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# On the Radar: Dynatrace provides all-in-one monitoring environment

## Monitoring users' digital experience, app performance, and cloud and container infrastructure

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# Summary

## Catalyst

The revolution in the digital transformation market has thrown up many new challenges to the application performance monitoring (APM) industry. Significant trends include the shift from monolithic applications with relatively static and manually operated virtualized-infrastructure environments to highly dynamic and automated microservices environments. There is also the change from reactive, human engagement to identify and solve issues to real-time, AI, and machine-driven platforms that help automate the task.

In response, Dynatrace has delivered a platform that seeks to deliver an all-in-one monitoring solution that covers everything from the users' experience to the automated management and resolution of problems that occur anywhere in the full stack, supporting a widely diverse and dynamic infrastructure.

## Key messages

- Automated end-to-end visibility is provided with the Dynatrace OneAgent that auto-discovers and auto-instruments the full stack including containers with a single installation per host.
- Real-time, full-stack topology modeling and self-learning is provided by Dynatrace Smartscape, which auto-discovers all the components and dependencies of the entire technology stack.
- Automated full-stack monitoring powered by Dynatrace's artificial intelligence (AI) engine supports smart analytics and artificial intelligence to provide real-time predictive and reactive answers.
- Davis, an AI-powered virtual assistant, provides voice and chat-driven interaction for the platform.

## Ovum view

Dynatrace has one of the most extensive and constantly enhanced set of capabilities of any vendor in the APM field, and is a strong player in the market. The "land and expand" approach to installation based on the intelligent OneAgent per host makes adoption very straightforward, and the level of out-of-the-box intelligence is impressive, particularly the visualizations and automation related to problem evolution and root-cause analysis. The introduction of conversational human-to-solution interaction via a voice-enabled interface puts Dynatrace at the forefront in using AI in APM, and helps make the solution easier to use.

# Recommendations for enterprises

## Why put Dynatrace on your radar?

The new Dynatrace platform offers DevOps and business teams a single, highly capable monitoring environment. It also takes advantage of a broad range of cloud and technology partnerships, with key players such as Pivotal, Docker, Red Hat, and AWS offering extensive coverage of the full stack of

software at each stage of the application lifecycle. It is also one of the first solutions to deliver direct support to business owners, with performance analytics analyzed in the context of conversion rates, as well as bounce rates with new-feature adoption, and service-consumption rates tracked to measure success against business objectives.

# Highlights

Dynatrace offers one of the most extensive monitoring solutions in the market with an evolving set of features and capabilities.

### End-to-end visibility with the Dynatrace OneAgent

The Dynatrace OneAgent auto-discovers and auto-instruments the full stack, including within containers, with a single installation per host. The OneAgent also discovers and maps cross-tier topological dependencies. This is made possible by intelligently analyzing metrics from multiple full-stack data-sources in context with one another. This information is used to build out the real-time detail of the Smartscape topology modeling tool.

The Dynatrace OneAgent is preconfigured, fully load-balanced, and updated automatically via connection to the Dynatrace server. Because OneAgent's single-install-per-host approach doesn’t require configuration and Dynatrace servers are discovered automatically, many cumbersome deployment tasks are eliminated.

Supported technologies include:

- System: disk, network, OS including special variants like CoreOS and Amazon Linux AMI.
- Virtualization: VMware, AWS Xen, OpenStack/KVM, Hyper-V.
- Cloud: AWS (including EC2, EBS, S3, RDS, DynDB, ELB, Lambda), Azure, Cloud Foundry, Docker, DC/OS, MesoSphere, Netflix OSS, Red Hat OpenShift, OpenStack, Oracle Cloud, and others.
- Built-in network packet analysis, file-change/configuration-change detection, and built-in log file detection and analysis.
- Generic process responsiveness/performance monitoring and topology mapping for any kind of software application.
- Deep code-level visibility into Java, .NET, PHP, Scala, Play, and Node.js.
- Support for polyglot development: Ruby, Perl, Python, JRuby, Storm, Hadoop, Varnish, HAProxy, Erlang, Riak, RabbitMQ, and others.
- Web servers: Apache, Nginx (including plug-in visibility).
- Databases: SQL and NoSQL, including Couchdb, Cassandra, MongoDB, Redis.
- Browsers: web page injection for monitoring of desktop and mobile browsers, including a broad set of JavaScript technologies.
- Mobile: Android, iOS.

Dynatrace OneAgent not only collects metric data, but also places it into context. For example, when OneAgent discovers a log file, the log file is automatically mapped to its associated process. This data is then used to enrich Smartscape, where the relationship between the log file and the process is visualized in a real-time view.

