



Plan, execute and monitor your cloud migration for sustained success

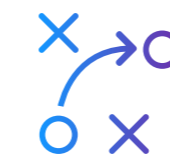
A step-by-step guide for your journey into the cloud

Introduction

Picking the right migration strategy is key to getting the very best out of the cloud. A smart approach ensures you can accelerate innovation, boost efficiency, and build competitive advantage. But this kind of shift to the cloud is only possible if you understand your existing IT architecture and the current best practices around cloud migration and deployment.

This eBook will explore the common approaches to cloud migration, help you start planning your own successful migration, and show you how to avoid the pitfalls that many organisations face when they begin their cloud journey. It will cover the three core pillars of a strong cloud migration path: planning the migration, moving workloads, and operating in the cloud.

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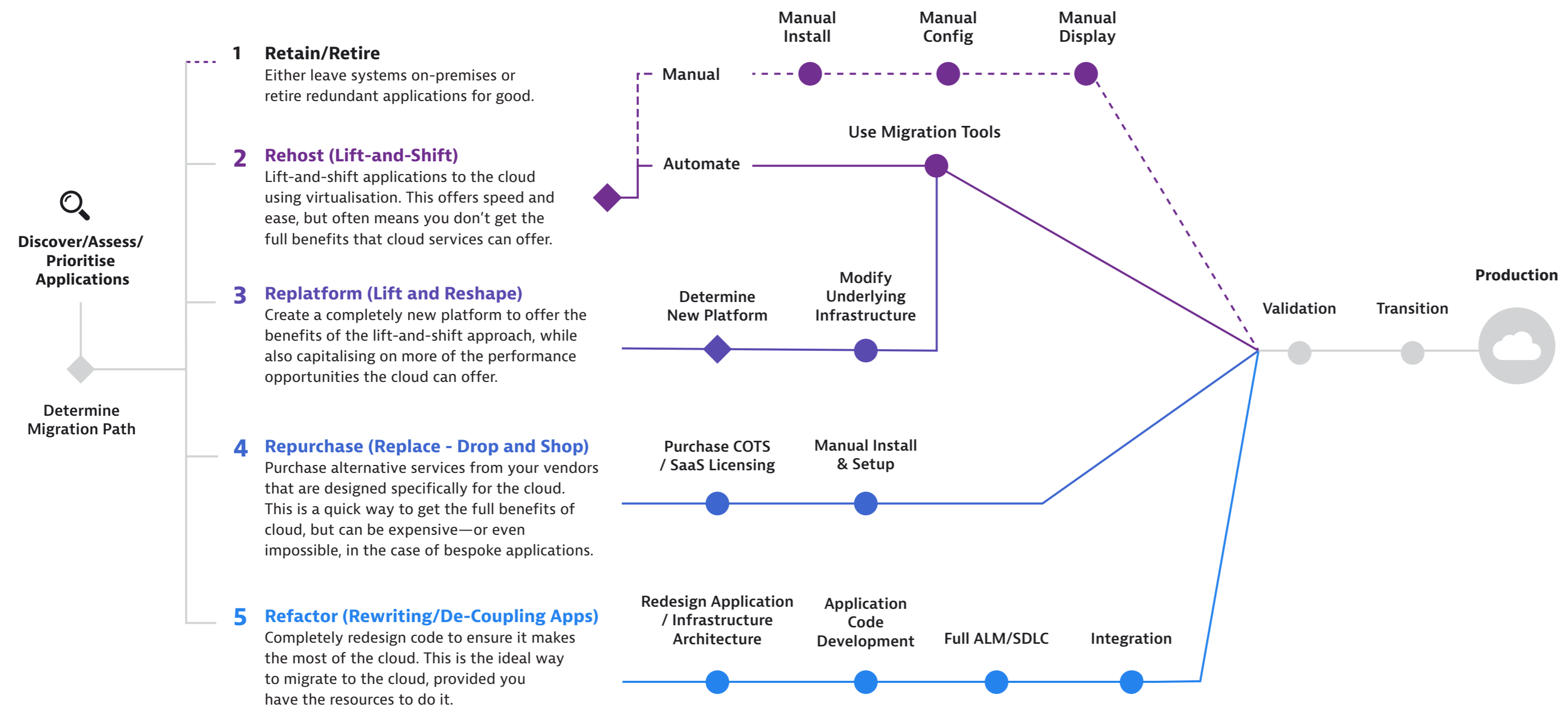
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Plan better

