A Forrester Total Economic Impact™
Study Commissioned By Dynatrace
November 2018

The Total Economic Impact™ Of Dynatrace

Cost Savings And Business Benefits Enabled By AI Powered Software Intelligence

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ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

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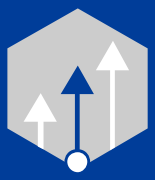
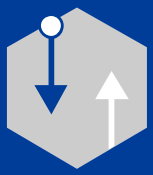
Financial Results

ROI
311%

NPV
$14.3 million



Benefits PV
$18.9 million



Payback
<6 months
post-
deployment

Executive Summary

Dynatrace™ is a full stack solution that covers application performance management, digital experience management, infrastructure monitoring and AIOps. Dynatrace commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Dynatrace™. This study provides readers with a framework to evaluate the potential financial impact of Dynatrace™ on their organizations and how it can affect business operations and users of all types when moving from prior-generation application performance management (APM) toolsets.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed seven customers with years of experience using the Dynatrace platform. Our findings revealed that the AI-powered software intelligence platform performed well across entire IT stacks — for those organizations using enterprise cloud as well as those on traditional on-premises infrastructures. Several primary attributes of Dynatrace were particularly helpful for organizations:

- AI-powered full-stack analyses help multiple groups within IT, providing decipherable insights rather than extraneous data — to mitigate and even prevent performance degradations with speedy identification.
- Easily deployable agents can be stood up across the infrastructure, in hours, not months, even on a multicloud environment.
- Granularity of detection across the entire IT stack brings clear visibility to interdependencies between data flows.

With Dynatrace, customers markedly improved their efficiency in handling application performance issues, lifting service levels higher and boosting end user satisfaction and productivity. Further, the Dynatrace platform enabled organizations to streamline reliable application and service delivery at scale, making it possible for these businesses to align with the age of the customer where the quality of the customer experience (CX) means the difference between success or failure.

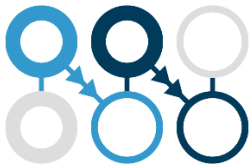
Internal business users and external consumers expect a high level of service delivery and availability in this day and age where the digital experience is paramount. Prior to using Dynatrace, customers experienced a multitude of issues with the delivery of applications to end users. Commonly mentioned shortcomings with previous solutions were:

- Organizations could not resolve application issues efficiently, tying up high value people resources in war room situations.
- In some instances, the organizations were unable to find resolutions at all, causing protracted performance degradation to persist until the issues had subsided on their own.
- Older solutions did not provide analytical clarity around the root cause of incidents. Were these problems a factor of bad code, or were they infrastructure-related problems?

Ultimately, early generations of APM solutions yielded limited success at best and kept the organizations guessing as to where application performance and delivery issues truly rested. As one interviewee put it:

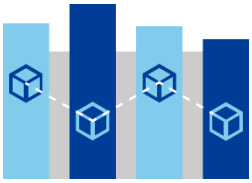
“When we had performance issues with our previous solution, all it could do is tell us we were having an issue, not necessarily what the issue was. We had to find the issue on our own.”

Key Benefits (Three-Year, PV)



Savings from quicker dev and test cycles:
$5,658,700

End user productivity recovery gains:
$4,453,918



Savings in IT operations due to full-stack monitoring:
$2,418,939

Faster application to market value:
$2,150,306

Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the companies interviewed:

- **More accurate insights rather than superfluous and uncorrelated data help the greater IT group improve efficiency.** Organizations described their stockpiles of logs and reports, which were often manually generated. The interviewed organizations wanted earlier incident detection and usable information that they could use to remediate existing code to identify bottlenecks in the infrastructure. Organizations experienced war room scenarios that took hours from members of varying IT groups; Dynatrace decreased the total time wasted, driven by a mean-time-to-identify (MTTI) reduction of 75% from previous-generation APM tools. IT help desk operations were also relieved to see a decline in performance-related calls due to better customer experiences delivered. AI-led analyses and detection saved IT groups and DevOps the equivalent of $2.4 million over three years, PV.
- **Fewer performance incidents and faster resolution time result in greater business end user productivity.** As resolution times decreased and IT groups became more proactive with the Dynatrace solution, internal business users benefited, noticing everything from snappier performance to fewer serious performance degradations. Poor performance equated to 8 minutes per incident — and across an enterprise at which 10% of an affected workforce could mean over 2,000 users, the effects can be profound. Dynatrace reduced issues an additional 40% over legacy APM toolsets. We estimate that a typical enterprise would gain over $4.4 million in productivity.
- **Using Dynatrace during the development process saves significant developer effort for new and ongoing projects.** Developers save time beyond fewer and quicker war room resolutions if leveraging Dynatrace fully. When integrated into a workflow for application development, Dynatrace can cut down testing and redundant development cycles by as much as 45%. Three-year savings for developers who are commonly expensive to hire and difficult to retain amount to nearly $5.7 million, PV.
- **Application delivery to market speed improved, bringing revenues to organizations sooner.** As development accelerated, organizations reported an earlier introduction of services to the market — enabling an ongoing quicker recognition of revenues. B2B and B2C organizations alike will benefit from this, with an estimated amount of $2.2 million, PV.
- **New application and enhancement buildouts leveraging Dynatrace during the development process avoid performance incidents from the start.** Being able to test code in various scenarios on infrastructure helps organizations avoid future performance issues as projects are tested from development conception. Over a three-year timeframe, the expected benefit is $1.2 million, PV.
- **Full-stack visibility even across the cloud enables organizations to move forward with digital transformation efforts faster, opening new revenue possibilities while minimizing the risk of introducing application issues.** With full-cloud and container monitoring, Dynatrace can move organizations through their digital transformation efforts much faster to support customers at scale. The value of addressing new customers across new segments without diminishing customer experience is conservatively valued at $3.0 million PV over three years.

"We started our [relationship with] Dynatrace three years ago. Before that, we were having a ton of issues – our old solution was too convoluted, the dashboard was subpar, and everything was done manually. Dynatrace came in with a side-by-side [POC], and our entire team immediately asked, 'Why haven't [we] jumped on board yet?'"

