Magic Quadrant for Application Performance Monitoring

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APM vendors are expanding their support for hybrid and multicloud infrastructure, business processes, machine learning and automated root cause analysis. I&O leaders must balance their desire for these needed capabilities with ease of use and automation support when selecting an APM suite.

Strategic Planning Assumption

Enterprises will quadruple their application performance monitoring (APM) due to increasingly digitalized business processes from 2018 through 2021 to reach 20% of all business applications.

Market Definition/Description

With a few changes in description from the 2018 Magic Quadrant, Gartner defines APM suites as one or more software components that facilitate application monitoring to meet three main functional dimensions:

- **Digital experience monitoring (DEM):** DEM is an availability and performance monitoring discipline that supports the optimization of the operational experience and behavior of a digital agent, human or machine, as it interacts with enterprise applications and services. For the purposes of this research, it will include real-user monitoring (RUM) and synthetic transaction monitoring for both web- and mobile-based end users.
- **Application discovery, tracing and diagnostics (ADTD):** Application discovery, tracing and diagnosis is a set of processes designed to understand the relationships between application servers, map transactions across these nodes, and enable the deep inspection of methods using bytecode instrumentation (BCI) and/or distributed tracing.
- **Artificial intelligence for IT operations (AIOps):** AIOps platforms combine big data and machine learning functionality to support IT operations. AIOps for applications enables the automated detection of performance and event patterns or clusters, the detection of anomalies in time-series event data, and the determination of the root cause of application performance problems. AIOps accomplishes this through machine learning, statistical inference or other methods.

Gartner continues to include DEM and AIOps for applications as components of our APM suite evaluations, while also evaluating them as separate subsegments of the performance analysis market.

Magic Quadrant

Figure 1. Magic Quadrant for Application Performance Monitoring

Source: Gartner (March 2019)

Vendor Strengths and Cautions

Broadcom (CA Technologies)

Headquartered in San Jose, California, the public company Broadcom acquired CA Technologies in November 2018. CA's APM offerings are part of the Enterprise Software Division, and offer on-premises as well as SaaS-based solutions through various products and modules.

The CA solution includes core APM, infrastructure, network, end-user, cloud, mainframe and business transaction monitoring integrated across the CA Digital Experience Insights (DXI) platform. Over the past three years, CA has focused on modernizing its underlying technology architecture by incorporating open-source technologies — for example, for visualization and analytics — and using containers and microservices to support faster development and customer deployment options. Central to CA's offering is the CA DXI platform, which serves as a starting point for investigating end-user, application, infrastructure and network performance issues. The vendor has focused on improving the usability of its solutions by enhancing the assisted triage workflow, which helps users identify performance anomalies and business transactions that can be further investigated through detailed drill-downs.

CA's roadmap includes extending the coverage of applications and modern IT architectures, as well as extending the solution's ability to ingest a wide variety of data sources beyond those collected by its agent technologies. This includes support for competitive products as well as open-source technologies.

CA historically has sold to midsize and large enterprises, both direct and via partners. Going forward, the company will focus its direct efforts on the largest enterprises as part of Broadcom's strategic direction, while leveraging partners to serve smaller accounts. CA's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $125 million and $250 million.

Strengths

- CA provides a comprehensive solution that includes monitoring capabilities across the end-user experience (browser, synthetic, session replay), application, infrastructure and network.
- The DXI platform delivers strong analytics capabilities with an increasing focus on correlation across multiple layers and assisted triage for root cause analysis use cases.
- CA provides support across a wide set of geographies for large organizations with internationally distributed footprints.

Cautions

- The acquisition by Broadcom could impede product development and customers should be cautious in making decisions that depend on CA's stated roadmap.
- Small and midsize enterprises that previously dealt directly with CA may find it difficult to determine exactly what APM offerings are best for them due to Broadcom's strategy targeting large organizations in a direct way.
- CA's APM suite continues to improve its product integration, but customers still must jump between components that have different UIs.

Cisco (AppDynamics)

AppDynamics has been a division of Cisco since March 2017. Cisco is headquartered in San Jose, California. AppDynamics offers both an on-premises and a SaaS-based APM solution with a common architecture across both deployment models.

