POLESTAR

Cloud Migration is now **A NEED**

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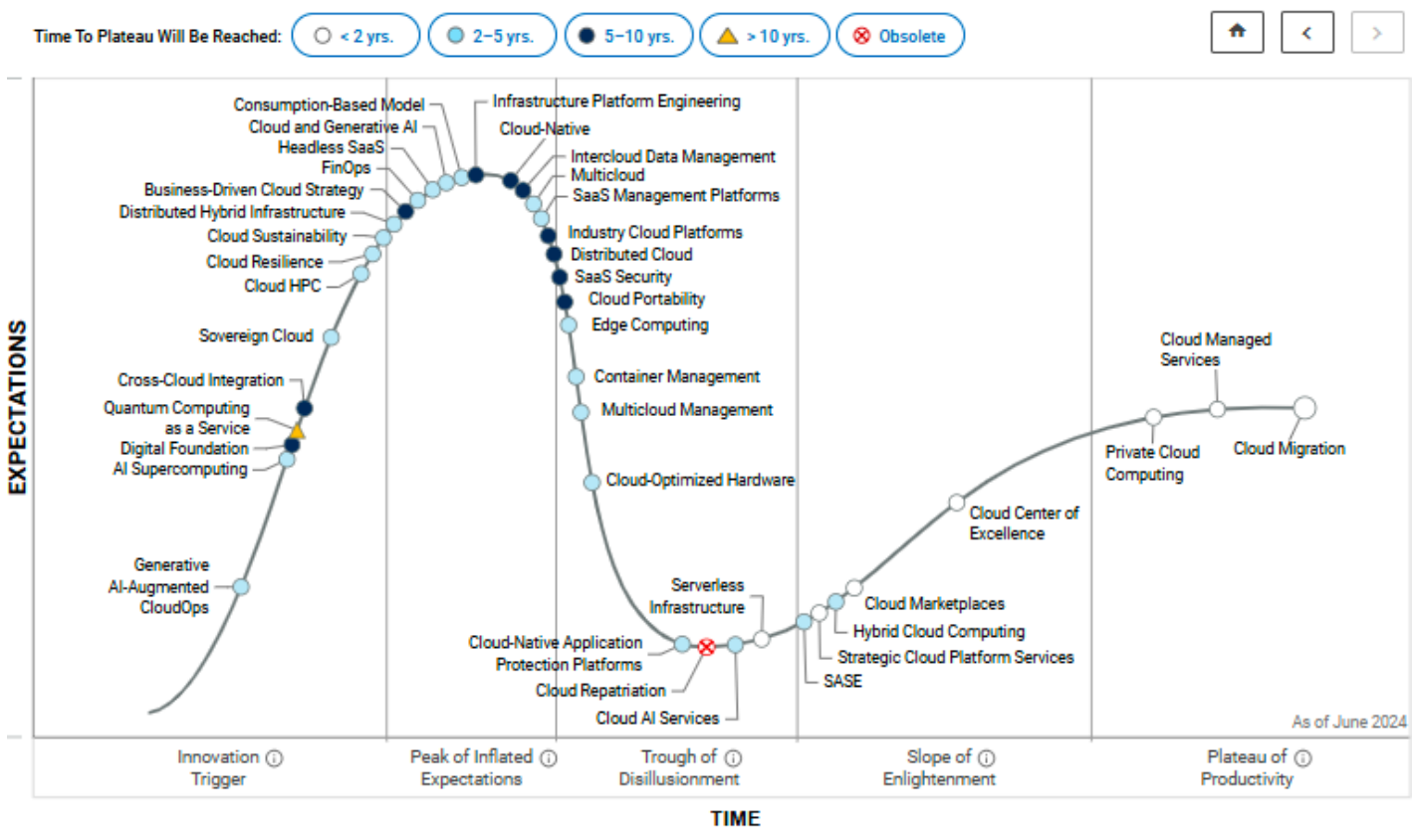
Enter the plateau of productivity with Cloud Migration

Google Keynote speech in 2023 included AI over **140 times** and over **120 times in 2024**. But the core that drives this AI – the cloud / data/ warehouse (call it anything)– how many times have you spoken about this unsung hero? The answer would definitely be far less than needed.