Director of IT, online education organization

Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

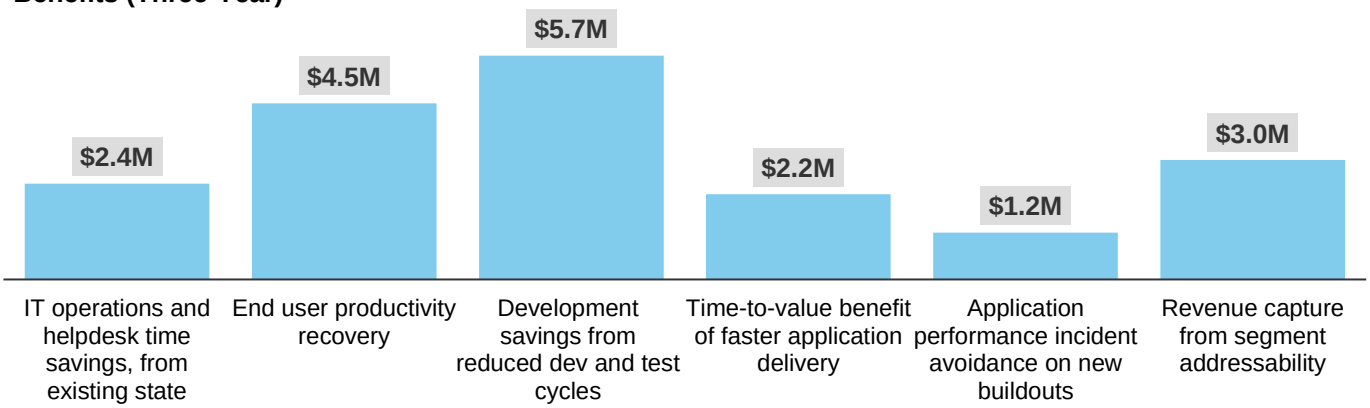
- **Coverage of multicloud and containers may provide physical infrastructure cost benefits.** The movement toward more flexible infrastructures — especially those organizations on multicloud or hybrid scenarios — can improve the efficiency of infrastructure utilization, leading to lower capex and opex. As organizational shifts toward this model are highly variable depending on IT spend allocations, this benefit has not been quantified in this study.
- **The consolidation and sunsetting of legacy tools used previously to monitor applications and infrastructure, and to determine faults, can produce a dramatic cost savings.** Dynatrace as a full-stack platform replaces many of the wide-ranging toolsets to manage experience delivery. These legacy toolsets have hard product costs along with associated service and support plans, commonly at an additional 20% of tool subscription costs. Additional indirect costs like that of administration and functionality buildouts of existing solutions on older-generation solutions have not been quantified in this study but can be substantial when collapsing the toolset stack.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

- **License, support, and customer success-related costs equate to $4.4 million over the course of three years, in PV.** These costs are charged yearly as a subscription, inclusive of Digital Experience Management. Costs reflect a tiered approach to adoption of Dynatrace, with more host units added to the license annually.
- **Training and ramp-up time are important but form only a small portion of costs to run Dynatrace.** The Dynatrace solution puts forth an intuitive graphical user interface (GUI) that is easy to learn for most incident responders. Developers, however, need training to understand how to incorporate the platform into their software development cycles to improve efficiency. In all, the training and ramp time necessary to fully leverage Dynatrace over three years, accounting for turnover as well as increasing usage, is $236,169, PV.

Forrester's interviews with seven existing customers and subsequent financial analysis found that a composite organization based on these interviewed organizations experienced benefits of $18.9 million over three years versus costs of $4.6 million, adding up to a net present value (NPV) of $14.3 million and an ROI of 311%.

Benefits (Three-Year)



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TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Dynatrace.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Dynatrace can have on an organization:

The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

DUE DILIGENCE
Interviewed Dynatrace stakeholders and Forrester analysts to gather data relative to Dynatrace.

CUSTOMER INTERVIEWS
Interviewed seven organizations using Dynatrace to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewed organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.

CASE STUDY
Employed four fundamental elements of TEI in modeling Dynatrace's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Dynatrace Customer Journey

BEFORE AND AFTER THE DYNATRACE INVESTMENT

Interviewed Organizations

For this study, Forrester conducted seven interviews with Dynatrace customers. Interviewed customers are represented by the following:

INDUSTRY	REVENUE AND MARKET	INTERVIEWEE	PRIMARY USAGE
Online education	$100+ million, US	Director of IT	B2C and LOB applications; on-premises and public cloud
Health and fitness	$1+ billion, global	Director of NOC	B2C and LOB applications; on-premises
Freight	$10+ billion, US	Director of technology	B2B and LOB applications; on-premises and private cloud
Software	$1+ billion, global	Lead applications administrator	B2B and LOB applications; on-premises and private cloud
Health insurance	$10+ billion, US	Director of technology	B2B, B2C, and LOB applications; on-premises and multicloud
Financial services	$500+ million, Europe	Senior IT analyst	B2C and LOB applications; on-premises
Technology provider	$10+ billion, global	Technology lead of cloud services	B2B, LOB applications; on-premises and multicloud

Key Challenges

Forrester consistently heard that customers of Dynatrace came from environments where it was increasingly difficult to meet the acceptable levels of service. To do so, the customers needed to invest heavily in high-availability infrastructure and throw people resources at cases for hours. With regularity, organizations triaged when incidents arose, only to waste hours without a true resolution.

We attribute the ineffectiveness of the prior solutions to the following:

- **Legacy monitoring and logging tools produced a lot of data, much of which was noncorrelated and without context.** Observational data was largely siloed with legacy monitoring tools, making it difficult to connect the dots. IT operators, be they DevOps, incident responders, database administrators, or any other ITOps personnel, needed insightful/meaningful information — and they needed it fast to be able to act on it.
- **Without intelligible information, IT operators wasted unnecessary time guessing** at the where the root cause resided and often resorted to blaming one another in war room situations.
- **The IT infrastructure grew increasingly complex — including that of cloud environments.** Containerization and multicloud environments make it challenging to monitor and reliably deliver against acceptable service levels. Only full-stack toolsets can provide the level of usable data and insights IT operators require today.

> "War rooms constantly took hours and results weren't always produced. After transitioning [to Dynatrace], we now call Dynatrace the war room peacemaker."
>
> *Lead applications administrator, software organization*

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- **Raw growth of code led by the need to build custom services — in some instances in different programming languages — was largely a black box for legacy APM.** The sprawl of data and services required to run organizations has seen explosive growth and makes legacy monitoring tools largely obsolete as these tools offer no code-level visibility on newer languages.
- **Performance degradation incidents happened unexpectedly — and sometimes resolved themselves before operators could fix the real problem.** Issues can arise and go away before organizations can properly identify the root cause, leaving these problems as exposure points that can repeatedly cause problems.

