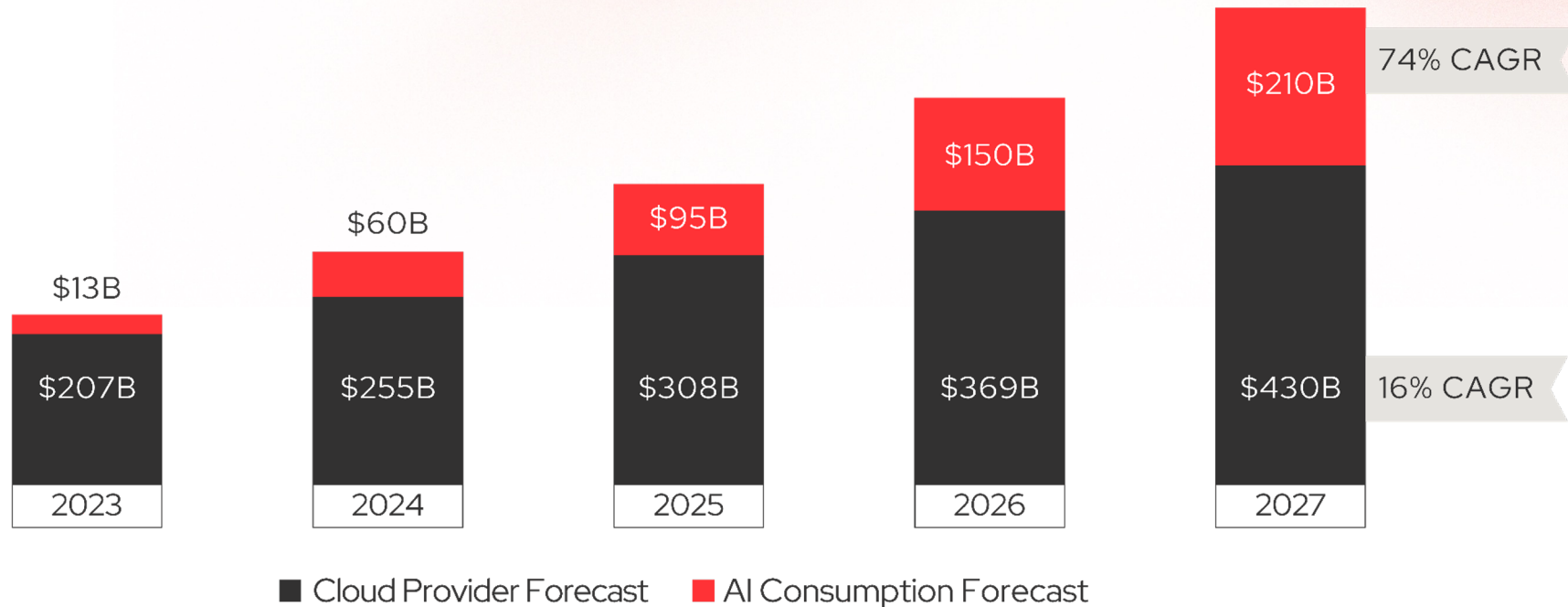
AI.

"**Generative AI is the single most significant platform transition in computing history.** It's bigger than PC, it's bigger than mobile, and it's going to be bigger than the internet."

Jensen Huang, CEO of Nvidia

Evolution of cloud infrastructure.

AI is the next frontier of cloud infrastructure.

PC	Internet	Cloud	AI

Timeline items:
- Monolith Architecture
- Distributed Computing
- Containers
- Separation of Storage and Compute
- Serverless Computing
- ChatGPT & Stable Diffusion
- Client / Server Architecture
- Virtualization
- Big Data
- Stream Processing
- Foundation Models
- Explosion in Generative AI

Years: 1990, 2000, 2010, 2020, 2024

Training costs down 10x.

Training costs decreased 10x in less than a year. It costs $50k to train stable diffusion and $200k to train a high-quality LLM.
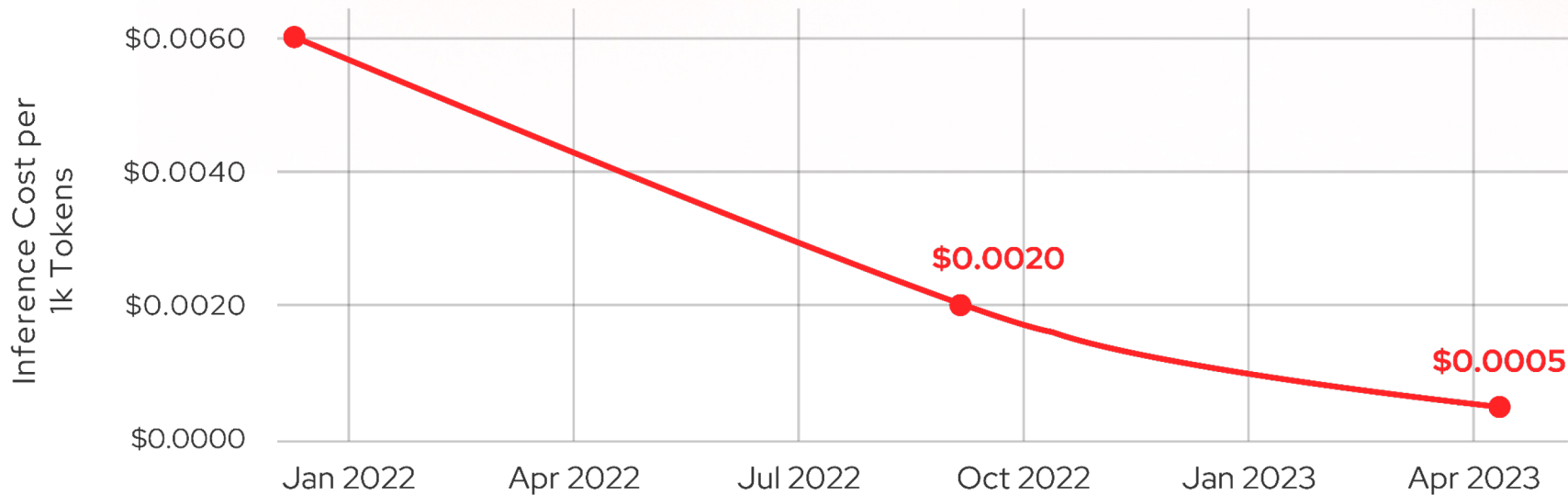
Training Cost – Stable Diffusion
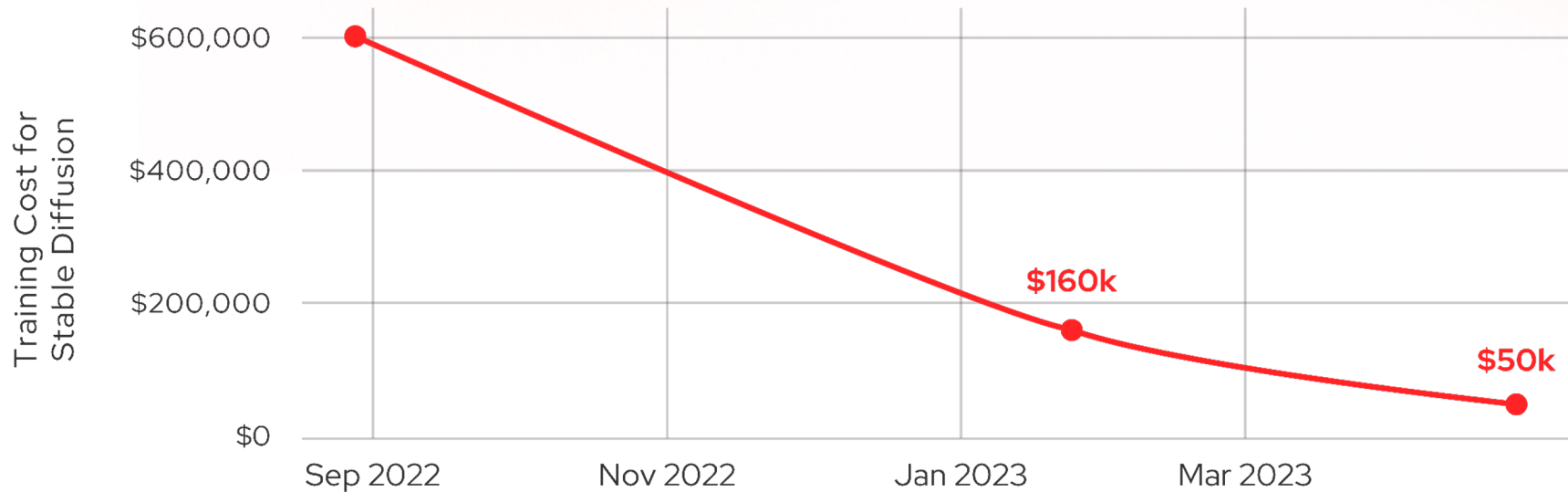
Inference costs down 10x.

Inference costs dropped 10x from $0.006 / 1k tokens for Curie generations to $0.0005 / 1k tokens for Curie quality generations in 16 months .