With this guide, we take a step back from the AI journey and talk about the cloud (in reality we're enabling it) – to building the strong infrastructure by migrating to cloud – which brings the maximum results wrt value realisation.

In case the benefits weren't apparent before, cloud migration helps you

1. Achieve data democratization & enable employees across all levels to access and analyze data.
2. Create a change in the culture of data-driven decision-making
3. Improve data quality with their robust governance frameworks, ensuring that information is accurate, consistent, and readily available for analysis, which are relevant for teams.
4. Take the next step of integration of AI and advanced analytics to data as on-premise systems are not capable of handling the infrastructure cost needed to implement AI



P.S. The benefits of Cloud Migration establish its position in the Plateau of Productivity in the Gartner's Hype Cycle of 2024

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Do Traditional Systems Meet Modern Needs?

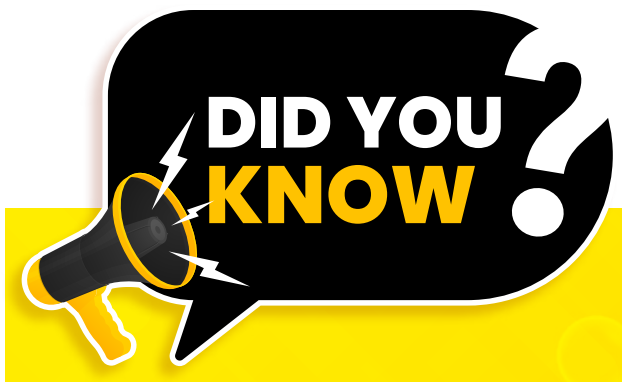
Can traditional data handling framework take care of operational requirement of C-suite and technical requirement of various teams?

From our experience- NO

Legacy systems were never built with today's AI, analytics, or collaborative needs in mind. Their structures lack today's flexibility or scalability needs. This rigidity means adopting new technologies or processes typically involves hefty investments in upgrades or complete system overhauls.

Some of the recurring challenges that shroud these traditional systems are-

- Data Security and Compliance Risks- On-premise systems struggle to keep up with new technologies and changing security standards, on premise systems. This is because it involves complex networks, and multiple hardware and software components. Moreover, one or more things might not function properly, which will require additional resources to fix. According to the IBM, Data Breach Report for 2024, 23% of the data breaches are due to IT failures
- High Operational Costs- Keeping on-premises infrastructure running can be a costly affair. All the expenses- hardware maintenance, energy costs, staff requirements to manage it- quickly add up.
- Inefficient Resource Utilization- Traditional IT setups are accompanied by inefficient resources management either in the form of over-provisioning of resources or underutilization.
- Complexity of Data Management- Managing large amounts of data in traditional systems is often time consuming and error-prone process as they rely heavily on manual processes for entry, cleaning or analysis. These lead to data integrity issues and without any advanced data management and automation tools, it's rather difficult to extract value from your dataset.



Extensive use of AI and automation lowered costs by 45.6% and contain breaches nearly 100 days faster.