Step 1: Choose your migration strategy

There are many ways to move to the cloud, with each option offering different capabilities, time frames and benefits. In general, there are five main strategies organisations will adopt. Some may use a single migration strategy, but often different strategies can be used to migrate different systems based on your available resources and system requirements.



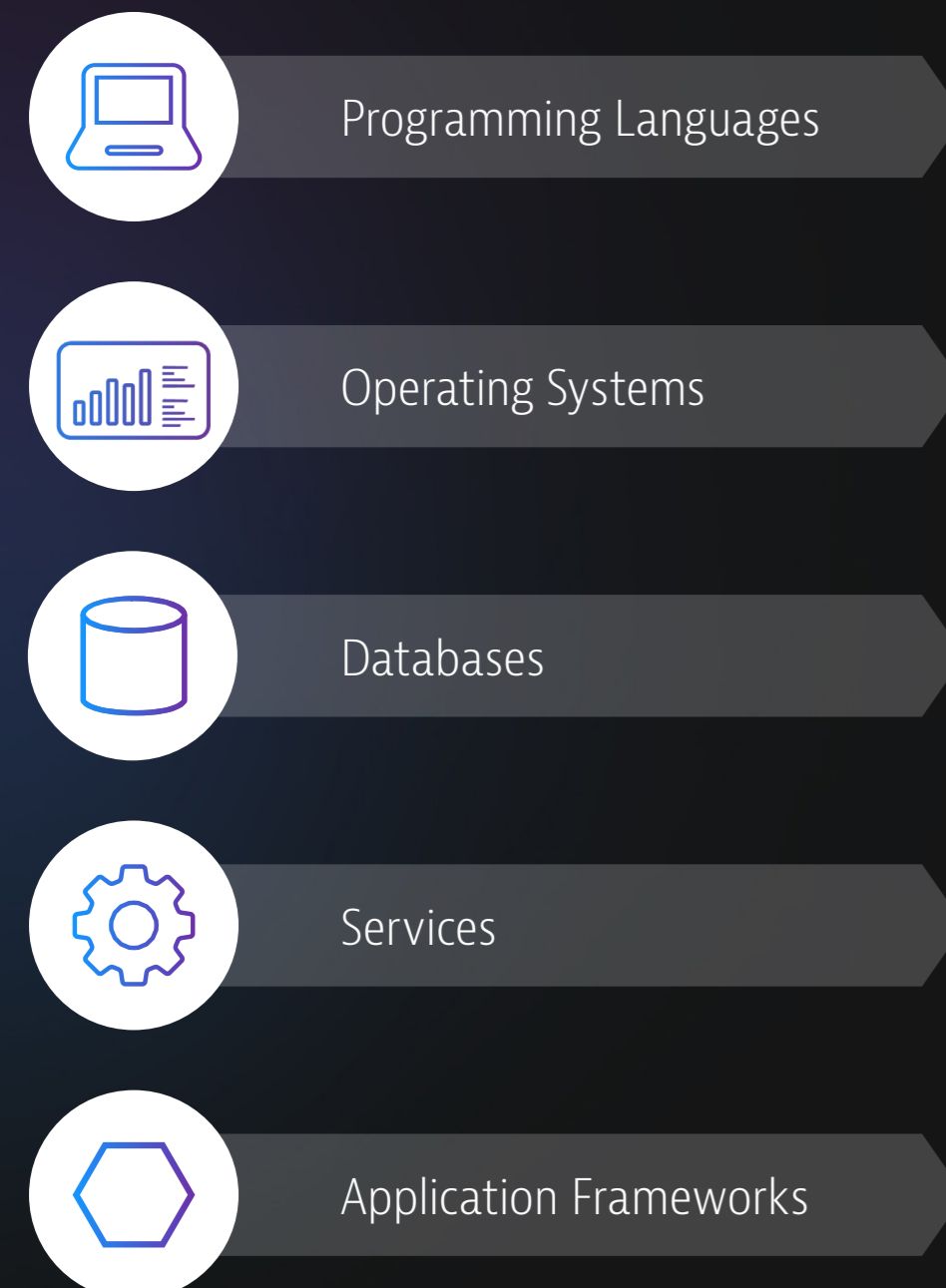
The key to a successful cloud migration

is to begin with a solid, yet flexible plan, that covers two key components:

- 1 A migration strategy
- 2 Your vision for the new system, based on an assessment of your legacy applications.

Manual or automatic identification?

Analysing and assessing your legacy systems manually can be time-consuming, especially when you have to investigate a range of different:



However, advanced solutions can accomplish mapping and profiling with minimal effort, visualising important dependencies and auto-baselining 'normal' performance.

Step 2: Understand your legacy systems

Once you've selected your migration strategies, your next step is to get a deep understanding of your legacy systems.

This isn't as simple as it might seem. As many companies develop systems with third-party developers over several iterations, it can be difficult to maintain a complete understanding of all the existing technologies and how they work.

Beyond identifying system components and technologies, you also need to understand how your services interact and operate under real-world conditions. That includes knowing how different end-user behaviour and devices affect service flows, CPU loads, database queries, system availability, and performance.

Whether you use an automated solution, or manually investigate your systems, getting this step right will allow you to identify which systems and components you should migrate first, and discover if there are any other parts that need to be migrated at the same time.

You'll also uncover any technical constraints or bottlenecks that should be considered during your migration.

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Monitoring solutions for profiling legacy systems

The right monitoring solution can help you effectively profile legacy systems. Advanced solutions offer:

- Identification, mapping, and visualisation of system components
- Interactive topology maps
- End-to-end technology coverage
- Automatic setup that reduces effort
- Automatic performance baselining for each system component
- Performance profiling under real-world conditions