The AppDynamics solution includes core APM, monitoring and analytics for end users, infrastructure, cloud, mainframe, the SAP S/4HANA application and business performance. In October 2017, Cisco acquired Perspica and has since embedded Perspica's machine learning technology into AppDynamics' infrastructure, application and business analytics. AppDynamics has been steadily increasing its capabilities in monitoring ephemeral cloud architectures, including microservices, serverless computing, container and hybrid environments, as well increasing its cloud-native integrations. At the same time, AppDynamics has enhanced its Business iQ solution, which tracks the performance of business processes spanning multiple transactions and applications, and relates IT monitoring metrics to business process flows.

Cisco (outside of AppDynamics) is now selling AppDynamics Visibility Pack, which could generate customer interest for AppDynamics, particularly in midsize organizations. AppDynamics' roadmap includes enhancing its solutions with additional cloud coverage, improved business performance monitoring, an intelligent, persona-based UI experience, more support for commercial off-the-shelf (COTS) applications and greater alignment, both across products and sales within Cisco.

AppDynamics historically has sold to midsize to large enterprises, both direct and, recently, through Cisco account managers and partners. AppDynamics' revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $250 million and $550 million.

Strengths

- AppDynamics Business iQ continues to expand the value it provides to the line of business by tracking business processes and metrics, thus highlighting the business value of IT.
- AppDynamics has shown early progress in leveraging Cisco's extensive partner network to push sales of the AppDynamics Visibility Pack.
- Monitoring support for SAP S/4HANA via AppDynamics' C++ API adds technology coverage for customers with COTS applications.

Cautions

- Although AppDynamics continues to strengthen its machine learning capabilities, it has fewer capabilities and automation than some of its competitors today.
- AppDynamics' multiagent architecture needs simplification to improve ease of deployment.
- AppDynamics remains a relatively small part of a very large company that is focused primarily on networking, which may add risk to APM-specific customers.

Dynatrace

Headquartered in Waltham, Massachusetts, Dynatrace is a privately held company owned by private equity firm Thoma Bravo. Dynatrace's APM offering is available as on-premises, managed service and SaaS, all under the same common architecture.

The Dynatrace solution includes APM, DEM, infrastructure, network monitoring and AIOps capabilities that are embedded across the platform. Unlike some competitors' offerings, Dynatrace's analytics are not sold as a separate module. Dynatrace's analytics leverage real-time topology and AI algorithms to automatically detect anomalies, business impact and root cause across users, applications, and infrastructure. The analytics are built into the platform regardless of the feature being used and can ingest external data sources via APIs. The vendor offers a comprehensive monitoring suite, covering on-premises and cloud infrastructure, as well as hosted, packaged and mainframe applications and SaaS applications. Qumram, a company acquired in November 2017, adds session replay to its DEM capabilities. Dynatrace continues to expand its support for cloud infrastructure and applications. Additionally, it offers its products in a variety of deployment options and provides support and managed services through the Dynatrace ONE program.

Dynatrace continues to integrate research, product development and service delivery through the colocation of such activities across three key locations around the world. The vendor's roadmap includes expanded support for multicloud and hybrid architectures, further use of purpose-built AI to enable faster root cause analysis and the move toward automation and remediation, and the use of session replay as part of customer and business journey analysis.

Dynatrace has a global footprint with a primary go-to-market consisting of direct sales to midsize and large organizations, and uses channel and strategic technology partners to deliver products and services. Dynatrace's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $250 million and $550 million.

Strengths

- Dynatrace offers a comprehensive and integrated monitoring platform covering infrastructure, network, application and end-user experience, underpinned by its OneAgent architecture.
- The vendor offers strong support for a wide set of environments, from mainframe to COTS, as well as SaaS, serving customers with a mix of modern and legacy technologies.
- Dynatrace ONE provides customers with premium managed services with a variety of options, from in-product chat and remote coaching with product specialists to on-site professional services.

Cautions

- Dynatrace tends to be a premium solution in the market, often on the top end of the price range among the competitors analyzed in this research.

- The vendor continues its journey to convert existing customers to the new Dynatrace platform, but some customers report inconsistencies in licensing options that complicate purchasing.
- Although Dynatrace continues to strengthen its customer journey analytics, its business analysis capabilities have fewer features and automation than some of its competitors.