IBM Data Breach Report

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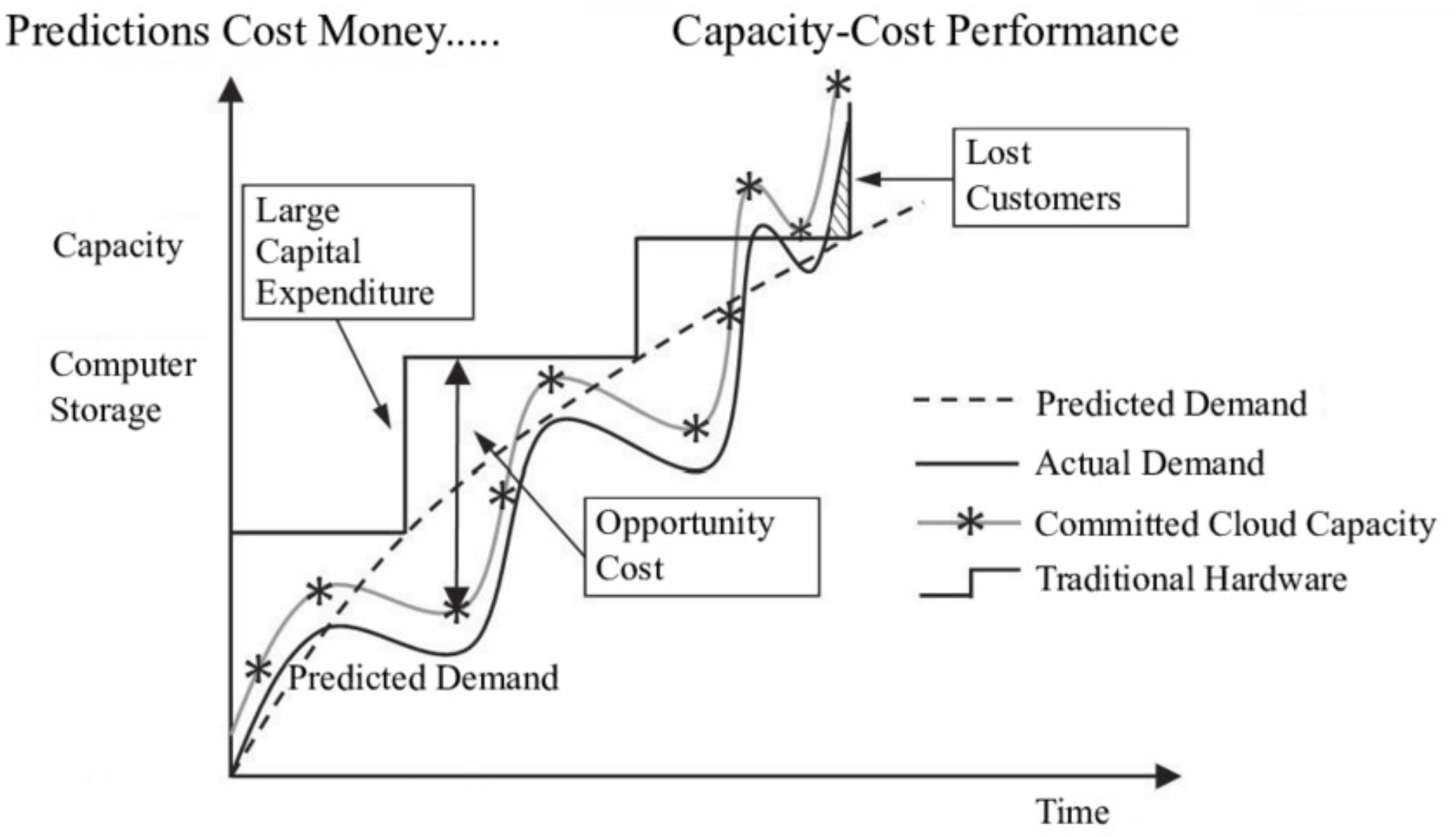
Do Traditional Systems Meet Modern Needs?

The graph compares traditional hardware with AWS. With traditional hardware, the business needs to spend more and over-provision resources to handle traffic spikes. As time goes on, the actual demand increases and the business needs to over-provision hardware again.

5 signs you have data debt





Source: ResearchGate

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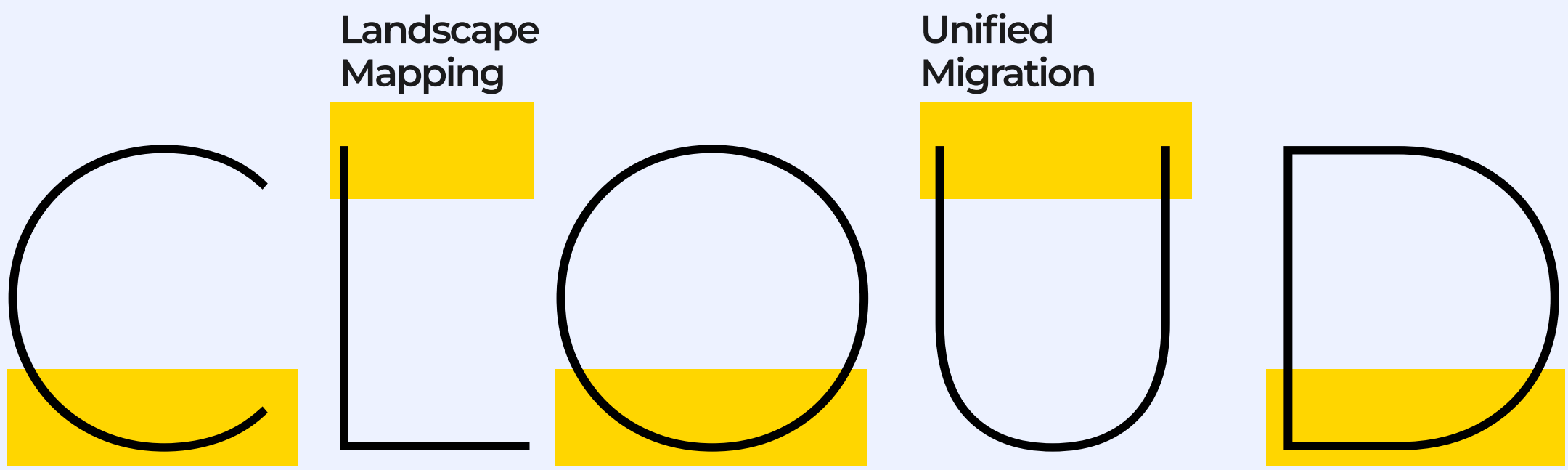
Getting started with Cloud Migration