All of the above contributed to a deeper problem: These organizations were handicapped in their ability to address their customers. Regardless of whether these customers were internal business users or external consumers, organizations were losing dollars in the form of productivity, (current and future) revenue, and, even worse, long-term brand reputational harm.

Further worsening the matter, businesses that were engaged in digital transformation found it extremely difficult to move forward relying on traditional reactionary measures to application and services delivery. In a world where developers are expensive to hire and retain, organizations were forced to make things work by asking more of these already overutilized personnel — especially those developers who were involved with operations (DevOps).

> "In working with Dynatrace at multiple companies, I can say that Dynatrace will show problems far before everything else — and the data will be granular enough so that we understood the interdependencies and we can actually fix it."
>
> *Director of NOC, health and fitness organization*

Key Results

The interviews revealed that key results from the Dynatrace investment include the following:

- **Self-discovery by the Dynatrace OneAgent allows organizations to be up and running quickly.** It takes hours, not months, to stand up the Dynatrace platform across the enterprise infrastructure. The OneAgent self-discovers across all interdependencies and quickly illustrates the stack, from infrastructure down to microservices. Auto-baselining further reduces implementation effort, as it's automated. An IT director explained: "Deployment of our old solution was painful. . . . We got this up and baselined in a week, and the actual deploy was entirely automated. We didn't have to do anything."
- **AI capabilities greatly reduce the mean-time-to-identify, bringing dramatic drops to the effort IT groups need to exert.** Interviewed organizations saw a drop in MTTI and mean-time-to-resolve (MTTR), making for less time spent in a war room and nipping of root-cause issues immediately. On average, MTTI is down 75% from existing legacy APM solution sets. "Our previous generation APM solutions still required a lot of time and effort on our part to understand failures. Dynatrace showed us the entire flow up to the failure so that we could be proactive," said a director of NOC.

> "Dynatrace's AI engine helps our operators a lot. . . . Prediction and actionable data are now available, telling us what might potentially break. This is what I think makes the solution priceless."
>
> *Lead applications administrator, software company*

> "Dynatrace differs from the other tools in that it actually attempts to analyze the root cause of the problem and points you in the right direction specific to the area of code you should look at."
>
> *Director of IT, online education organization*

- **Performance-related incidents decrease greatly, raising satisfaction of internal and external users.** Businesses users are recouping thousands of hours annually with Dynatrace. Without accounting for external customers, the gain alone internally makes for millions of dollars per year. An interviewee said: "We track the number of our major incidents, and it has decreased year over year. Along with that, minutes that individual users are impacted have also gone down significantly."
- **Full-stack and multicloud intelligence future-proofs the Dynatrace solution and accelerates digital transformation efforts.** Customers are more active about moving to flexible compute and storage solutions on the cloud. Microservices and the interconnectivity between data sources create a definitive need for such a solution as Dynatrace so that as organizational application and service delivery models shift to be more cloud and container based, the monitoring solution can still provide a holistic view without breakages in monitoring. One interviewee remarked: "Dynatrace has reinvented APM. They were the only ones that were able to look inside containers."
- **Developers are freed to do what they are intended to do: deliver value-add applications and enhancements.** Teams can avoid tedious hours spent triaging in the war room because of the Dynatrace AI engine. Developers can focus on innovation and move back to real development efforts. With the usage of Dynatrace in the software development cycle, they can reduce development time by 45%, largely by reducing testing times and rework processes. One director of IT stated: "What's really been key for us is to put Dynatrace in the hands of our developers. That's a big value driver for us."

"Auto discovery by the Dynatrace agent is nothing short of a miracle, especially as we looked to scale to a more dynamic infrastructure on [a cloud computing platform]."

Director of NOC, health and fitness organization

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the seven companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. This North American-based but globally-facing B2C organization had been steadily making strides in its digital transformation efforts — both to expand serviceability of its client base and to more effectively scale. Additional characteristics are as follows:

- It has annual revenues in the billions.
- It already had logging tools and legacy APM tools in place but felt that its IT operations were still severely hampered by the inadequacy of this toolset to operate effectively to identify issues across its IT stack.
- To keep pace with internal user and external customer expectations, it required a modern monitoring solution that intelligently automated many existing incident response workflows.
- It had traditionally been a reactionary organization in its approach with its application performance issues — with no clear-cut way to proactively reduce performance incidents.
- Mean-time-to-resolve was terribly slow and affected end user productivity as well as customer perception of the brand.

Key assumptions

- Global B2C organization
- 20,900 business FTEs
- Migrating from previous-generation/homegrown legacy APM
- 120 internal developers
- Moving to a multicloud infrastructure

Prior to selecting Dynatrace as its APM solution, this organization questioned whether it was effectively using its IT budget on a wide assortment of tools to address a growing need to deliver consistent application and service experiences. While delivery of new applications and associated enhancements was not slow, there was a definitive need to reduce strain on developers to fix issues when they could be instead deployed to add value through new developments projects.

Deployment characteristics. The organization started deployment across its on-premises infrastructure — primarily focusing on critical applications. By the latter portion of the first year, the Dynatrace solution effectiveness had warranted a move to expand its use to its cloud infrastructure. Discovering that the Dynatrace agent was easily deployable and effective at monitoring containerized applications, the composite organization continued to expand the use of Dynatrace to effectively accelerate and manage cloud-based applications residing on a private cloud and public cloud. Effectively across a three-year span, the composite leveraged Dynatrace in its internal- and external-facing application bases, not only for monitoring, but also to rapidly flesh out its digital transformation efforts.

"In APM, collecting data is the easy part. AI is adding context and interpreting these data points to actually tell you when there is something you should be aware of. And that is priceless because people get desensitized to data. AI, in my opinion, is one of the key differentiating features of Dynatrace."

Technology lead of cloud services, technology provider

Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	IT operations and help desk time savings, from existing state	$921,228	$975,037	$1,032,381	$2,928,646	$2,418,939
Btr	End user productivity recovery	$1,448,487	$1,796,046	$2,199,846	$5,444,379	$4,453,918
Ctr	Development savings from reduced dev and test cycles	$1,617,408	$2,372,198	$2,965,248	$6,954,854	$5,658,700
Dtr	Time-to-value benefit of faster application delivery	$614,615	$901,435	$1,126,794	$2,642,845	$2,150,306
Etr	Application performance incident avoidance on new buildouts	$436,739	$476,402	$528,069	$1,441,210	$1,187,502
Ftr	Revenue capture from segment addressability	$680,000	$1,360,000	$1,700,000	$3,740,000	$3,019,384
	Total benefits (risk-adjusted)	$5,718,477	$7,881,118	$9,552,338	$23,151,933	$18,888,749

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of approximately $18.9 million.