- Full stress testing for different systems

Summary: Two steps to plan effectively

- 1 Consider your migration strategy and how it will apply to different systems and apps
- 2 Understand your legacy systems under real-world conditions — including all dependencies and underlying technologies

Section 2:

Migrate with confidence

Once you've investigated your legacy systems and begun planning your migration, you need to start considering exactly how you will migrate — and how you can do so with confidence.

How will you ensure you're moving everything as efficiently as possible? And how can you be sure your migration won't impact your UX, dependencies, performance, scalability, or your ability to meet SLAs?

The case for refactoring

Unlike lift-and-shift processes or other migration methods that retain the architecture of on-premises systems, refactored applications allow you to make the most of the cloud. By refactoring systems, you can build them from the ground up to harness the potential of microservices architectures together with cloud-native technologies like container environments, function-as-a-service, and load balancers.

Re-factoring results in cloud-native applications that are more scalable and more cost-effective than those migrated with a lift-and-shift approach.

The key to successfully refactoring is figuring out where to start — and understanding how to split up monolithic applications into smaller chunks. Careful planning is needed here.

By understanding how your codebase will work as microservices in advance — you can minimise development cycles and get a head-start towards a well-architected and high performing application.

Considering a phased migration approach?

If you chose a **phased approach** and chop away at the monolith one service at a time, you might want to start with parts of applications that have performance or reliability issues. Tackling these low-hanging fruits first can help set the rest of your migration up for success and give you a true sense of how the cloud will enhance your systems and services.



Another challenge with splitting up monolithic applications is deciding on the granularity for the new services. Domain-driven design (DDD) and other context mapping techniques can help identify bounded contexts within a business domain (and the relationship between them). From this, you can understand your microservices, the connections between them, and successfully refactor systems and applications to ensure they make the most of what the cloud can offer.