According to Gartner, 83% of data migration projects fail or exceed the timeline and budget. We understand why – the years of having long technical code which has seen multiple people, applications, and servers – half of it which no one understands. And the difficulty in choosing between the multiple service providers like AWS, Snowflake, Azure, and GCP- which have frequent updates and new services.

Especially with the Data Lakehouse coming into picture to enable AI and ML – this shift to Cloud is more urgent. So, for the sake of simplicity, here's our 5 step approach which we generally use for cloud migration– we call it CLOUD (simple right!).

Polestar Analytics' 5-Step Approach to Cloud Migration



If you're looking to see the differences between multiple cloud platforms like AWS, Snowflake, Azure, Google Cloud **this comparison guide is for you**

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Comprehensive Assessment

A strategy without vision is like a deer in headlights - clueless! So, even before the assessment – have a vision on why are you migrating, what are the use cases and the end goal of your migration.

The assessment usually entails:

- Business impact analysis
- Full IT infrastructure inventory
- Application dependency mapping
- Workload classification
- Cloud readiness scoring

The idea is to identify the **system resources used in the current environment** which will be re-evaluated. By building a modern architecture, you can identify the exact reduction in the resources i.e. cores, RAM, etc.

Sample assessment of workloads and their important parameters

Name	Source code location	Technologies	Deployment procedure	Other requirements	Dependencies	System resources requirements
Marketing website	Corporate repository	Angular frontend	Automated	Legal department must validate content	Caching service	5 CPU cores 8 GB of RAM
Back office	Corporate repository	Java backend, Angular frontend	Automated	N/A	SQL database	4 CPU cores 4 GB of RAM
Ecommerce workload	Proprietary workload	Vendor X Model Y Version 1.2.0	Manual	Customer data must reside inside the European Union	SQL database	10 CPU cores 32 GB of RAM
Enterprise resource planning (ERP)	Proprietary workload	Vendor Z, Model C, Version 7.0	Manual	N/A	SQL database	10 CPU cores 32 GB of RAM
Stateless microservices	Corporate repositor	Java	Automated	N/A	Caching service	4 CPU cores 8 GB of RAM

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Landscape Mapping

Once you've identified the dependencies, it is now time to map the landscape to the strategy. As you can see here, there are majorly 7 types of cloud migration strategies, now we can identify the areas which need what type of migration.

Eg: Infrastructure migration needs movement of hardware, networking, storage, etc. which might need rehosting, replatforming, rearchitecting, rebuilding, and replacing in certain areas; but UI/UX can be replaced or rebuilt without needing to rehost and rearchitect.

Cloud Migration strategies you need to know!

Retire

Drop the outdated and legacy system applications

Rebuild
(Rewrite and Redesign)

Including the possibility of replacing the application for preserving the scope and application

Retain

Applications that are either optimized or too costly to move

Rehost
(Lift and Shift)

Moving applications and data to the cloud without significant changes to architecture.



Refactor
(Re-architect)

Fundamentally redesigning applications to optimize the use of cloud resources.