IT Operations And Help Desk Time Savings Over Existing State

AI-powered software intelligence brings new levels of automation over the existing-generation monitoring toolsets. Working across the entire IT stack, Dynatrace led IT operators directly to the root-source issues more quickly, saved triage time in war rooms, reduced log analyses, and lessened code debugging. Using the latest generation of Dynatrace transformed IT organizations to become enablers of business, rather than constantly looked at as a cost center that constricted the digital user experience.

- IT operations that were affected most heavily with the implementation of Dynatrace include:
  - ITOps, NetOps, DevOps, and IT help desk/incident responders.
- Key metrics that were collected from interviewees include:
  - Reduction in MTTI, between 60% and 85% over older-generation APMs. Readers should note that the MTTI or MTTR reduction will largely depend on the usage of older APM solutions, with more conservative results asserted in our calculations as most interviewees were not greenfield to monitoring.
  - Lower false positives and fewer associated incident investigations of up to 100 occurrences per year.
  - Time savings in war room triage of 10+ hours per incident (accounting for the number of people involved).

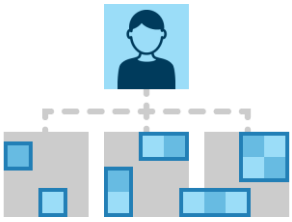
"Dynatrace is the heartbeat monitor of our organization. We use it to ensure the entire environment is running without issue."

Director of IT, online education organization

- A 30% decrease in IT help desk calls related to performance issues, or the equivalent of 151,767 calls in Year 1 alone.

Forrester designed a composite model representing the characteristics and metrics that the interviewees conveyed, which are largely in line with the metrics listed above. Overall, the ITOps group saves an estimated $274,496 annually, while the IT help desk and first-level incident responders save over $701,719 annually. Holistically, the time savings gain for the entire IT group is $2,418,939 over three years, PV.

A director of IT explained: “Dynatrace is the heartbeat monitor of our organization. We use it to ensure the environment is running without issue.”



IT operations identify issues 75% faster on Dynatrace than legacy APM.

IT Operations And Help Desk Time Savings, From Existing State: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Application performance incidents in production environment, yearly (increases roughly 5% each year)	7 per week*52 weeks	364	382	401
A2	Operations group personnel hours needed for issue identification per incident, pre-Dynatrace on average		16.5	16.5	16.5
A3	Reduction in time-to-identify; MTTI reduction		75%	75%	75%
A4	Average hourly wage of network operations, incident responders, and developers (increases roughly 5% each year)	$91,000*1.2x benefits multiplier/2,000	$54.60	$56.24	$57.93
A5	Deflected incident investigations due to AI reduction of false positives, yearly		55	57	60
A6	Hours saved per false positive on average		2.5	2.5	2.5
A7	IT operations time savings	A1*A2*A3*A4+ A4*A5*A6	$253,453	$273,875	$296,160
A8	IT help desk calls deflected per year, inclusive of internal and external users	30% decrease in application performance	151,767	159,355	167,323
A9	Time spent per application performance-related help desk call, in minutes		10	10	10
A10	Average hourly wage of IT help desk	$44,000*1.2x benefits modifier/ 2,000 hours	$26.40	$26.40	$26.40
A11	IT help desk time savings	A8*A9/60*A10	$667,775	$701,162	$736,221
At	IT operations and help desk time savings, from existing state	A7+A11	$921,228	$975,037	$1,032,381
	Risk adjustment	0%			
Atr	IT operations and help desk time savings, from existing state (risk-adjusted)		$921,228	$975,037	$1,032,381

End User Productivity Recovery

Forrester observed that many of the interviewed organizations' existing APM solutions reduced incidents to some degree, allowing for measurably fewer incidents than those organizations that had no APM solution at all. A level of digital maturity was evident at these organizations, which involved the use of high-availability (HA) equipment along with legacy APM as the first step to ensuring a consistent application experience.

With the move to a more modern platform in Dynatrace, with AI, organizations experienced a further reduction in performance degradation events. The severity of performance degradation also improved. Combined, outage and degradation time reduced by over 40% after moving from a suite of legacy tools to Dynatrace — impacting end users directly.

Our interviewed customers had also estimated that any given performance degradation event affected roughly 10% to 12% of their internal business users, resulting in a productivity hit in the form of sluggish-to-respond apps or completely inaccessible key services of the organization. We assume that:

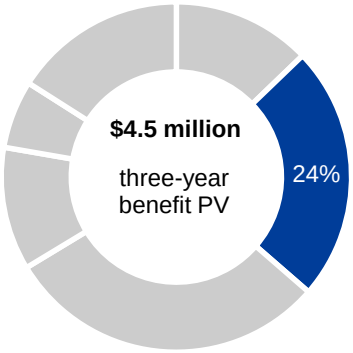
- Internal users at the composite lose 8 minutes of productivity per end user per event. This number would be higher without the use of HA already in place.
- The composite has 20,900 business users and has a conservative 10% factor applied for the users who are actually impacted by incidents. This level of users is impacted because users come from various groups and use a plethora of different applications/services; systems and services that are universally used across the enterprise have a higher degree of scrutiny placed on them to provide the highest levels of service-level agreement (SLA) and are less likely to be problematic.
- This case study does not include the possible value that external users (e.g., consumers, shoppers) may realize with a more consistent performing experience. B2C organizations can realize higher levels of benefit, especially with digital real estate spread across multicloud instances.

When aggregated, the composite organization is able to recover over 40,000 end user productivity hours in the first year alone, scaling to over 61,000 end user hours by the third year of usage. Put into dollar terms, the three-year savings is approximately $5,239,904, PV.

The pace at which an enterprise becomes a proactive code- or infrastructure-issue solver on its mission-critical data — which is often the backbone to serve the entire organization — can vary. Protracted rollouts place the returns further out and are a potential risk for slower-moving enterprises.

Additionally, recouped productivity does not always translate into actual productive outputs. For example, some office workers may opt to read sports news or use social media regardless of whether the performance issue has been fixed.