Dynatrace uses dynamic monitoring technology that automatically identifies clusters of services (even across hosts), and handles instances as they come and go, as opposed to sending out an alert whenever an instance goes down, even when there's no impact and the behavior is intentional.

## Full-stack topology modeling and self-learning with Dynatrace Smartscape

Smartscape provides real-time, full-stack topology modeling for highly dynamic environments, including microservices. Smartscape is now also integrated with the third generation of PurePath, Dynatrace's multidimensional end-to-end transaction tracing technology.

Based on OneAgent context-full data, Dynatrace builds and maintains a real-time topological model that can track billions of nodes. Dynatrace can map individual end-user actions to specific services, instances, processes, containers, disks, hosts, the network, datacenters, and log files. Dynatrace also maps all interdependencies between components (for example, service A depends on service B, service B depends on service C, and so on). Smartscape relies on weighted-graph modeling, codified best practices, and additional semantics derived from its APM expertise to generate topology models.

Dynatrace rapidly auto-discovers all the components and dependencies of the entire technology stack end to end.

## Automated full-stack monitoring enabled by Dynatrace's AI Engine

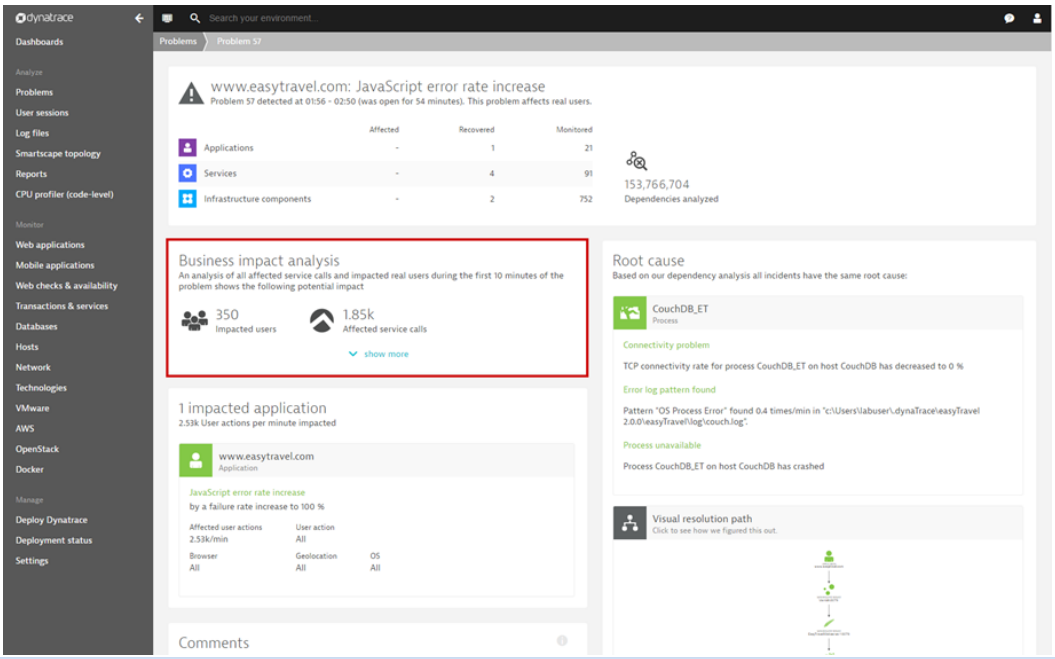
The OneAgent provides quality data collection, and Smartscape delivers the real-time topology context. This is a base on which Dynatrace can add smart analytics and artificial intelligence to provide real-time predictive and reactive answers and ad-hoc analytics as needed.

Learning algorithms running on top of Smartscape enable Dynatrace to understand normal baseline performance, not simply by evaluating metrics, but by evaluating weighted topology graphs over time. Dynatrace also runs multidimensional analytics to automatically reveal the issue that's the cause of each performance problem.

The AI engine also offers "alerts over time" axis analysis. This means that Dynatrace can understand the evolution of problems from their root-cause to how they evolve, propagating through a distributed system until they potentially impact customer experience. In this way, Dynatrace avoids sending out thousands of meaningless alerts. Dynatrace sends out a single context-full problem alert with complete root-cause analysis detail only when a problem seriously impacts customer experience or service quality.

**Figure 1: Root-cause analysis and problem evolution**




Source: Dynatrace

## Architecture

Dynatrace's OneAgent provides full-stack monitoring for real-user monitoring, application performance management, log analytics, and end-to-end infrastructure monitoring, including servers, network, containers, and the cloud.

In a SaaS deployment model, OneAgent metrics are sent to the Dynatrace SaaS Clusters for processing, analysis, and storing, providing monitoring-data results through the web user interface, VoiceOps/ChatOps, and API access. The communication from OneAgent to the Dynatrace Cluster is secured and authenticated via HTTPS, and is easily deployable in the presence of firewalls.