Replace
(Repurchase, "drop and shop")

Eliminate the former application and replace it with a COTS or SaaS solution

Replatform
(Lift and Reshape)

Migrating applications to the cloud while making some optimizations without changing the core architecture.

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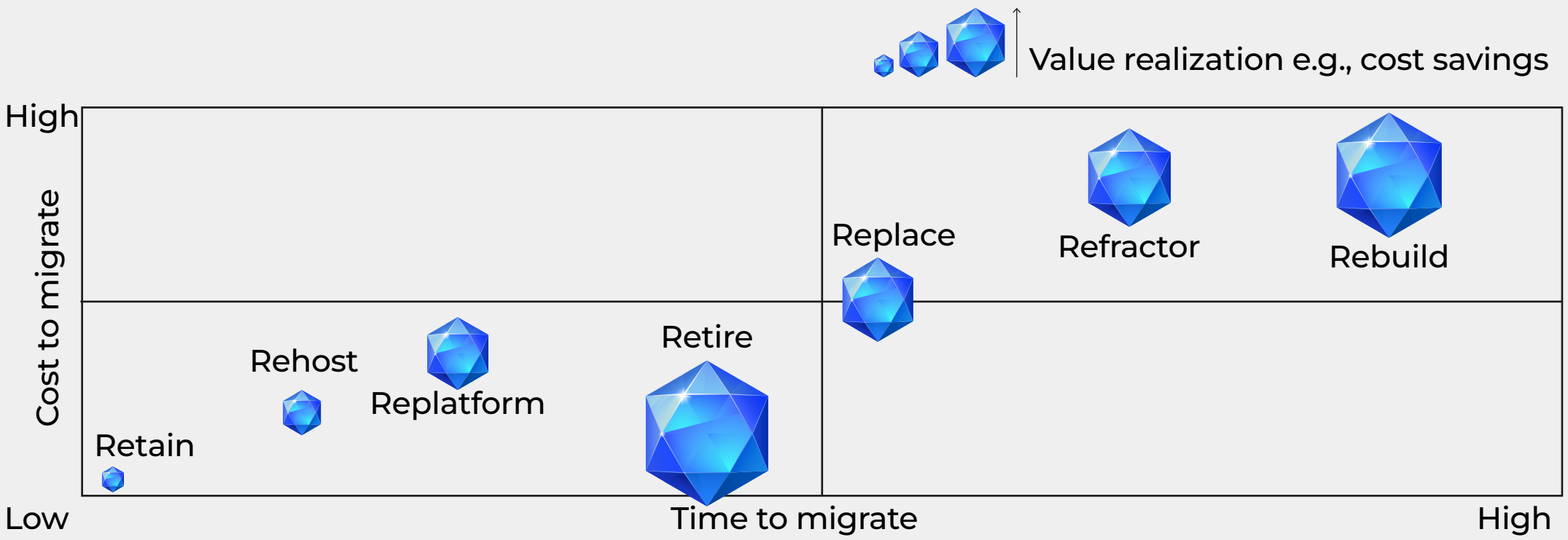
Landscape Mapping

Each of the strategies discussed above would have different requirements and need different timelines based on their end goals. This a sample cost vs time wrt the value realized for the various migration types.

Please note: This is a representative timeline – actual values will be based on the requirements.

Migration cost vs. time to migrate



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Optimization Strategy

You might say all this is easier said than done. We agree!