Given the variability noticed between the interviewed organizations, Forrester adjusted the benefit to end users downward by 15%, yielding a three-year risk-adjusted total PV of $4,453,918.



End user productivity recovery: **24%** of total benefits

End user productivity recovery: **2,000+ users per** performance **incident** at a **cost of 8 minutes each occurrence**

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

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End User Productivity Recovery: Calculation Table					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
B1	Outage or degraded app performance incidents, per year	A1	364	382	401
B2	Outage or degradation reduction, on-premises and cloud		40%	45%	50%
B3	Internal users affected by outages at given time of incidents	10% to 12% of 20,900 total business users	2,090	2,195	2,305
B4	Estimated time lost due to poor app performance per incident per user, in minutes		8	8	8
B5	Average hourly wage of internal business user	$70,000*1.2x benefits modifier/ 2,000 hours	$42	$42	$42
Bt	End user productivity recovery	B1*B2*B3*B4*B5/ 60	$1,704,102	$2,112,995	$2,588,054
	Risk adjustment	↓15%			
Btr	End user productivity recovery (risk-adjusted)		$1,448,487	$1,796,046	$2,199,846

Development Savings From Reduced Dev And Test Cycles

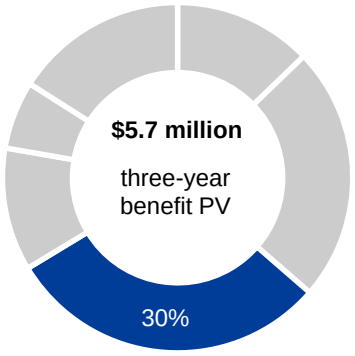
Many interviewed organizations spoke to Forrester of developer efficiencies when utilizing Dynatrace in the software development life cycle. Growingly complex projects that had interdependencies within the architecture required developers to operate in larger teams and increased the likelihood of coding rework. Organizations using Dynatrace during the coding process reduced significant development effort, enabling the organizations to do more with the same developer resources.

Software development life cycles (SDLC) were heavily compressed in the development and testing phases due to live AI-based analytics as coding was in progress. Organizations found additional effort savings in the deployment stage of projects.

The composite organization has the following characteristics:

- For new project builds, it experiences 45% in savings for SDLC overall, separate of operational tasks.
- Developers ramp into the usage of Dynatrace as a regular part of development efforts over time, gaining traction year over year (YoY).
- Developer resources/FTEs no longer need to increase YoY as efficiencies build.

Net of introducing Dynatrace into the development cycle, developer time savings grow from $1.6M in Year 1 to nearly $3M in Year 3. In PV over a three-year period, the composite recognizes $5,658,700 with this benefit.



Shortened software development life cycles: **30%** of total benefits

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Development Savings From Reduced Dev And Test Cycles: Calculation Table					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
C1	Development time spent annually in hours, pre-Dynatrace	120 developers, committing 60% of time to new development, ramped	72,000	105,600	132,000
C2	Utilization modifier to account for downtime	80% of total time available	80%	80%	80%
C3	Average hourly wage of internal developer	$104,000*1.2x benefits modifier/ 2,000 hours	$62.40	$62.40	$62.40
C4	Reduction in development time as a percentage		45%	45%	45%
Ct	Development savings from reduced dev and test cycles	C1*C2*C3*C4	$1,617,408	$2,372,198	$2,965,248
	Risk adjustment	0%			
Ctr	Development savings from reduced dev and test cycles (risk-adjusted)		$1,617,408	$2,372,198	$2,965,248

Time-To-Value Benefit Of Faster Application Delivery

Organizations don't hire developers just to keep pace with the competitive landscape; they leverage these scarce resources to pull ahead with new capability and enhancement buildouts. The result of shorter SDLCs and quicker rollouts yielded an acceleration in recognition of business-level gains for interviewed organizations. For some, the gains came in the form of productivity enhancements for internal users. For another, it meant new customer-facing revenue-producing features. With the advent of faster rollouts, organizations were also able to allocate now available developer resources to start *additional* value-producing projects.

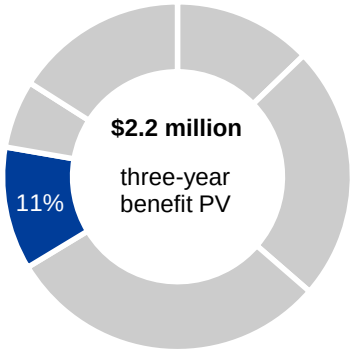
For the composite organization, we assume that:

- An internal rate of return (IRR) of 30% or greater is necessary for new application or enhancement projects. The IRR expectation has been capped by Forrester to stay conservative in projections.
- Indirect development costs reflect hours spent by developers on solely new projects.
- On average, a 45% reduction in development time shaved rollout times by four months out of the year (after accounting for downtime).

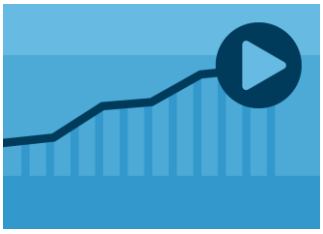
Two main components form the value basis in this benefit segment:

- The time-to-value of releasing development efforts four months sooner.
- The value of returns in additional projects that developers can now engage in by working more efficiently.

The return on quicker development releases through three years at the composite organization sums to nearly $2.3 million dollars, PV. Some organizations can also reasonably approve projects with slightly lower IRR. To capture this possible risk, we've adjusted this benefit downward by 5%, yielding a three-year risk-adjusted PV return of $2,150,306.



Time-to-value of accelerated application rollouts: **11%** of total benefits



New projects yield results four months sooner with Dynatrace.

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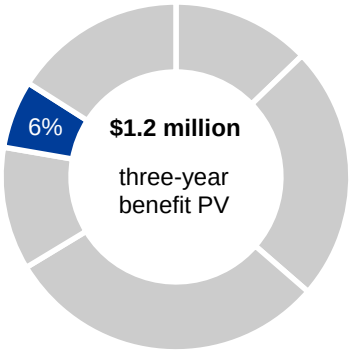
Time-To-Value Benefit Of Faster Application Delivery: Calculation Table					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
D1	Cost of development pre-Dynatrace	C1*C2*C3	$3,594,240	$5,271,552	$6,589,440
D2	Acceleration in app or functionality rollout, counted in percentage decrease in development time		45%	45%	45%
D3	Expected internal rate of return for development projects (IRR)	Interviews	30%	30%	30%
D4	Time-to-initial-deployment savings, represented in months		4	4	4
Dt	Time-to-value benefit of faster application delivery	(D1*D2*D3)+(D1*D2*D3*D4/12)	$646,963	$948,879	$1,186,099
	Risk adjustment	↓5%			
Dtr	Time-to-value benefit of faster application delivery (risk-adjusted)		$614,615	$901,435	$1,126,794

Application Performance Incident Avoidance On New Buildouts

Fundamentally, interviewed organizations needed to be proactive in their approach to handling performance degradations. Dynatrace played a large role to actively find faults in the entire stack so that operators could address issues before they impacted business segments. A number of interviewees asked, “What if we could stem the problem further by coding out issues during the build phase of new projects?” And indeed, that was exactly what they did once incorporating Dynatrace into their development cycles.