Finding the right migration solutions

There are many solutions designed to streamline cloud migration and help you avoid common migration pitfalls that impact software quality and deployment time.

While there are many basic solutions designed primarily for lift-and-shift migration, others offer more advanced capabilities, augmented by AI and advanced data analytics. These solutions can help you answer essential questions about your migration approach and the services you deploy:

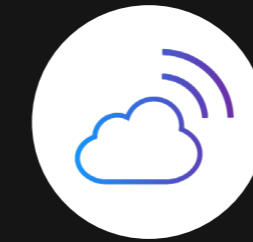
- Does the new system perform as expected?
- Are the service flows working out as designed?
- Does the system scale correctly?
- Does it interact with other systems properly?
- Has the user behaviour changed (and in what way)?

What to look out for in a cloud migration monitoring solution



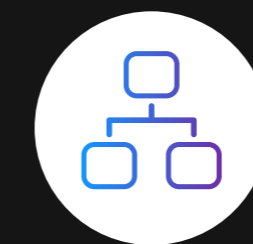
Granularity and locality

Identify tightly coupled services and help architects decide if they need to combine two services into one or use platform mechanisms to guarantee co-location.



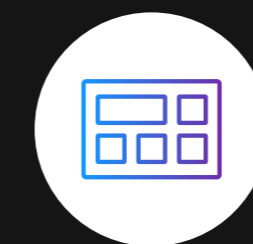
Impacts of remote function calls

In-memory functions in monoliths turn into remote service calls in the cloud, so payloads need to include actual data versus only in-memory object references.



Network monitoring

Although maintenance and administration requirements for physical network components are reduced in the cloud, virtual networks need more attention because they come with network and computing overhead.



Polyglot technologies

Monitoring solutions need to be able to cover polyglot technologies and trace transactions across different technologies, including mobile front-ends, Node.js API gateways, Java or .NET backends, and MongoDB databases.

Automating key processes

can help to significantly reduce the burden on your teams, accelerate your move to the cloud, and enhance software quality.

Automation through CI/CD

Continuous integration and continuous delivery (CI/CD) are important parts of the migration process, allowing rapid and reliable software deployment.

Automating key processes can help significantly reduce the burden on your teams, accelerate your move to the cloud, and enhance software quality. Automated tests can uncover more issues and architectural regressions than manual testing, and can help you fix broken builds earlier in your delivery pipeline.

However, this level of automation only works if you have the right feedback loops in place.

Fact-based feedback loops can help you:



Summary

Three steps to deploy with confidence:

1. Consider refactoring core systems and apps
2. Make sure you're getting the right migration monitoring solutions
3. Automate the deployment process through CI/CD

Section 3:

Operate simpler

Once you've carefully planned and executed your migration, the work isn't over. You need to ensure your new cloud-based environment meets performance and customer experience expectations.

Surveying the complete IT estate

The key to maintaining application performance and reliability is ensuring visibility across all application environments, even those across multiple data centres. However, using a large number of specialised solutions is not the answer, as these can come with high maintenance costs and many blind spots.

Modern, all-in-one monitoring solutions can offer real visibility and automatic fault detection without the downsides of point solutions. Because they can combine all available metrics into a coherent picture for analysis, they can help you survey and understand your IT estate.

Getting proactive with you fault detection

If you're just fighting fires as they spring up, you risk critical availability and performance issues affecting your applications and services. By proactively detecting and solving issues, you can eliminate most of them before they impact end users.

However, proactive fault detection requires highly automated monitoring solutions. Given the dynamic nature of modern cloud infrastructures, manual definition of performance thresholds for nominal system behaviour is not sustainable. This is better done by machine learning algorithms that can automatically define and adopt performance thresholds for all system components, from the network layer all the way to the user front-end.

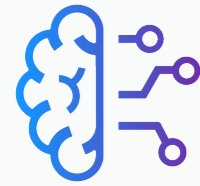
But your alerting also needs to be smart. In cloud environments, individual compute nodes are spun up or discontinued all the time. And these operations won't necessarily impact on the end user. To avoid false alerts, your monitoring system needs to understand the system as a whole and distinguish between temporary glitches and serious customer-facing problems. Advanced monitoring solutions can help here, with many being capable of pinpointing the single root causes of large problems, accelerating your ability to resolve them.