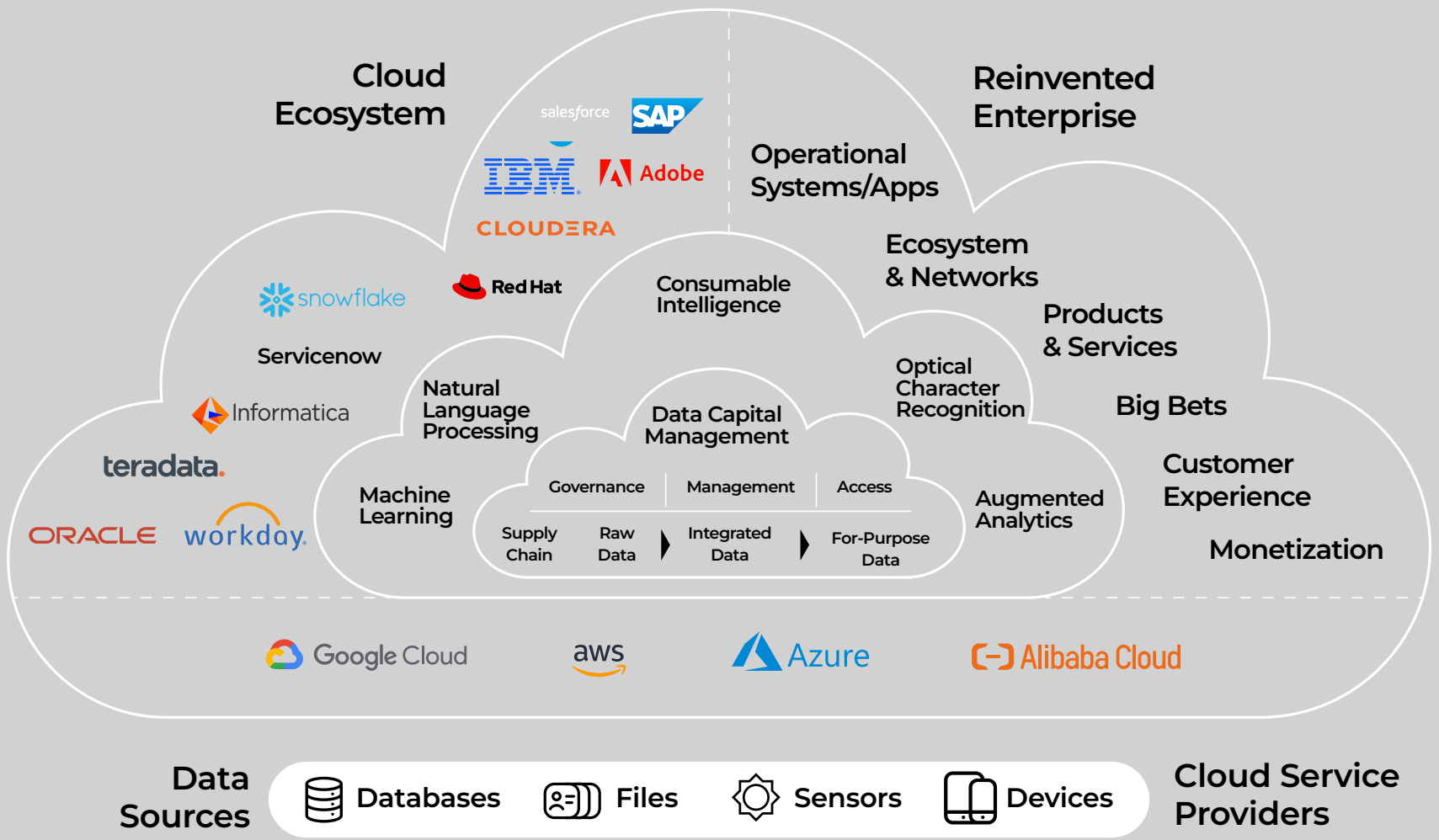
Given that the complexity and the choices available are high – it is important to find the right technology/ infrastructure that is scalable for your future needs. Therefore, we suggest having:

- Performance baseline establishment
- Resource right-sizing recommendations
- Cost management planning
- Modernization opportunities identification
- Technology stack rationalization

As a part of your optimization strategy. You should also check out tips in managing cloud budgets with **our Cloudflation blueprint.**

P.S. Optimization is an ongoing process to improve the performance, availability, and reliability of applications or their components. So having the right strategy in place beforehand is important.

Tech stack for consideration
(not comprehensive)



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An Alcoholic beverage client of ours migrated to cloud based on Azure and experienced upto 50% lesser time to load and refresh data **Check out the complete details here**

Unified Migration

Obviously the best way to approach migration is to take a phased approach with minimal business disruption and having a continuous validation process. But depending on the complexity, risk tolerance, budget constraints, technical landscape, business criticality, you can choose one of the following:

Big-bang

This approach can complete the project faster, but it also has greater risk.

Phased

This approach usually takes more time, but it allows the team to focus on smaller chunks of the workload.

Hybrid

This approach often involves deploying the architecture to the cloud, but migrating content in phases.