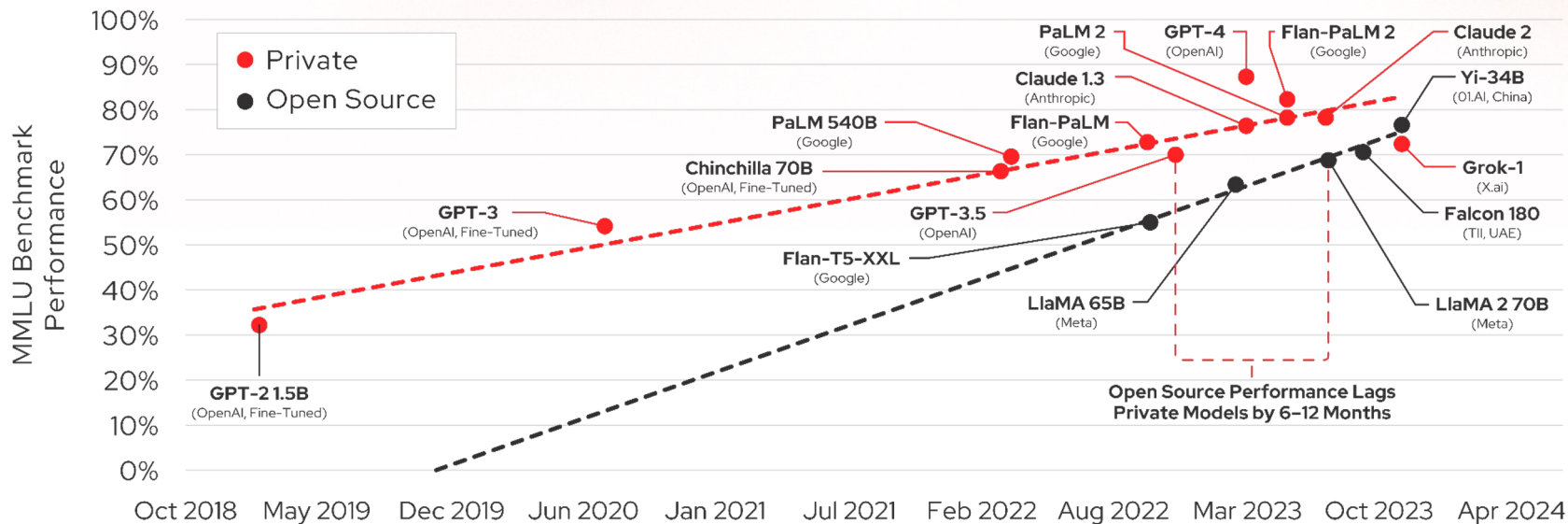

Inference Cost – Curie-Quality Model

15

Open source versus closed source.

Open source model performance lags private models by only 6 to 12 months.

Open Source vs. Private Models – 5-Shot MMLU Performance

16

Growing need for AI-specific dev tools.

Model Evaluation

BRAINTRUST Patronus AI

Humanloop scale

Training & Inference

Modal baseten

together.ai replicate

Retrieval Augmented Generation

LangChain Pinecone

LlamaIndex LanceDB

2023 was the year of experimentation with generative AI. In 2024, companies look to move these workflows into production creating the need for a new set of tools.

Incumbents help developers build with AI.

Vector Search

Elastic and Mongo added native vector search with products like Atlas Vector Search and Elasticsearch AI Lake.

LLM Personalized Customer Interactions

Hashicorp released Developer AI to provide an AI powered companion for architectural recommendations, while Twilio Customer AI allows for personalized AI campaigns.
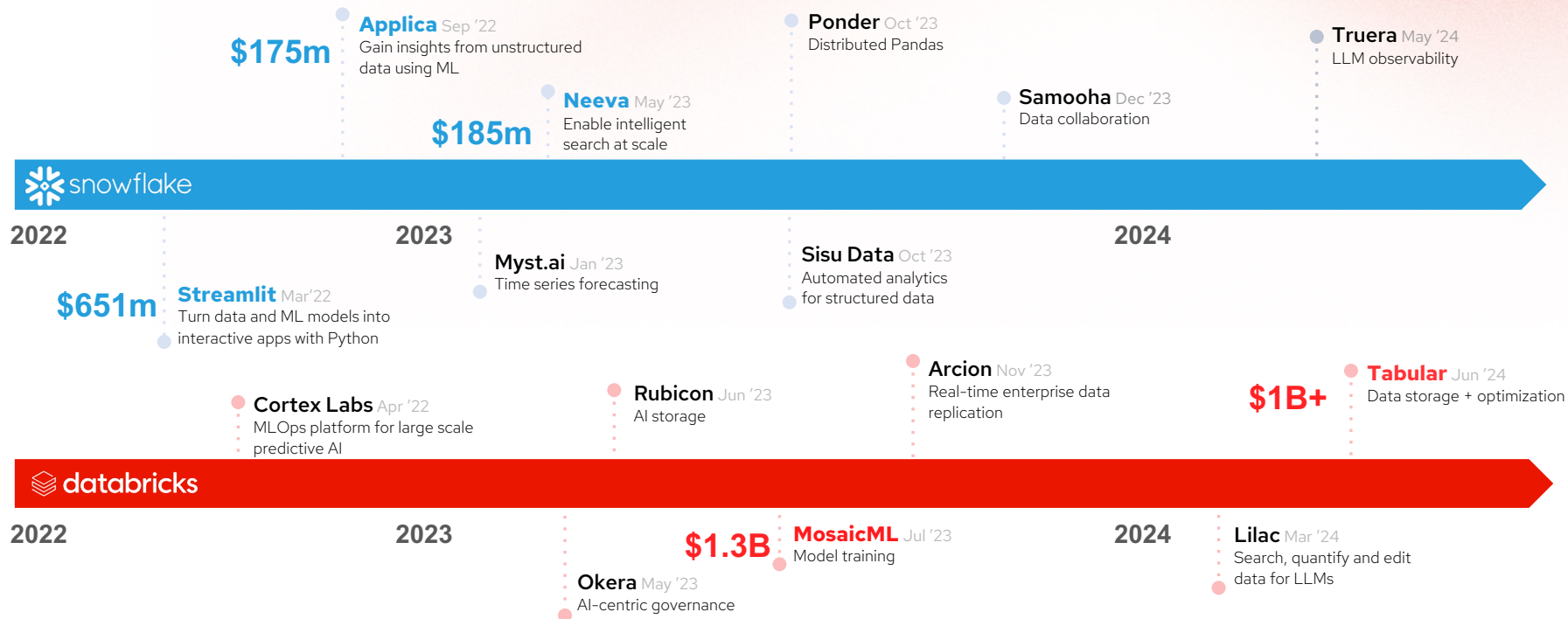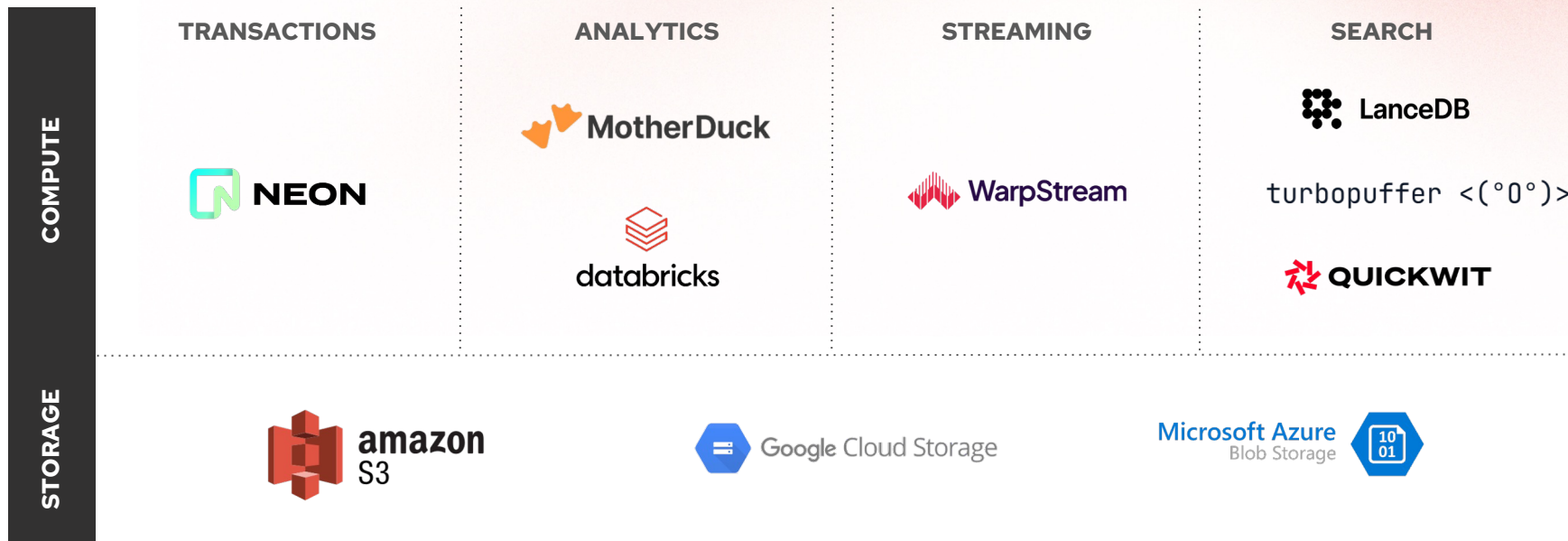
Deep LLM Integrations

Snowflake launched Snowflake Cortex to allow customers to access to Mistral, Llama 3, and more inside Snowflake, while Confluent added AI support in Flink SQL.