A director of technology stated: “Finding an issue as we are coding is one one-thousandth of the impact as it would be if found in production. ‘Shifting left’ and fixing issues during the coding process brings a lot of efficiency to our defect removal efficiency.”

For the composite organization, Forrester assumes that an increased average of 31+ priority incidents per year are caused by new buildouts before Dynatrace. Extrapolating from the cost per incident to the IT operators, help desk personnel, and end user impact, we deduce that over a three-year period, the composite derives gains of $1,187,502, PV. The key here is that everyone benefits as performance surprises are heavily reduced on the software side.



Performance incident avoidance on new buildouts: **6%** of total benefits

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Application Performance Incident Avoidance On New Buildouts: Calculation Table					
Ref.	**Metric**	**Calculation**	**Year 1**	**Year 2**	**Year 3**
E1	Estimated incidents avoided from new capability and enhancement buildouts		31	32	34
E2	IT operations savings from avoided incidents	E1*16.5 hours*Average hourly rate of responders	$27,568	$29,695	$32,499
E3	IT help desk savings from avoided incidents	E1*Help desk calls deflected*Time per incident*Hourly IT help desk wage	$51,029	$53,363	$56,698
E4	Internal end user impact from avoided incidents	E1*Users affected*Time per incident*Hourly business user wage	$358,142	$393,344	$438,872
Et	Application performance incident avoidance on new buildouts	E2+E3+E4	$436,739	$476,402	$528,069
	Risk adjustment	0%			
Etr	Application performance incident avoidance on new buildouts (risk-adjusted)		$436,739	$476,402	$528,069

Revenue Capture From Segment Addressability

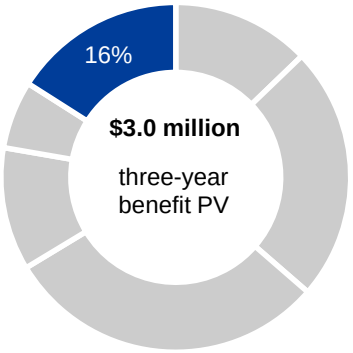
The choice to engage specific markets starts at a strategic level with input from across the enterprise. But organizations must start thinking at the tactical support level — for instance, the approach toward enterprise IT infrastructure and the related deployment and usage. The decision to expand with new data centers or steer toward a more flexible multicloud environment, just as many of the interviewed organizations had done, can either be an enabler or a bottleneck to capture future opportunities in new geomarkets and dynamically changing existing markets.

Dynatrace, because of its full-stack, multicloud addressability, makes digital expansion on the cloud front much more predictable. One interviewee said: “Sure, we had started moving our services onto the cloud, but we didn’t want to leave them unmonitored. We now have full visibility into the microservices and containers.”

The question isn’t whether expanding enterprises should shift toward the cloud, but rather how they would continue to address and maintain consistent experiences that are delivered on the cloud.

Forrester assumes that the composite organization:

- Has an ongoing digital transformation initiative and has begun to leverage public and private clouds.
- Expands into addressable markets, based on the premise of what the cloud has to offer in cost flexibility and global reach. Estimated *obtainable* revenue segments are reflected through a three-year span.
- Is experiencing an absolute percentage increase of 17% balk/abandonment rate under conditions where performance degradation took place. Interviews reflected absolute increases in the range of 15% to 25%.



Improved market addressability: **16%** of total benefits

Squash a 17% balk and abandonment rate on consumer-facing cloud delivery.

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Aggregated, the full benefit across our analysis forecast is $3,019,384, PV. The primary driving factor to prevent the revenue leakage is Dynatrace's full-stack monitoring that provides coverage across multiple cloud platforms and container services.

Revenue Capture From Segment Addressability: Calculation Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
F1	Cloud-enabled customer and segment addressability, expressed as revenue		$40,000,000	$80,000,000	$100,000,000
F2	Revenue susceptible to leakage due to poor level of service provided		10%	10%	10%
F3	User balk/abandonment rate improvement, in absolute percentages		17%	17%	17%
Ft	Revenue capture from segment addressability	F1*F2*F3	$680,000	$1,360,000	$1,700,000
	Risk adjustment	0%			
Ftr	Revenue capture from segment addressability (risk-adjusted)		$680,000	$1,360,000	$1,700,000

Unquantified Benefits

Forrester's interviews with and analysis of Dynatrace customers pointed to additional benefits that could not be reasonably quantified but are still important to note. The following are segments where we believe further value can be obtained:

- **The usage of Dynatrace led to an earlier realization of infrastructure operations savings.** Migrations to the cloud have been part of a shift for many organizations, creating new efficiencies in operational models and infrastructure utilization — all leading to lower overall spend. Many organizations, however, lacked confidence in providing consistent service delivery across cloud infrastructures, which effectively slowed migration efforts. In adding Dynatrace, visibility into the cloud and container layers became possible at these organizations. These organizations felt more assured that the experiences depending on the cloud were delivered with consistency. Due to this newfound capability, organizations more aggressively shifted their infrastructure from legacy on-premises installations to lower-cost-to-operate cloud infrastructures.

  While the time-to-value proposition of migrating to more modern architectures is certainly enabled by Dynatrace, Forrester has opted not to quantify this benefit, as the adoption of this operational model is highly variable between organizations dependent on use case. Nonetheless, opex and, in some situations, capex can be reduced and should be considered.

- **Monitoring, logging, correlation, and analytics engines can be rationalized through the use of Dynatrace.** Traditional application performance monitoring requires the use of multiple tools that involve some combination of licensing, in-house buildouts, and administration/management costs. By collapsing the larger stack into a single full-stack solution, costs on all of these fronts are reduced when these older tools are sunset.