Criteria	Big-Bang	Phased	Hybrid
Implementation Speed	Fastest	Moderate	Slowest
Risk Level	Highest	Moderate	Lowest
Operational Disruption	Maximum	Minimal	Minimal
Complexity Handling	Limited	Excellent	Excellent
Cost Efficiency	Variable	High	High
Flexibility	Low	Moderate	High

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Deployment and Validation

Ensure that you conduct thorough functional and performance testing

- **Functional Testing:** To verify if applications are functioning correctly in the cloud environment through unit tests, integration tests, and user acceptance testing (UAT).
- **Performance Testing:** To conduct load testing to assess how applications perform under expected user loads.

At this phase it is important to track metrics like

- Migration duration, NPS
- CPU utilization and memory usage, Downtime incidents,
- Response times, resource utilization, and network delay
- Estimated vs actual expenses and costs of remediation
- Compliance with security standards, number of security incidents

High level validation checklist:

- [ ] Ensure Inventory of workloads to migrate is updated
- [ ] Effective coordination for downtimes especially for zero-downtime migration
- [ ] Assessing workloads that support clustering and redundancy
- [ ] Effective communication of configuration updates
- [ ] Assess the failure modes and the effects with backups
- [ ] Understanding the network infrastructure to reconfigure loads balances
- [ ] Having a roll-back strategy for each step of the migration plan

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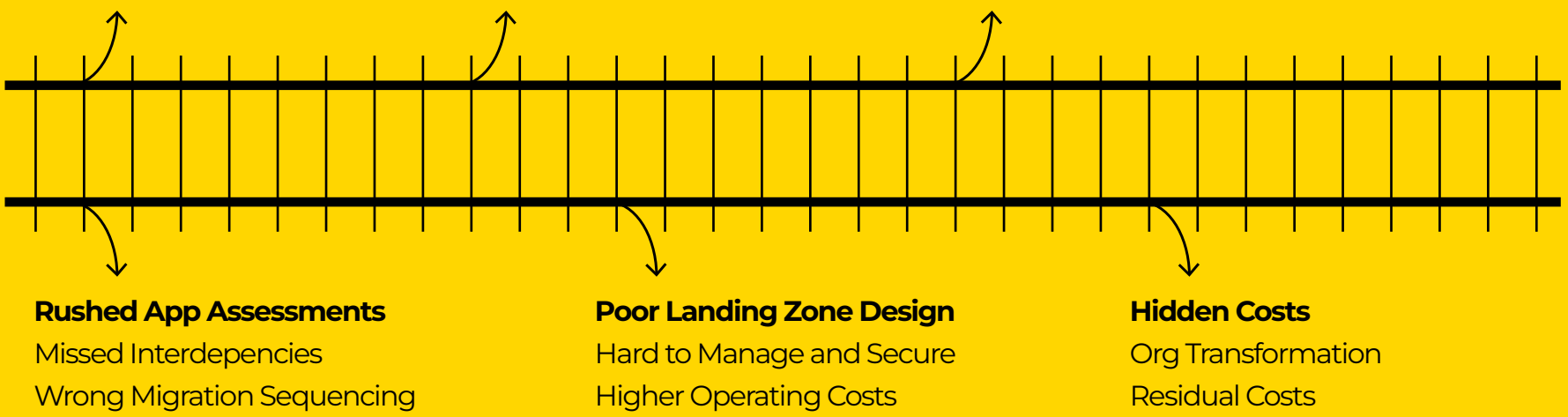
Six Major Pitfalls with cloud migration

> **Parkinson's law of triviality argues that people within an organization commonly give disproportionate weight to trivial issues because they understand them more easily than the much more complex challenges of their primary tasks."**

So instead of focusing on the trivial details, focus on the higher order of things.

P.S. We're Successful, So Why Change Anything? – this change resistance is the major challenge. Leadership team has to ensure that they convey the need for the shift effectively.

Six ways cloud migration costs go off the rails



Source: **Gartner**

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Cloud journey is a maze, migration is just the beginning

You've finished reading the instruction manual of cloud migration – but the actual assembly starts now. With the ever growing need for cloud infrastructure, you need to keep optimizing the resources and the costs.

To bring business transformation, cloud is now an intertwined part. So, begin with a partner that can provide you efficiency, expertise, and excellence.