Data.

Race to unify data & AI.

$175m

Applica Sep '22
Gain insights from unstructured data using ML

Ponder Oct '23
Distributed Pandas

Truera May '24
LLM observability

$185m

Neeva May '23
Enable intelligent search at scale

Samooha Dec '23
Data collaboration

snowflake

2022

2023

2024

Myst.ai Jan '23
Time series forecasting

Sisu Data Oct '23
Automated analytics for structured data

$651m

Streamlit Mar'22
Turn data and ML models into interactive apps with Python

Arcion Nov '23
Real-time enterprise data replication

Tabular Jun '24
Data storage + optimization

Cortex Labs Apr '22
MLOps platform for large scale predictive AI

Rubicon Jun '23
AI storage

$1B+

databricks

2022

2023

2024

$1.3B

MosaicML Jul '23
Model training

Lilac Mar '24
Search, quantify and edit data for LLMs

Okera May '23
AI-centric governance

Source: Corporate Financials, Pitchbook; Data as of June 14, 2024
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20

Further separation of storage and compute.

	TRANSACTIONS	ANALYTICS	STREAMING	SEARCH
COMPUTE	NEON	MotherDuck / databricks	WarpStream	LanceDB / turbopuffer <(°0°)> / QUICKWIT
STORAGE	amazon S3	Google Cloud Storage	Microsoft Azure Blob Storage	

New data infrastructure built directly on top of object storage. This allows customers flexibility to choose the right tool for their workflow without having to copy or move their data.

Unstructured data becomes more valuable.

Images

Videos

Tables

Human Consumption

Text

PDFs

Vectors
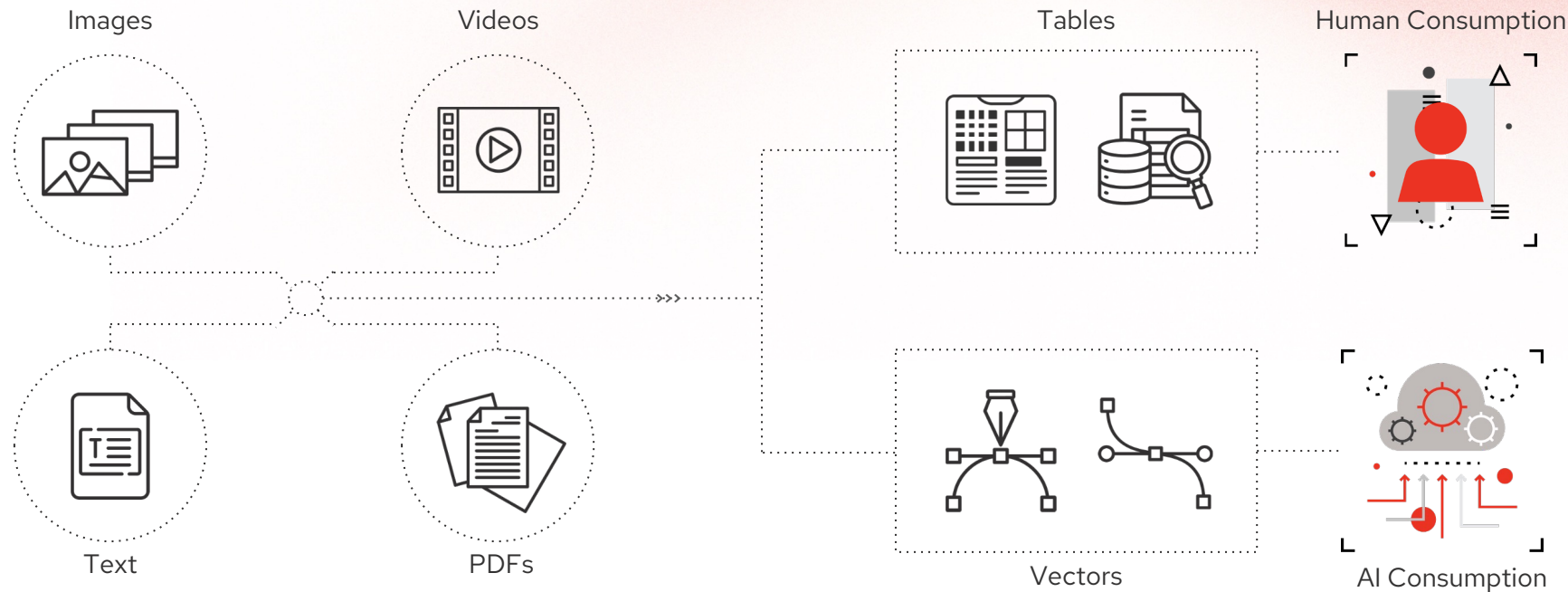
AI Consumption

AI transforms images, videos, and documents into tables and vectors. These formats allow for easier consumption at scale by both analysts and AI.

DevOps.

Coding with AI goes mainstream.

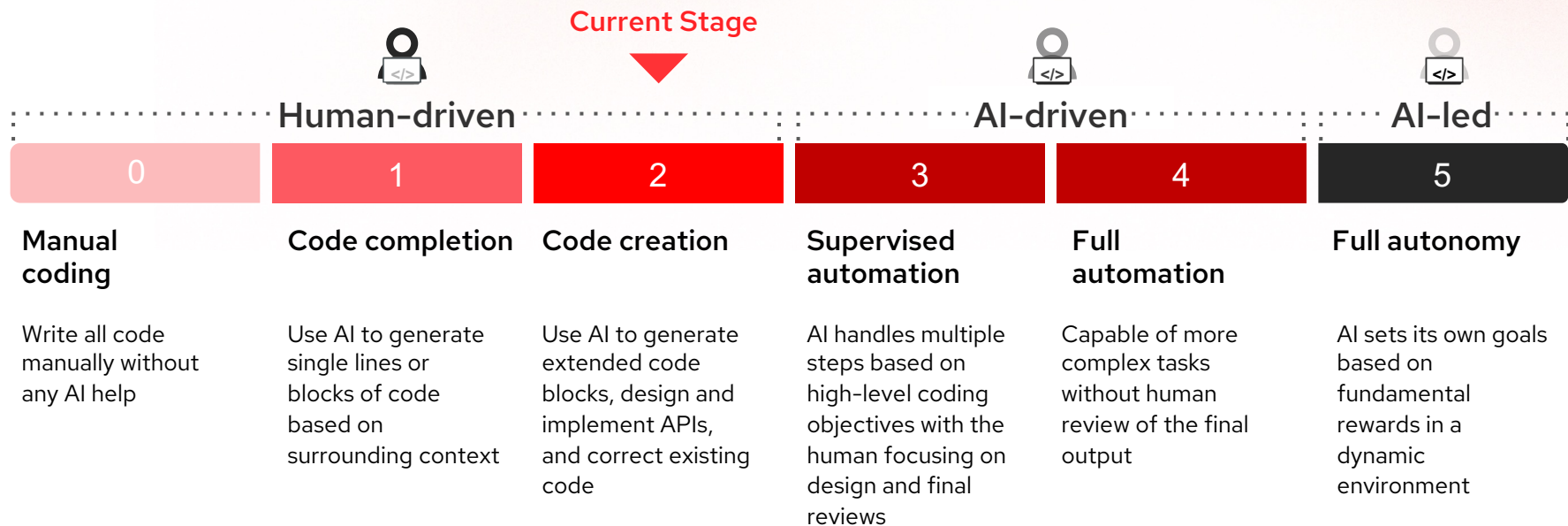**76%** Of developers use or expect to use an AI coding assistant