Proactive fault detection

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The right solutions for every mission

To get all the data, and the visibility you need to ensure continued success in the cloud, you need the right solutions.



AI capabilities can help you establish custom metrics and enable dynamic change point detection. Smart auto-baselining and automated anomaly detection, root cause analysis, and problem remediation features can further help keep things running smoothly—and repurpose IT staff to more business-critical activity.



Advanced monitoring solutions can help you get a bird's-eye view of all your systems and keep up with dynamic changes to your environments.



Problem commenting systems backed up with intelligent search and analysis features can help create a knowledge base that helps your teams get relevant information and solve problems faster.



Log analytics solutions build for the cloud can help you understand where log files are being written and for how long they will be available.

Whatever solutions you use to monitor your cloud services, make sure those solutions can also properly monitor and manage containers and serverless functions.

Monitoring operations post-migration

When monitoring your cloud systems after migration, you must make sure you can:

- Automatically discover and baseline performance of dynamic multi-cloud environments
- Solve problems and detect root-causes
- Scale to large environments — up to thousands of hosts
- Monitor containers, functions, and overall systems health
- Enable predictive monitoring and proactively respond to issues

Summary

Three steps to ensure continued cloud success:

1. Ensure you have visibility of overall cloud and remaining on-premises system
2. Identify and correct problems before they impact users
3. Invest in the right monitoring solutions — preferably ones with AI and deep analytics capabilities

Migration success in the real world

Organisations like yours are already using these methodologies to successfully migrate critical applications, systems, and services to the cloud.



PayMaya replatforms core services for new payment app in the cloud

PayMaya, a FinTech company with remittance and e-money issuing as a business, has 'replatformed' its pioneering payment app in the cloud by shifting away from a monolithic codebase to building on a microservices architectural framework. This enabled them to deliver a superior product with a 100-day timeline and improve performance

Using Dynatrace for digital performance monitoring, PayMaya has ensured it can:

- Minimise application downtime by identifying root cause and releasing a patch in less than 1 hour
- Reduce manual discovery down from 1 day to minutes
- Optimise the performance of core applications to less than 1 second response time

Learn more about how PayMaya runs its application in the cloud confidently [here](#).



Landbay goes cloud-native

Peer-to-peer lending specialist Landbay wanted a way to enhance their customer experience. To accelerate its website's performance and availability, Landbay needed a full-stack monitoring solution to ensure it could move key systems to the cloud successfully.

Dynatrace empowered Landbay with real-time visibility into its architecture and customer behaviour, helping it:

- Refactor its platform into a cloud-native architecture
- Run more than 30 microservices on AWS
- Release 2-3 codes a day

Learn more about how Landbay delivered a seamless cloud shift [here](#).

Section 4:

Your ally for migration success

Get actionable insights out-of-the-box.

While it's impossible to handle cloud monitoring, migration, and post-move reporting and support yourself, having an ally on-hand can help you achieve your migration goal faster and confidently, ensuring business continuity and zero customer impact.

As an AWS Advanced Technology Partner with Migration Competency, Dynatrace is trusted by the world's leading brands, including 72 of the Fortune 100 companies. Join the thousands of enterprises who have migrated confidently to AWS with Dynatrace and see for yourself why Dynatrace has been named a leader in the Gartner Magic Quadrant for Application Performance Monitoring (APM) for 8 years running.

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Dynatrace provides software intelligence to simplify enterprise cloud complexity and accelerate digital transformation. With AI and complete automation, our all-in-one platform provides answers, not just data, about the performance of applications, the underlying infrastructure and the experience of all users. That's why many of the world's largest enterprises, including 72 of the Fortune 100, trust Dynatrace to modernize and automate enterprise cloud operations, release better software faster, and deliver unrivaled digital experiences.