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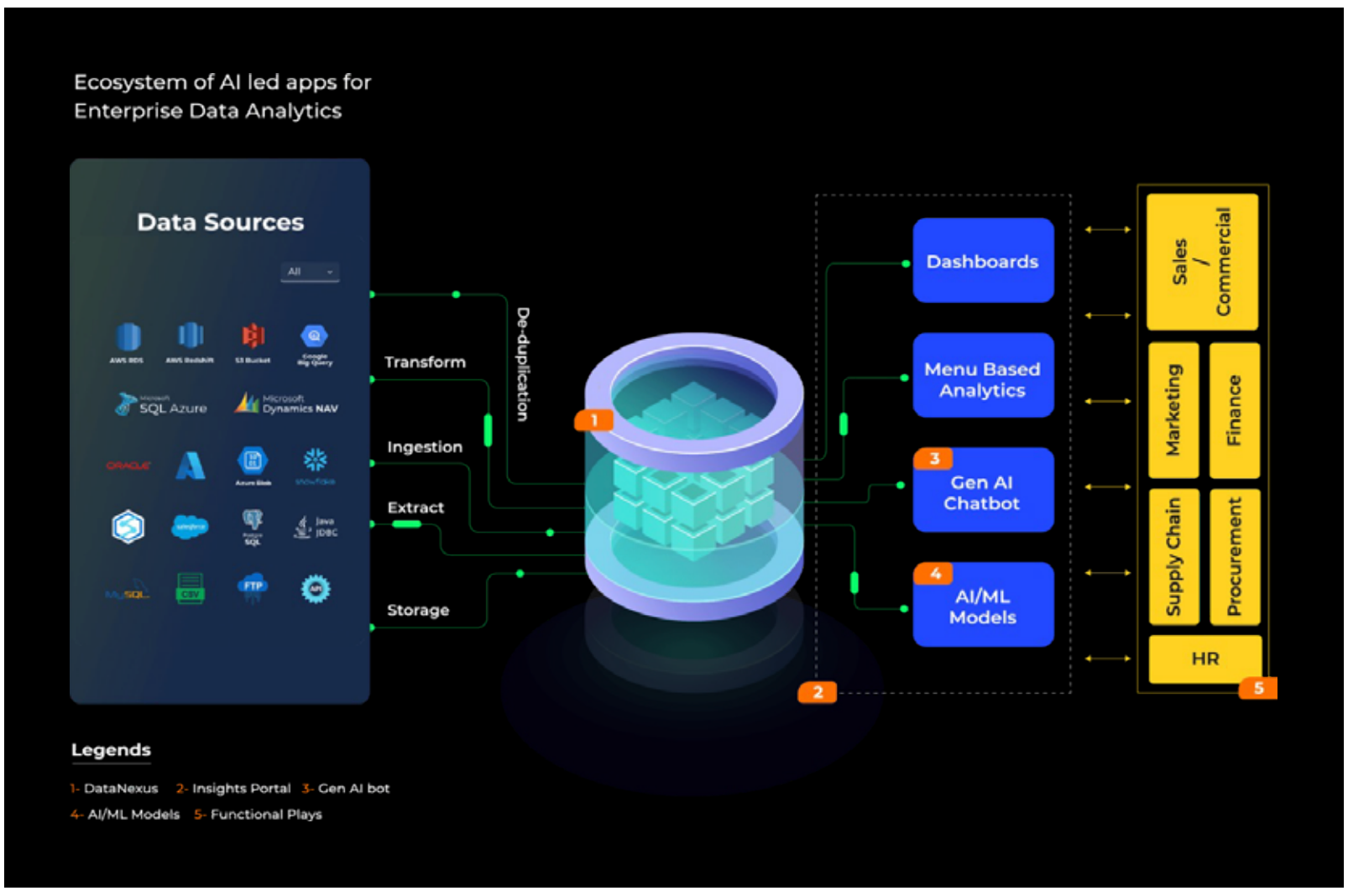
Polestar Analytics' 1Platform for the easiest migration!

With 1Platform and Data Nexus get AI-enabled world class data orchestration solutions which help you:

- Increase data accessibility by 200%
- 75% reduction in querying time
- 40% faster time to market for new products





Not just migration 101 – we take you through the journey of advanced cloud expertise from database migration to lakehouse migration

Get started with the best migration experts

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