84% Of developers using an AI coding assistant use ChatGPT

poolside

Sourcegraph

codium ai

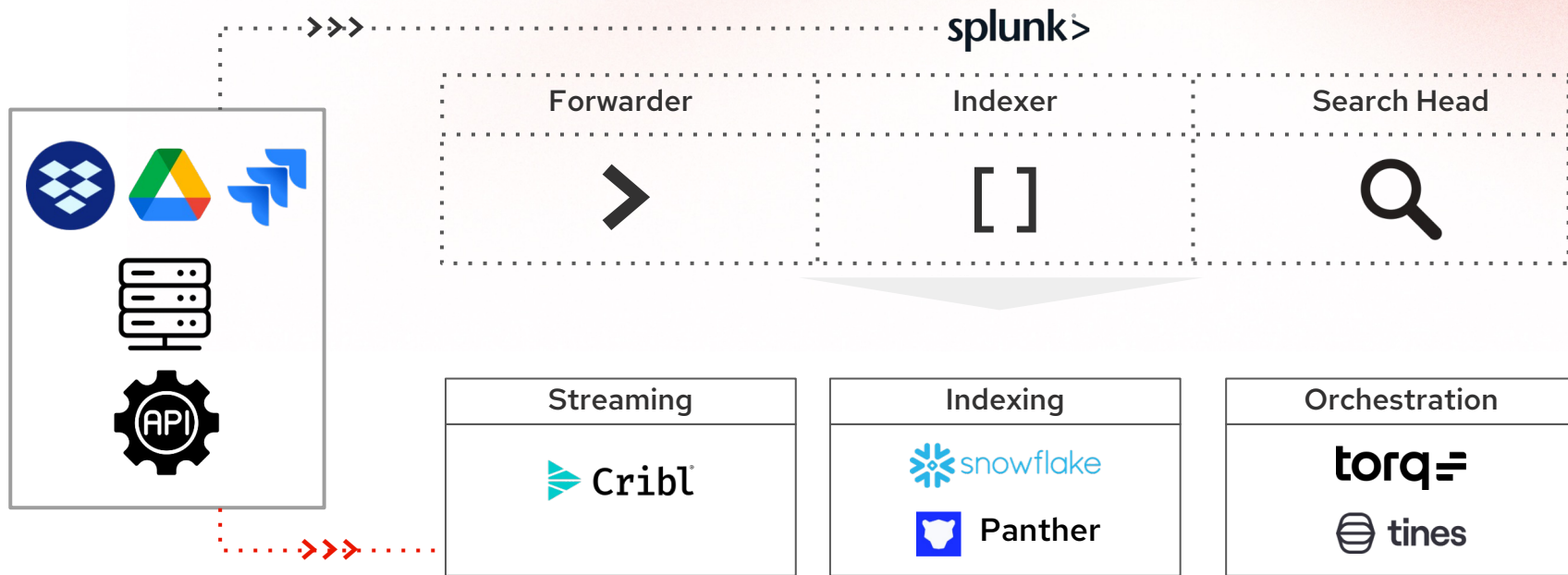ZED INDUSTRIES

Cognition

GitHub Copilot

Cursor

tabnine

AI coding assistants have become daily use tools for software engineers. Code generation startups and agents promise to deliver more complex code automation with minimal human involvement.

24

But code automation is still in its early stages.

Current Stage

Human-driven   **AI-driven**   **AI-led**

0	1	2	3	4	5

Manual coding	**Code completion**	**Code creation**	**Supervised automation**	**Full automation**	**Full autonomy**
Write all code manually without any AI help	Use AI to generate single lines or blocks of code based on surrounding context	Use AI to generate extended code blocks, design and implement APIs, and correct existing code	AI handles multiple steps based on high-level coding objectives with the human focusing on design and final reviews	Capable of more complex tasks without human review of the final output	AI sets its own goals based on fundamental rewards in a dynamic environment

Unbundling of observability.

The observability stack is undergoing a transformation and unbundling. Vendors like Cribl, Snowflake, and Tines are replacing existing workflows dominated by Splunk.

Security.

Incumbents are embedding AI into their products.

palo alto NETWORKS

CROWDSTRIKE

Microsoft

Precision AI™

Charlotte AI

Microsoft Copilot for Security

Palo Alto Network's Precision AI uses rich data and security-specific models to **automate detection, prevention, and remediation**

CrowdStrike's Charlotte AI **accelerates investigations, automates workflows,** leading to advanced threat detection and response capabilities

Microsoft Copilot for Security provides a **natural language assistive** experience for Security professionals to accelerate incident response

Emergence of new security workloads.

Non-Human Identity

- OASIS
- Astrix
- natoma

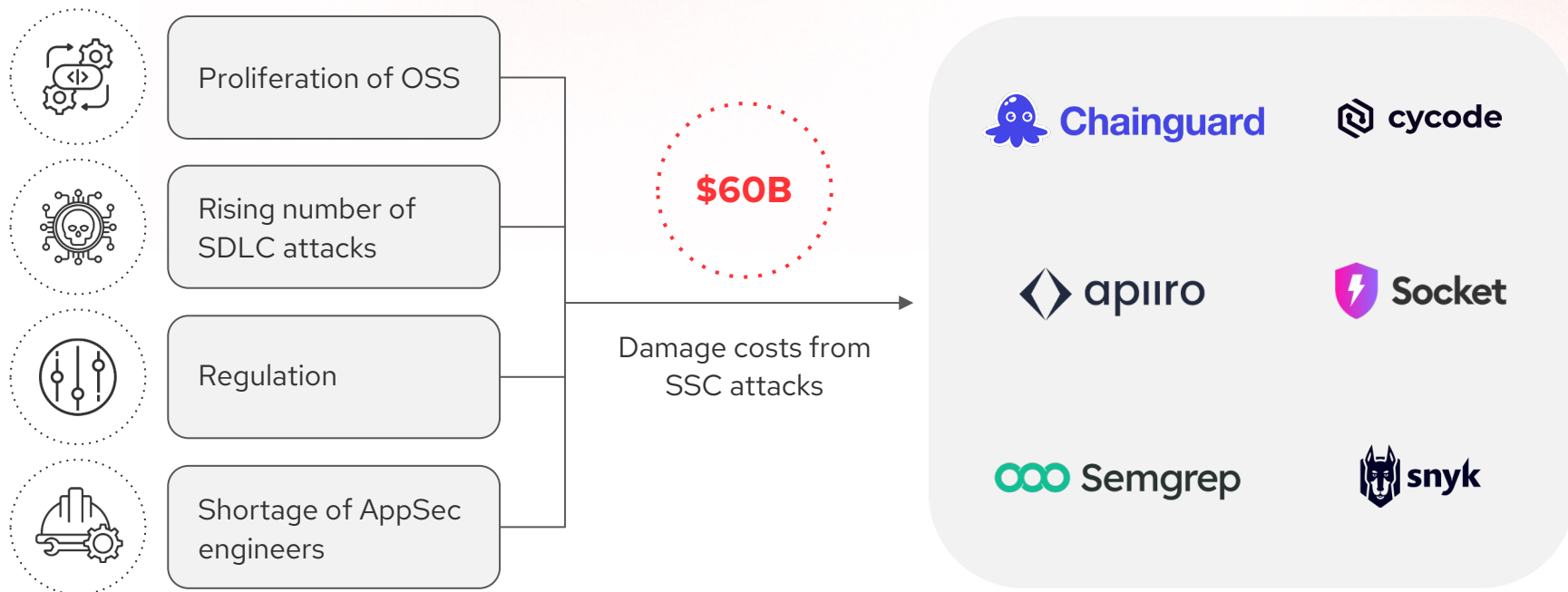**AI Security**

- Straiker
- HIDDENLAYER
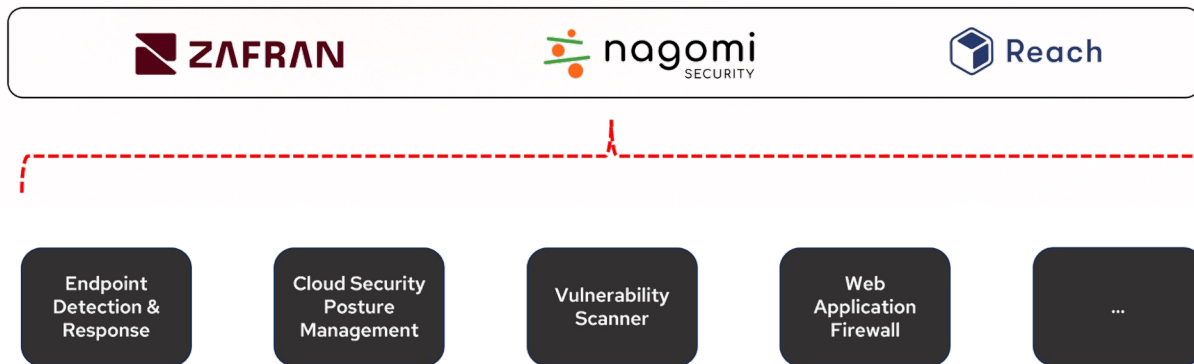- Protect AI
- AIM

Runtime Identity

- PERMISO
- upwind

In the past year, several new security workloads and corresponding security vendors have emerged to combat these new attack vectors.

Software supply chain security is top of mind.

Proliferation of OSS

Rising number of SDLC attacks

Regulation

Shortage of AppSec engineers

$60B

Damage costs from SSC attacks

Chainguard

cycode

apiiro

Socket

Semgrep

snyk

Tool sprawl is driving the emergence of risk mitigation platforms.

Risk Mitigation Platforms

ZAFRAN	nagomi SECURITY	Reach

Endpoint Detection & Response	Cloud Security Posture Management	Vulnerability Scanner	Web Application Firewall	...

Average organization has 75+ cyber solutions

Tool sprawl and the rising number of alerts are overwhelming security teams. As a result, risk mitigation platforms have emerged to reduce noise and streamline security workflows.