  Many of the interviewed organizations used a wide variety of tools, but data was inconclusive as to the precise direct and indirect costs incurred, particularly for internal builds of tools that were used in conjunction with off-the-shelf tools. Readers who are interested in this benefit should contact Dynatrace for a demonstration to determine the tools that can be reasonably replaced.

Organizations accelerated to modern clouds with confidence using Dynatrace, bringing a time-to-value savings on infrastructure operational costs.

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. The following is a scenario in which a customer might choose to implement Dynatrace and later realize additional uses and business opportunities, including:

- **Log Analytics.** Context is the key to operators in charge of monitoring IT. Dynatrace's Log Analytics discovers and brings together log into context of the applications and infrastructure. By combining the usage of Log Analytics, which was a new capability at the time of interviews with customer organizations, Forrester believes that a new level of visibility and root-cause discovery is possible by feeding the Dynatrace AI engine with additional data, reducing time for human deduction.

  Dynatrace's key benefit is being able to digest data and bring incidents into context, leveraging AI to deliver answers. Log Analytics furthers this as an additive component to fully leverage logs that previously could not make it through the analytical stage due to insufficient human capital. Where logs previously simply reported on what happened, Dynatrace states where and why the issue occurred so that human operators can stop similar errors from occurring in the future.
- **Usage of Dynatrace for infrastructure-as-a-service (IaaS) providers.** Most organizations operate Dynatrace for the benefit of their users — both external and internal. For certain organizations that are vendors of IaaS, platform-as-a-service (PaaS), or other as-a-service offerings, Dynatrace offers a unique value proposition that could serve as the underpinnings to value delivery to the clients from both internal usage and external offering perspectives.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Gtr	Dynatrace license and support-related costs	$0	$1,431,555	$1,802,796	$2,089,107	$5,323,458	$4,360,905
Htr	Training and ramp time necessary to fully leverage Dynatrace	$118,404	$0	$84,464	$63,836	$266,703	$236,169
	Total costs (risk-adjusted)	$118,404	$1,431,555	$1,887,260	$2,152,943	$5,590,161	$4,597,074

Dynatrace License And Support-Related Costs

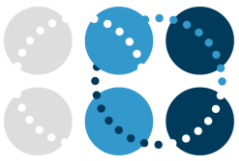
Dynatrace license and usage costs are typically incurred on a yearly plan. This TEI cost category includes the following components necessary to help enterprises deliver consistent digital:

- Host unit licenses that are increased year over year, in a multistage fashion, to account for expansion of Dynatrace coverage beyond that of just critical and tier 1 applications.
- Digital Experience Management licenses, for real-time — as well as synthetic — experience monitoring.
- Premium support and customer success.

The quantity of licenses used for modeling the composite may vary; readers should contact Dynatrace to assess the appropriate number of licenses for their particular environments. All pricing used for our financial modeling is accurate and at list levels on the date of initial publication.

Analyzed over a three-year period, the cost of licensing and support is $4,360,905, PV.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of approximately $4.6 million



Dynatrace's single auto-discovery agent makes expansion over multiple stages a simplified exercise.

Dynatrace License And Support-Related Costs: Calculation Table

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Cost of licensing and usage, host level			$1,117,500	$1,415,500	$1,639,000
G2	Cost of licensing and usage, digital experience monitoring			$138,250	$165,900	$193,550
G3	Service, support, and customer success — premium 24x7 level			$175,805	$221,396	$256,557
Gt	Dynatrace license and support-related costs	G1+G2+G3	$0	$1,431,555	$1,802,796	$2,089,107
	Risk adjustment	0%				
Gtr	Dynatrace license and support-related costs (risk-adjusted)		$0	$1,431,555	$1,802,796	$2,089,107

Training And Ramp Time Necessary To Fully Leverage Dynatrace

Most organizations interviewed came to the latest version of Dynatrace from a scenario where existing APM and tools had already been in use. While these interviewed organizations loved the ease of use on Dynatrace, Forrester found that organizations needed to commit internal training to fully leverage the platform. Additionally, the coverage of the full stack and newer components like that of containerized services generally required a brief ramp period.

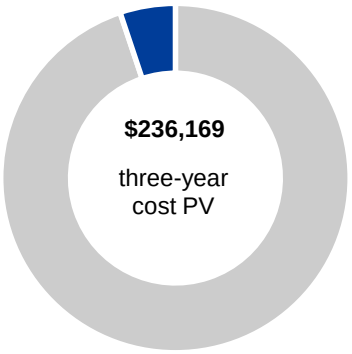
- Training and ramp periods applied to all operations FTEs who were involved in monitoring and incident management, as well as developers leveraging Dynatrace in the software development life cycle.
- Calibration of Dynatrace was simple and accrued very little indirect cost.
- Training and ramp were short for operations FTEs but longer with developers.

Across a three-year period, these costs amount to $215,605, PV.

Forrester recognizes that training costs can vary between organizations. Some of the factors that we have considered include:

- FTE turnover, leading to increased training sessions.
- Organizational IT stack complexities and use case complexities, leading to increased time-to-calibrate.
- Abilities and relative quality of the development team, which can affect the uptake of new processes in the SDLC.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of $236,169.