The Dynatrace SaaS solution, which is available worldwide, with multiple locations in the US, Europe, and Asia, is architected to allow rapid expansion regardless of the cloud provider or location.

Similarly, in a managed deployment model, OneAgent metrics are sent to the Dynatrace Cluster for processing, analysis and storing. The Dynatrace Cluster can run on a single node or on multiple nodes depending on the size of the customer's environment, and can be dynamically scaled as the monitoring footprint expands. The communication from OneAgent to the Dynatrace Cluster is secured and authenticated via HTTPS, and is easily deployable in the presence of firewalls.

Dynatrace provides continuous session storage on the file system of the Dynatrace Cluster, and can be attached to a RAID or network filesystem for HA. This allows historical, end-to-end drilldown for each transaction. Long-term metrics and baselines are stored in integrated, scalable Cassandra nodes.

The Dynatrace Cluster is a managed service, hence the name Dynatrace Managed, and customers do not need to maintain cluster instances themselves. During installation, clusters connect to Mission Control, a cloud service provided by Dynatrace that monitors the health of cluster nodes and also automates the deployment of updates and fixes. When compliance regulations forbid outbound communication, an unmanaged option is also available.

All components required for data processing and storage are transparent to the customer; one simple install without the need for expert knowledge is required to maintain Dynatrace clusters.

### Dynamic scaling

The Dynatrace platform is built with web-scale in mind to support more than 500,000 transactions per second and 100,000 deployed agents on a single Dynatrace Cluster with multiple nodes. There is no hard limit for the number of monitored web or mobile applications. All transactions are created equal in terms of capture, analysis, and retention, and AI-based algorithms are capable of automatically detecting the root cause of problems.

## Background

The original dynaTrace was founded in 2004 in Linz, Austria by Bernd Greifeneder, who is the current CTO. In 2008 John Van Siclen joined as CEO. dynaTrace was acquired by public company Compuware in 2011 as part of its APM business unit, along with previous acquisitions of Gomez, Adlex, and others.

In 2014 private equity firm Thoma Bravo acquired Compuware and split out the APM division as a standalone company called Dynatrace. In 2015, Keynote, which was another Thoma Bravo company, was merged into Dynatrace.

## Current position

Dynatrace has more than 1,600 employees including a 500-strong full-time technical team.It is profitable with APM revenues of more than $415m in 2016 and 15% year-on-year growth. Dynatrace is supported by private equity firm Thoma Bravo, and delivered earnings before interest, taxes, depreciation, and amortization of 30% or $120m.

Technology and ecosystem partners are a material component of the Dynatrace growth strategy. Along with its partner ecosystem, Dynatrace has invested significantly in this area, with more than 150 technology partners. This includes partnerships with independent software vendors (ISVs), cloud service providers, and others to provide leading-edge management solutions embedded in partner market offerings. Reference examples of these relationships include:

- PaaS and IaaS vendors, such as Cloud Foundry, Pivotal, Red Hat OpenShift, Microsoft Azure, and Amazon AWS.
- Microservices and container vendors, such as Docker, Mesosphere, Marathon, and Rancher.
- Enterprise application ISVs, such as SAP Hybris, Magento, and IBM Commerce.
- Application infrastructure providers, such as Nginx, MongoDB, Citrix, and Cisco.

# Data sheet

## Key facts

**Table 1: Data sheet: Dynatrace**

| | | | |
|---|---|---|---|
| **Product name** | Dynatrace | **Product classification** | APM: digital experience management, cloud, container and infrastructure monitoring, lifecycle APM |
| **Version number** | n/a | **Release date** | Bi-weekly updates |
| **Industries covered** | All areas, particularly e-commerce, financial services, online services, logistics, manufacturing, energy, telcos, and SIs building clouds | **Geographies covered** | US, Canada, Latin America, EMEA, Asia-Pacific, Japan, CEMA (Central Europe, Middle East, Africa) |
| **Relevant company sizes** | All sizes, with enterprise focus | **Licensing options** | Perpetual, one-year term, one-year SaaS |
| **URL** | www.dynatrace.com | **Routes to market** | Direct sales, channel partners, SIs, freemium model |
| **Company headquarters** | Waltham, MA, US | **Number of employees** | 1,500 |

Source: Ovum

# Appendix

## On the Radar

On the Radar is a series of research notes about vendors bringing innovative ideas, products, or business models to their markets. Although On the Radar vendors may not be ready for prime time, they bear watching for their potential impact on markets and could be suitable for certain enterprise and public sector IT organizations.

## Further reading

*Market Radar: Cloud-native Application Performance Management,* IT0014-003329 (September 2017)

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## Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com.

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