Wave of consolidation.

($ Deal Size)

Acquisitions*

Twistlock
($378M)

Gem
($350M)

DEMISTO
($474M)

TALON
($459M)

LACEWORK
($150M)

BIONIC
($239M)

CRYPSIS
($228M)

Dig Security
($350M)

noname
($500M)

EXPANSE
($797M)
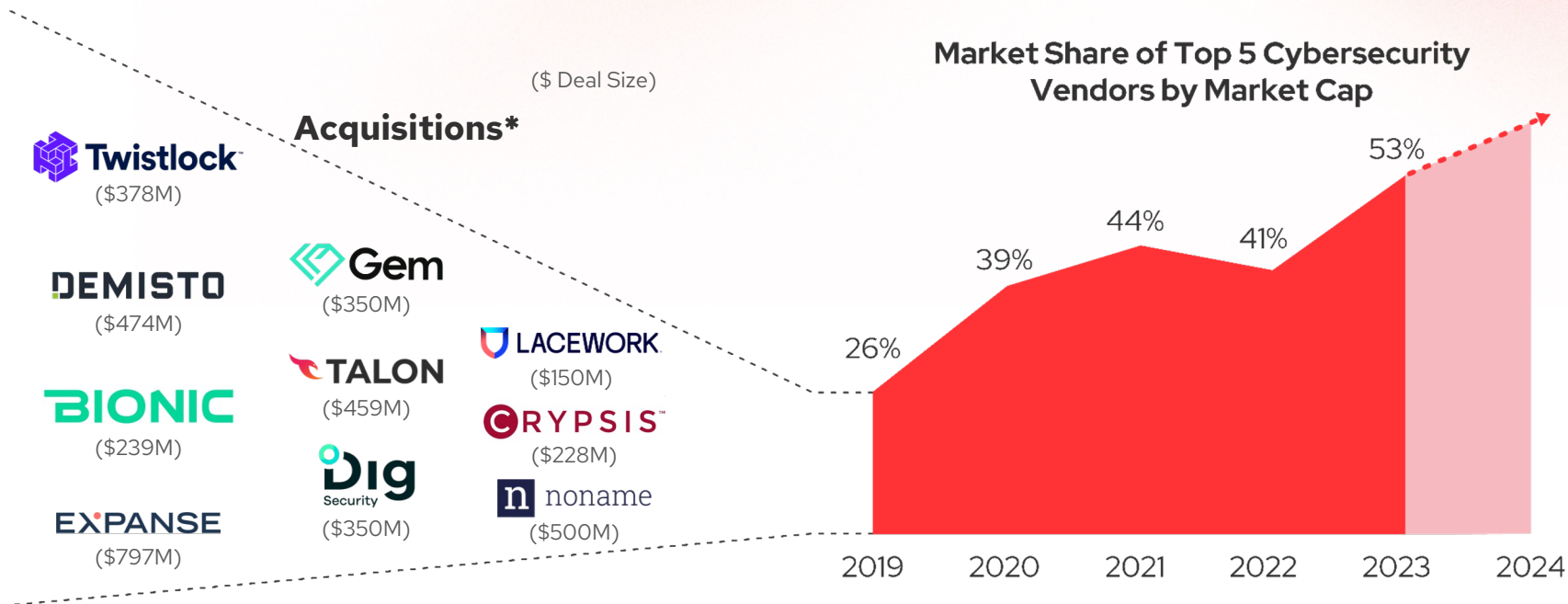
Market Share of Top 5 Cybersecurity Vendors by Market Cap

53%

44%

41%

39%

26%

2019   2020   2021   2022   2023   2024

Cloud Infrastructure in the Public Markets.

Infra software trades at a premium.

	App SaaS	Infra SaaS		App SaaS	Infra SaaS
Market Cap ($B)	$3.6B	**$10.4B**	FCF Margin	15%	**18%**
NTM Revenue Growth	11%	**16%**	Rule of 40	32%	**38%**
NDR	104%	**116%**	Multiple Return Since IPO	0.7x	**1.3x**

EV / NTM Revenue - Infra SaaS vs App SaaS

- 🟥 Infra SaaS Median
- ⬛ App SaaS Median

7.7 x

3.9 x

Jan-19, Jun-19, Nov-19, Apr-20, Sep-20, Feb-21, Jul-21, Dec-21, May-22, Oct-22, Mar-23, Aug-23, Jan-24, Jun-24

The Nasdaq Redpoint Cloud Infrastructure Software Index™.