Training and ramp time: **5%** of total costs

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

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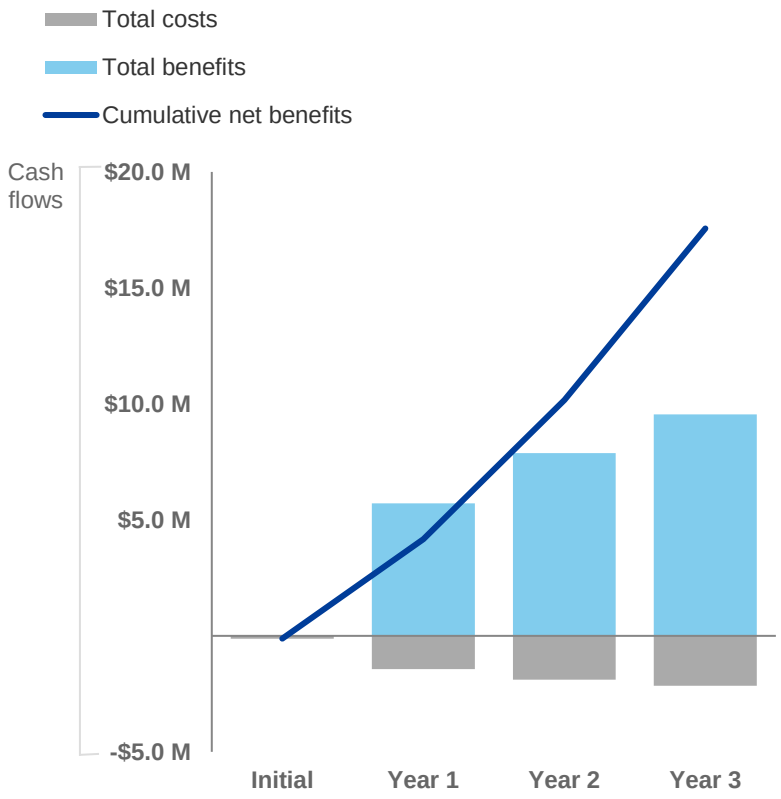
Training And Ramp Time Necessary To Fully Leverage Dynatrace: Calculation Table						
Ref.	**Metric**	**Calculation**	**Initial**	**Year 1**	**Year 2**	**Year 3**
H1	Core application monitoring team training and ramp time	8 personnel, 20 hours each, inclusive of turnover	160		20	20
H2	Cost per hour of core APM personnel		$54.60		$56.24	$57.93
H3	Developer training and ramp time	120 personnel, 24 hours each, inclusive of turnover	1,440		1152	864
H4	Cost per hour of developers	$104,000*1.2x benefits modifier/2,000 hours	$62.40		$62.40	$62.40
H5	Calibration/fine-tuning of Dynatrace		$4,368		$437	$437
Ht	Training and ramp time necessary to fully leverage Dynatrace	H1*H2+H3*H4+ H5	$102,960		$73,447	$55,509
	Risk adjustment	↑15%				
Htr	Training and ramp time necessary to fully leverage Dynatrace (risk-adjusted)		$118,404	$0	$84,464	$63,836

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($118,404)	($1,431,555)	($1,887,260)	($2,152,943)	($5,590,161)	($4,597,074)
Total benefits	$0	$5,718,477	$7,881,118	$9,552,338	$23,151,933	$18,888,749
Net benefits	($118,404)	$4,286,922	$5,993,858	$7,399,396	$17,561,772	$14,291,675
ROI						311%
Payback period						< 6 months

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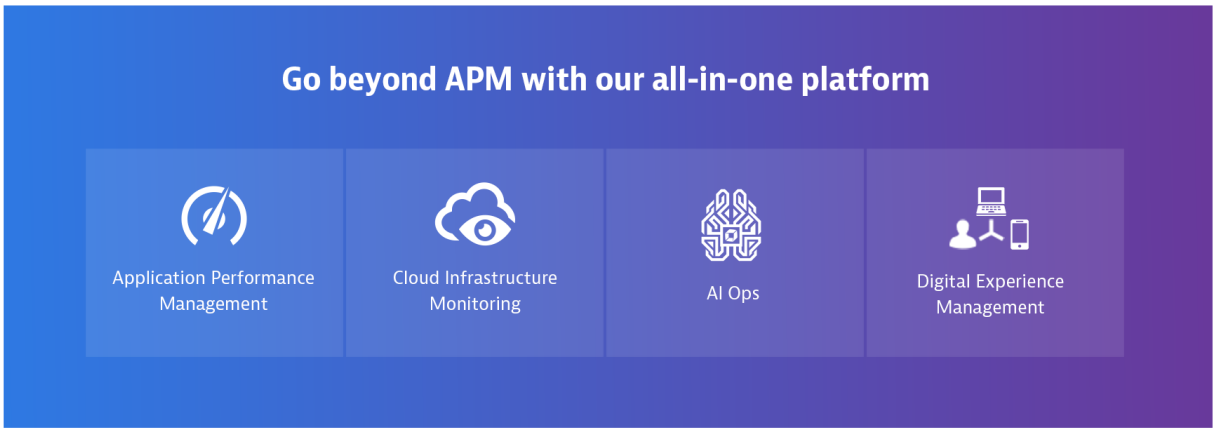
Dynatrace: Overview

The following information is provided by Dynatrace. Forrester has not validated any claims and does not endorse Dynatrace or its offerings.

dynatrace

Software intelligence for the enterprise cloud



Dynatrace™ is an all-in-one software intelligence platform purpose built for the enterprise cloud. Harnessing the power of artificial intelligence (AI) and advanced automation, Dynatrace™ provides insights and not just data about the performance of your applications, the underlying hybrid cloud infrastructure, and the real time experience of your users.

Dynatrace™ addresses the growing complexity enterprises face as they continue to embrace the cloud to drive digital transformation. Its full-stack, all-in-one approach further removes the need for a range of disparate monitoring tools that were not specifically designed for today's complex hybrid cloud ecosystem.

These insights enable organizations to modernize and automate IT operations, develop and release higher-quality software faster, and deliver superior digital experiences.

The unique differentiators of the Dynatrace™ software intelligence platform include:

- **A single agent that automatically configures itself**, instantly discovering all components and capturing high-fidelity, web-scale data across the full stack, profiling performance with code-level precision, even as applications and environments change.
- **A full-stack, all-in-one approach,** covering everything from APM, to Infrastructure Monitoring, DEM, AIOps and more. This approach limits the need for a broad array of monitoring tools and improves accuracy, productivity and decision making, while also reducing operating costs.
- **Deep integrations with the most popular cloud technologies**, including Amazon Web Services, Pivotal Cloud Foundry, Microsoft Azure, Google Cloud Platform, and more, simplifying operations and enriching the data that Dynatrace™ ingests, providing a single platform for all software intelligence.

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- **AI-powered answers instead of data**, with the deterministic AI engine constantly analyzing performance to serve up precise root-cause analysis when performance deviates from the established baseline of "normal" behavior.
- **Auto remediation**, allowing customers to take a significant step toward enabling self-healing applications and transitioning from IT operations (ITOps) to AIOps.
- **Web-scale and enterprise grade**, built to capture and analyze huge data sets from enterprise cloud applications and their underlying infrastructure in real time, improving the intelligence of its AI engine and providing more precise answers about software performance across the full stack.

And that's why Dynatrace™ is trusted by more than 2,200 customers across 79 countries, including 72 of the Fortune 100.

Try Dynatrace™ full stack monitoring for free and gain deep insights into your applications.

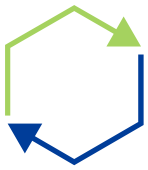
Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Return on investment (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

Payback period

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.