23 Businesses across Cloud Infrastructure

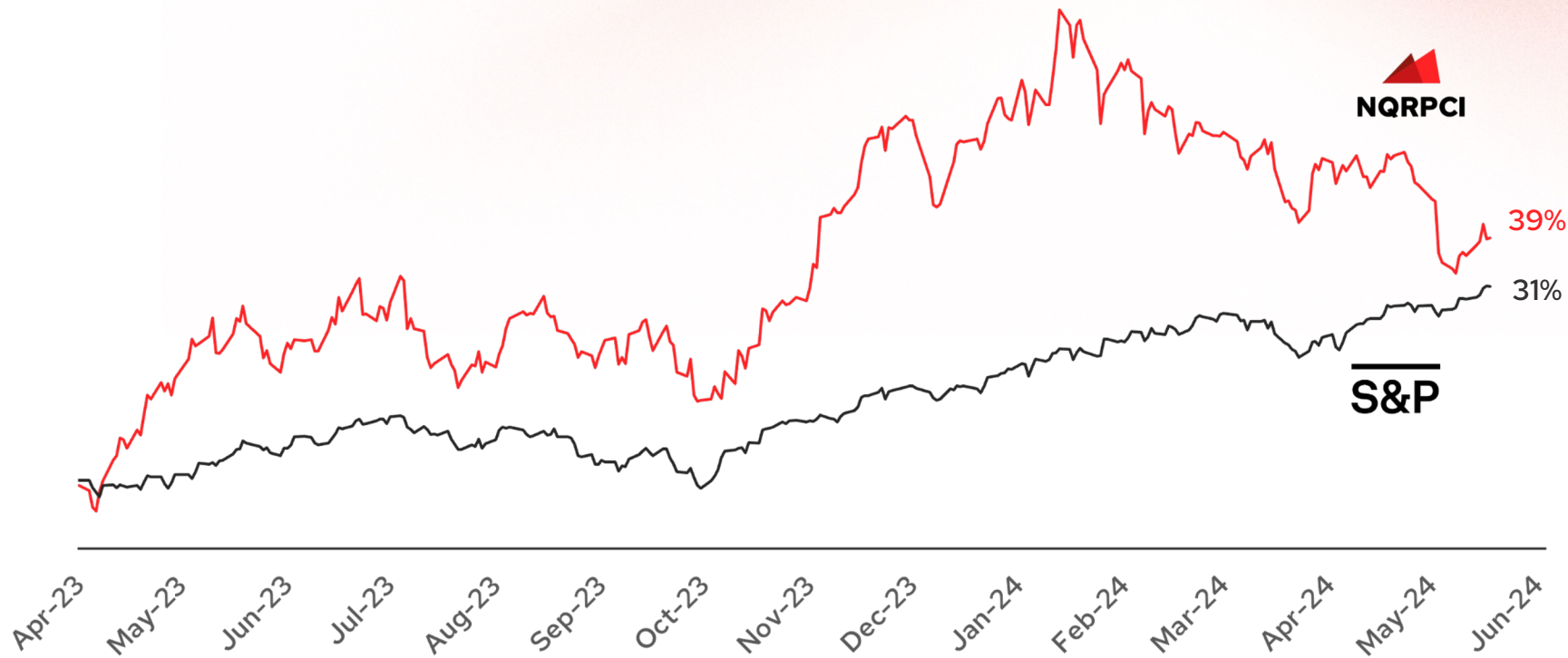**~$10B** Median Market Cap

16% Median NTM Growth Rate

2019

Median IPO Date
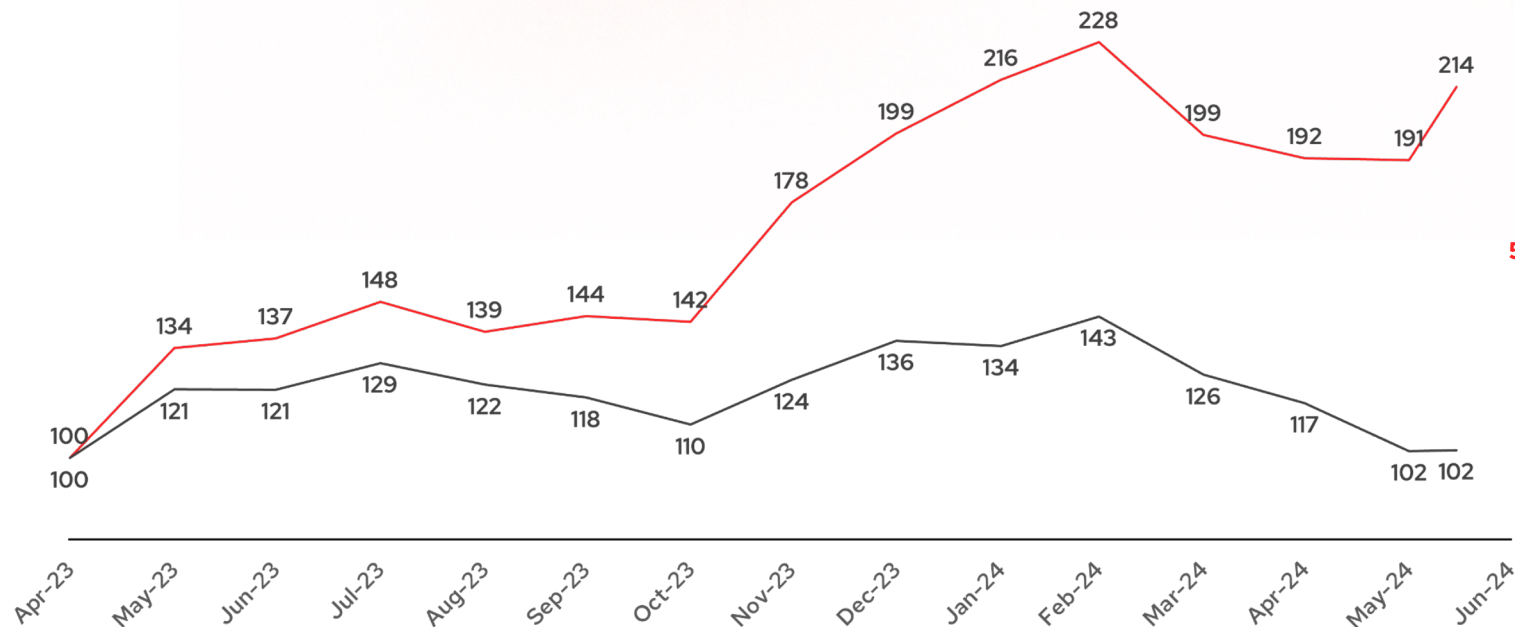
$501B

Aggregate Market Cap

Off to a strong start.

% Return Since the Launch of NQRPCI

NQRPCI

39%

31%

S&P

Apr-23 · May-23 · Jun-23 · Jul-23 · Aug-23 · Sep-23 · Oct-23 · Nov-23 · Dec-23 · Jan-24 · Feb-24 · Mar-24 · Apr-24 · May-24 · Jun-24

5 companies in the index are driving its performance.

Indexed Share Price

Top 5 Average

CROWDSTRIKE
DATADOG
elastic
paloalto NETWORKS
zscaler

55% of index market cap

Red line (Top 5 Average): 100, 134, 137, 148, 139, 144, 142, 178, 199, 216, 228, 199, 192, 191, 214

Black line: 100, 121, 121, 129, 122, 118, 110, 124, 136, 134, 143, 126, 117, 102, 102

Apr-23, May-23, Jun-23, Jul-23, Aug-23, Sep-23, Oct-23, Nov-23, Dec-23, Jan-24, Feb-24, Mar-24, Apr-24, May-24, Jun-24

The fastest growing and the most profitable.

2024E Free Cash Flow Margin (y-axis) vs 2024E Revenue Growth (x-axis)

Median EV / 2024 Revenue: **5.3x**
Median YoY Market Cap Growth: **1%**

2024E Revenue Growth: **20%**

Median EV / 2024 Revenue: **11.4x**
Median YoY Market Cap Growth: **22%**

2024E FCF Margin: 20%

Median EV / 2024 Revenue: **4.9x**
Median YoY Market Cap Growth: **(13%)**

Median EV / 2024 Revenue: **7.9x**
Median YoY Market Cap Growth: **15%**

Companies plotted: paloalto, CROWDSTRIKE, Atlassian, Snowflake, DATADOG, zscaler, Akamai, UiPath, Okta, Tenable, Dynatrace, DigitalOcean, PagerDuty, JFrog, Jamf, Twilio, MongoDB, elastic, GitLab, Cloudflare, SentinelOne, Confluent

What's special about these companies?

Platform Businesses

These companies operate in large, growing markets and have enormous top-line scale. Their first product served as a great wedge to layer on additional modules and build a true platform.

Scaling Efficiently

These businesses have achieved the highest increase in profitability over time by implementing tailored GTM strategies and leveraging various efficiency measures.
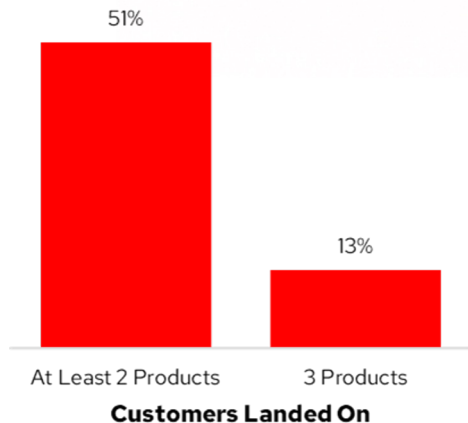
Platform businesses: more mature IPOs.

	2015-2018	2019-2024
ARR	$206m	**$292m**
Gross Margin	74%	75%
Rule of 40	44%	49%
Net Dollar Retention	126%	**136%**
Years from inception to IPO	9 years	10 years

40

Platform businesses: public infra companies are all multi-product.

100% OF INFRARED COMPANIES ARE MULTI-PRODUCT

paloalto NETWORKS

DATADOG

CROWDSTRIKE

51%

13%

At Least 2 Products | 3 Products

Customers Landed On

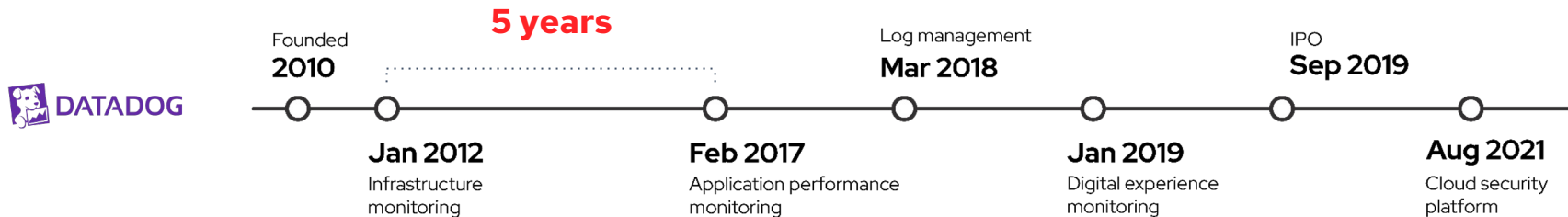**4+ Products** — 47%

6+ Products — 22%

4+ Modules — 65%

6+ Modules — 28%

Platform businesses: these companies take time to build.

CROWDSTRIKE

Founded
2011

4 years

Jun 2013
Endpoint detection
and response

Nov 2017
Vulnerability
management

Managed detection
and response
Apr 2018

Jun 2019
IPO

Cloud workload
protection
Feb 2020

Feb 2022
Falcon XDR

Identity threat
detection
Mar 2022

May 2023
Charlotte AI

DATADOG

Founded
2010

5 years

Jan 2012
Infrastructure
monitoring

Feb 2017
Application performance
monitoring

Log management
Mar 2018

Jan 2019
Digital experience
monitoring

IPO
Sep 2019

Aug 2021
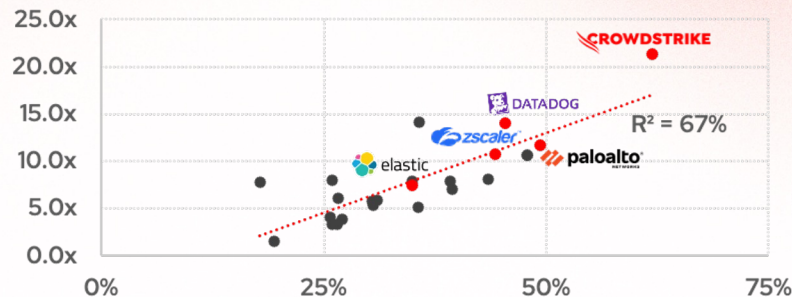Cloud security
platform

Infrastructure companies in our index take on average ~5 years to introduce a successful 2nd product.

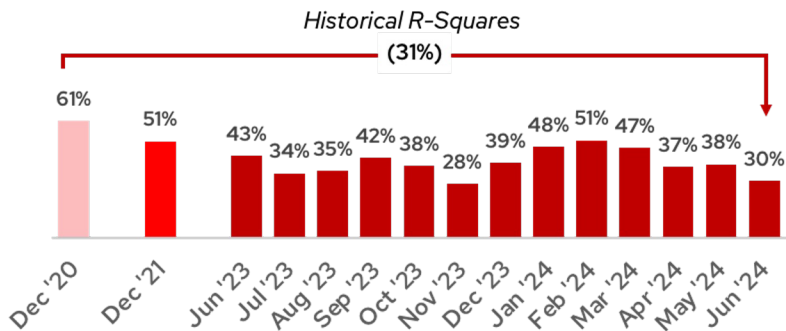# Efficiency: public market is weighting profitability more.
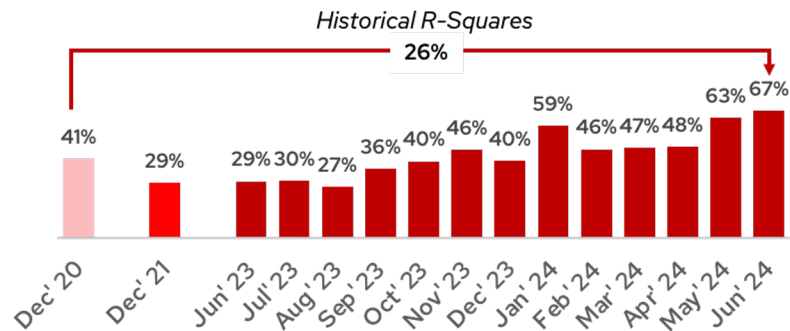

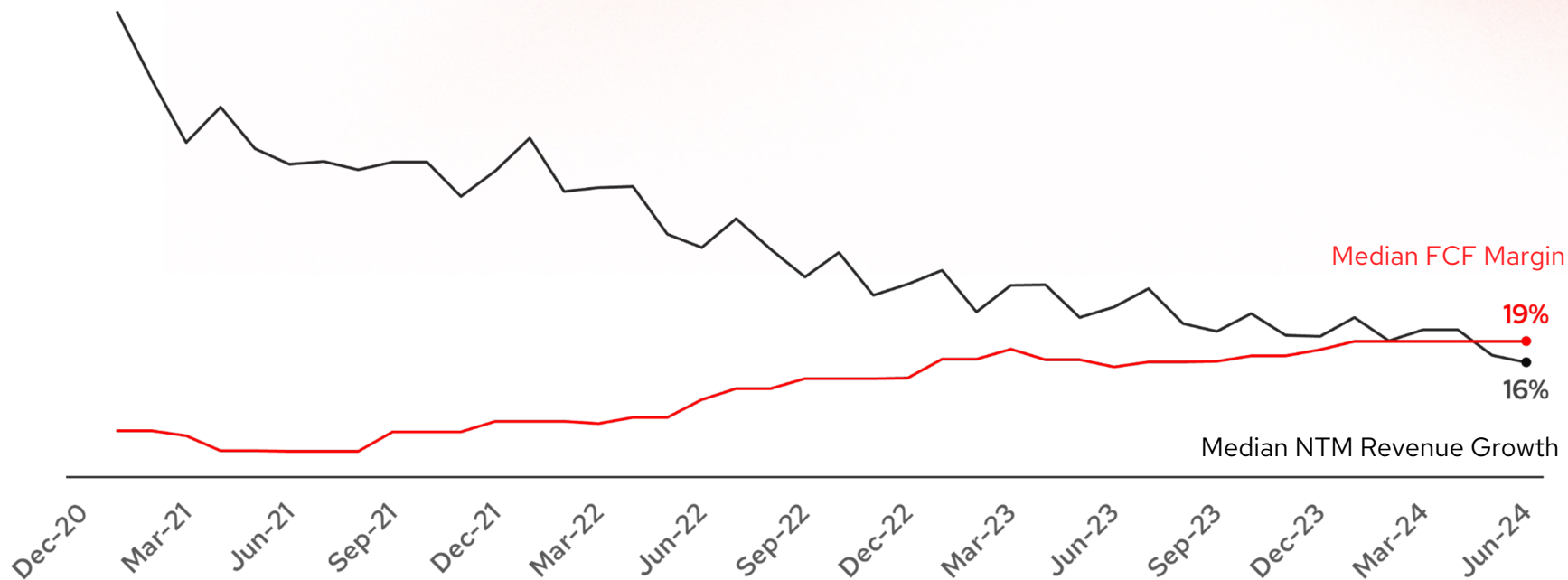EV / NTM revenue vs NTM revenue growth

R² = 30%

EV / NTM revenue vs rule of 40

R² = 67%

Correlation between NTM revenue multiple and NTM revenue growth

Historical R-Squares

(31%)

Dec '20	Dec '21	Jun '23	Jul '23	Aug '23	Sep '23	Oct '23	Nov '23	Dec '23	Jan '24	Feb '24	Mar '24	Apr '24	May '24	Jun '24
61%	51%	43%	34%	35%	42%	38%	28%	39%	48%	51%	47%	37%	38%	30%

Correlation between NTM revenue multiple and rule of 40

Historical R-Squares

26%

Dec '20	Dec '21	Jun '23	Jul '23	Aug '23	Sep '23	Oct '23	Nov '23	Dec '23	Jan '24	Feb '24	Mar '24	Apr '24	May '24	Jun '24
41%	29%	29%	30%	27%	36%	40%	46%	40%	59%	46%	47%	48%	63%	67%

Efficiency: infra companies are balancing growth with profitability.

Median FCF Margin — 19%

Median NTM Revenue Growth — 16%

Dec-20 Mar-21 Jun-21 Sep-21 Dec-21 Mar-22 Jun-22 Sep-22 Dec-22 Mar-23 Jun-23 Sep-23 Dec-23 Mar-24 Jun-24

Efficiency: the top 5 have increased profitability the most.

FCF margin since time of IPO

FCF Margin %

■ Median Top 5 (red)   ■ Median Rest (black)

KEY DRIVERS

| Continued Focus on Growth | Land & Expand Driving Better Unit Economics | Cost Discipline |

Chart values:
- t+0: Median Rest −21%, Median Top 5 −15%
- t+1: Median Rest −17%, Median Top 5 2%
- t+2: Median Rest −2%, Median Top 5 2%
- t+3: Median Rest 2%, Median Top 5 13%
- t+4: Median Rest 6%, Median Top 5 14%
- t+5: Median Rest 6%, Median Top 5 13%

t years (after IPO)
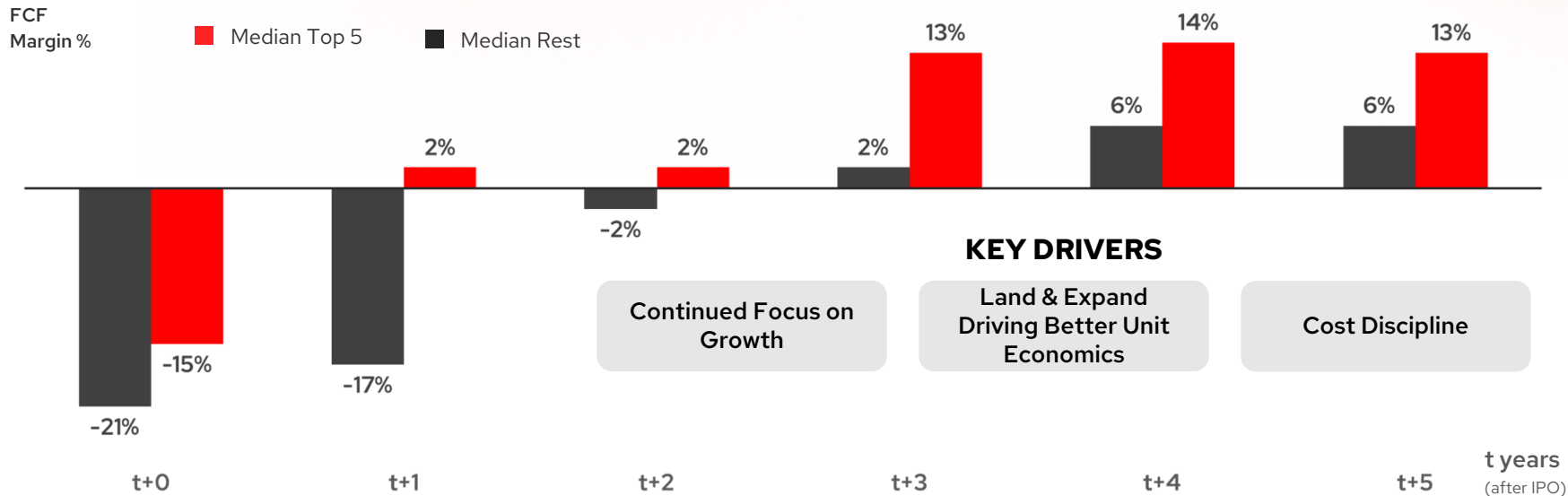
Note: Median Top 5 consists of Crowdstrike, Datadog, Elastic, Palo Alto Networks and Zscaler
Source: Pitchbook; data as of June 14, 2024

Case study: how Cloudflare continues to innovate in the public markets.

Customer count

Market cap ($B)

Dollar-based retention


Total ARR (M)

FCF margin

Platform Business. Cloudflare has over 5x their top-line since their IPO 5 years ago. They have over 20 different product categories and have made 13 acquisitions.

Scaling Efficiently. Cloudflare has increased its FCF by nearly 40% since its IPO.

The gap between private and public infra multiples has never been wider.

Public LTM Rev vs Private LTM ARR Multiples

Premium to Public Market

Cloud Infra Public LTM Revenue Multiple

Series B and C Infra LTM ARR Multiples
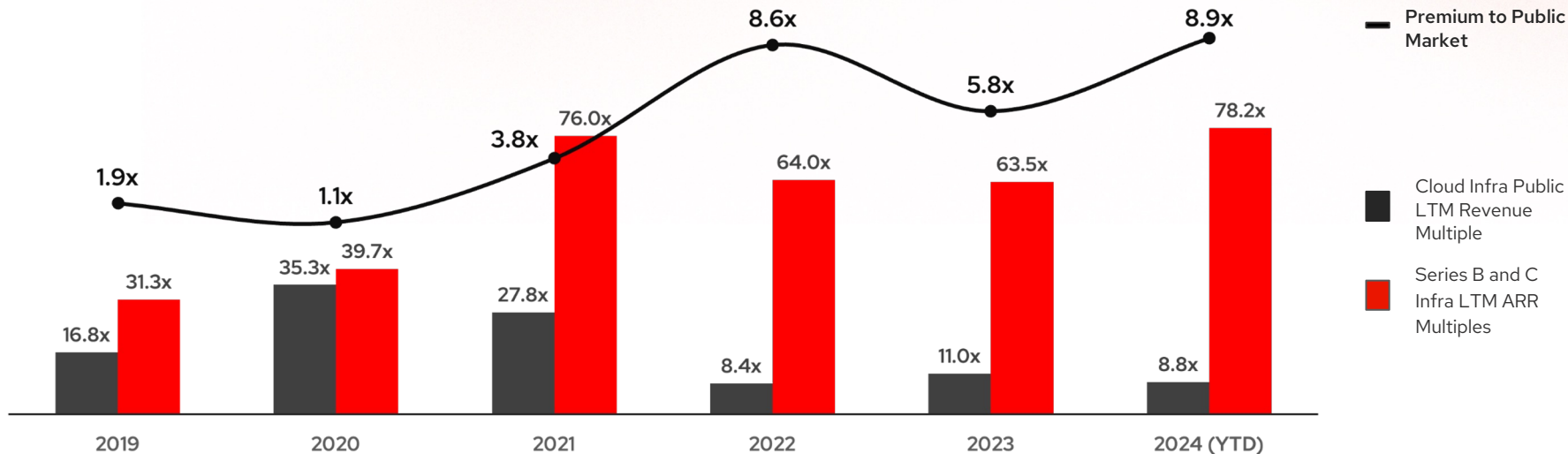
The delta between private and public multiples is widening, around ~9x now. That means you must ~30x your topline to grow your valuation by 3x in the public markets.

What does this mean for you?

Maximize your TAM. It's normal for your initial product and market opportunity to be modest, but it's crucial that your growth trajectory is significant. To become a major independent company, you need to develop additional products and have the foresight to launch them at the right time.

Converging to profitability. By the time you go public, you need to converge to ~40% in terms of the rule of 40, ensuring a clear path to profitability. This doesn't mean sacrificing growth for profitability in the earlier stages if you are outperforming your plan. However, if you're falling short of targets, act swiftly and decisively to implement measures that extend your runway.

Private Valuations. There is a major delta between private and exit multiples. When raising your next round, consider growth expectations carefully. Higher valuations can increase pressure on future growth and operations.

The InfraRed 100.

About the InfraRed 100.

$386B	$69B	~150%	46	15%
Aggregate Valuation	Total Dollars Raised	Average Annual Revenue Growth Rate	Unicorns	% International

Early stage (Seed / A).

bitdrift · BRAINTRUST · codium ai · Cognition · Dagger · Dragonfly

LanceDB · LangChain · LiveKit · LlamaIndex · LocalStack · Magic

MISTRAL AI_ · Modal · momento · nagomi SECURITY · Norm Ai · OASIS

(llama) · omni · Patronus AI · poolside · Railway · REFLEX

Resend · restate · Straiker · Sublime Security · TigerBeetle · Vantage

WarpStream · ZED INDUSTRIES

Mid-stage (B / C).

baseten   cerby   Chainguard   clerk   cortex   cyberhaven

llElevenLabs   FlutterFlow   glean   HEX   hightouch   incident.io

Linear   Materialize   METRONOME   MINIO   Modular   MC MONTE CARLO

MotherDuck   NEON   Pinecone   Redpanda   Semgrep   Sourcegraph

supabase   SurrealDB   tailscale   Temporal   Tessell   tines

together.ai   Upwind   Weights & Biases

Late stage.

Abnormal · 1Password · ANTHROP\C · ARCTIC WOLF · AXONIUS · chronosphere

ClickHouse · Cockroach Labs · CoreWeave · Cribl · CYERA · databricks

dbt · docker · DRATA · dremio · Fireblocks · Fivetran

Grafana Labs · Hugging Face · Island · LaunchDarkly · OpenAI · orca security

POSTMAN · Redis · scale · sigma · snyk · Starburst ANALYTICS ANYWHERE

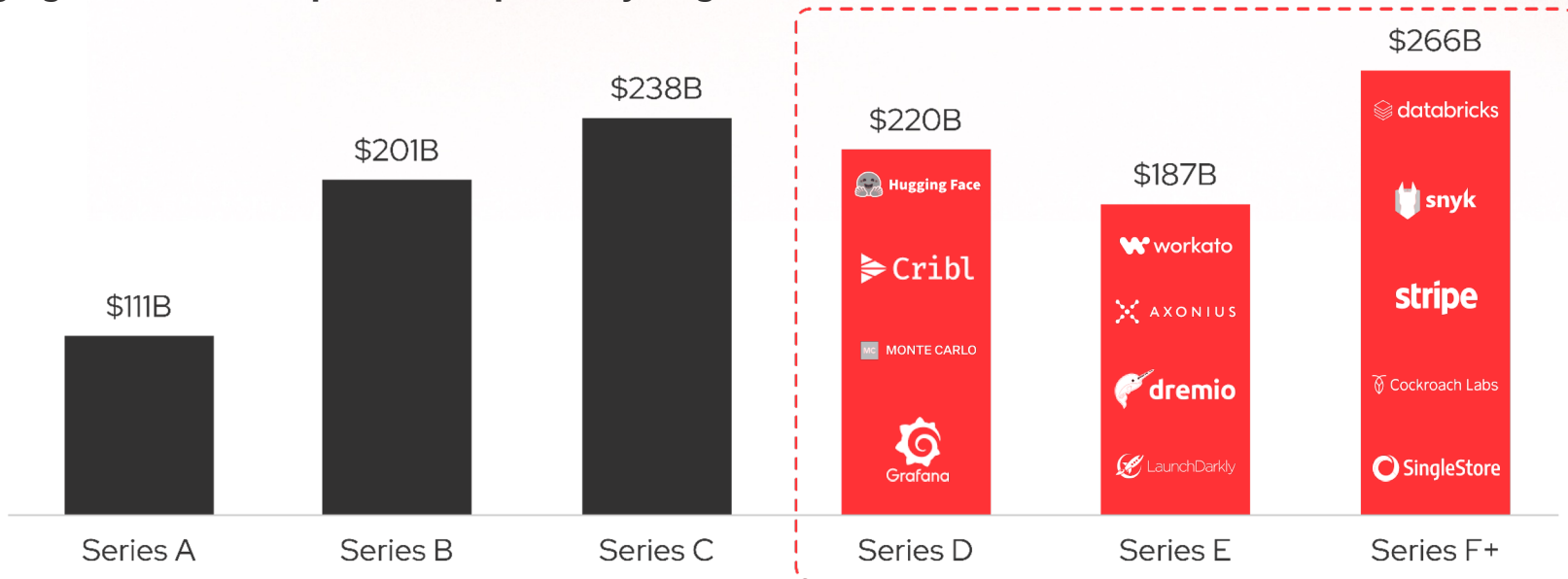stripe · VAST · Vercel · WIZ · workato

Large backlog of infrastructure software companies expected to IPO.

Aggregate valuation of private companies by stage

Series A — $111B
Series B — $201B
Series C — $238B
Series D — $220B (Hugging Face, Cribl, MONTE CARLO, Grafana)
Series E — $187B (Workato, AXONIUS, dremio, LaunchDarkly)
Series F+ — $266B (databricks, snyk, stripe, Cockroach Labs, SingleStore)

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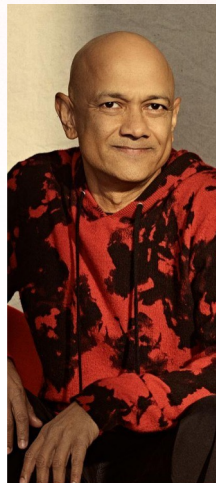# The Redpoint Cloud Infrastructure Team.

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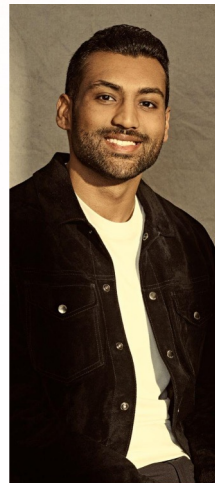**Managing Director**

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