IBM

IBM, a public company since 1911, is headquartered in Armonk, New York. IBM has been a participant in the APM market since 2003, and currently offers both on-premises and SaaS-based APM solutions, each with different architectures, features and packaging.

Since 2018, the IBM SaaS-based multitenant APM solution has been packaged as part of IBM Cloud App Management Base and Advanced. This solution, built using technologies including Kafka and Kubernetes, includes a single web-based UI with configurable dashboarding, monitoring of AWS and Azure using cloud-native APIs, RUM, synthetic transaction monitoring, log analytics via IBM Operations Analytics included with APM, integration into IBM infrastructure monitoring, middleware monitoring, capabilities for multivariate anomaly detection, and business insight via integration into IBM Business Monitor. The on-premises solution, IBM Cloud App Management, runs on IBM Cloud Private, and adds facilities for event and incident management and run book automation.

IBM extended its cloud-native integration monitoring in 2018 and plans to expand its APM root cause analysis capabilities in 2019. It plans to build out APM capabilities, including support for its Sterling product line and IBM InfoSphere DataStage, and to enhance the breadth of its root cause analytics. IBM's roadmap also includes investment in open-tracing standards to allow consumption of trace data from modern applications.

The vendor has a worldwide network of business partners. Historically, IBM has sold directly to midsize and large enterprises, and online via its IBM Cloud Marketplace, but has a worldwide network of business partners today. IBM's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $125 million and $250 million.

Strengths

- IBM's large network of resellers and services can sell and support large deployments worldwide.
- IBM provides a clean and intuitive UI for its APM solution, with custom views and a plug-in to Grafana, an open-source platform for analytics, monitoring and modern visualization.
- IBM's investment in Watson provides promising AI-based analytics technologies to leverage within its APM solution.

Cautions

- The APM solution's current packaging and feature set differ between the on-premises and SaaS offerings, as the SaaS capabilities are a subset of the on-premises capabilities.
- APM support for native mobile apps is not available.
- IBM is challenged in balancing support for its installed base at the expense of adding new capabilities.

ManageEngine

ManageEngine is the IT management division of Zoho, which is based in Chennai, India, and has been providing APM solutions since 2003. The company's APM solution includes Applications Manager and Site24x7 as its flagship products. Applications Manager is the vendor's on-premises-only offering and part of the larger ManageEngine portfolio of IT operations management (ITOM) products. Site24x7 is its SaaS option and is offered through a separately branded site.

Applications Manager is part of a broad set of ITOM solutions, including network performance monitoring and diagnostics (NPMD), IT infrastructure monitoring (ITIM) and security products, all a loosely integrated part of the ManageEngine suite. Applications Manager, the on-premises version, mostly does remote agentless monitoring, although agents are available. Site24x7, the SaaS version, additionally provides support for RUM through JavaScript Integration System, which can be used by Applications Manager if both products are installed. A single agent, installed on the monitored node, is used to collect and aggregate BCI data, which is sent to the Site24x7 or Applications Manager servers for analytics.

These products have been enhanced with support for additional data sources, including cloud-based sources from Azure and AWS, along with support for Apache, SAP and Db2. ManageEngine's roadmap includes support for HCI (Nutanix), Oracle Cloud and Google Cloud Platform. The vendor also plans to add anomaly detection capabilities for the RUM feature.

ManageEngine has a very strong focus on small and midsize organizations, with offerings spanning not only many IT operations segments, but also business applications. ManageEngine's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $20 million and $75 million.

Strengths

- ManageEngine facilitates product acquisition for small and midsize organizations with an easy-to-use SaaS product and well-regarded technical support.
- ManageEngine's suite includes ancillary tools beyond APM, providing a useful set of complementary capabilities that include network and infrastructure monitoring solutions.
- The vendor's APM product enhancements have focused on support for monitoring cloud services, including features to support cost analytics for cloud-hosted workloads.

Cautions

- Support is lacking for modern application frameworks, including container and microservices-based architectures.
- There is little synergy between on-premises Applications Manager and SaaS-based Site24x7, with significant differences in features and functionalities.
- ManageEngine has limited integration within DevOps toolchain ecosystems, making it difficult to use its APM solution to enable continuous integration/continuous delivery (CI/CD) or application release orchestration (ARO) initiatives.

Micro Focus

Micro Focus is a publicly traded company based in Newbury, U.K. On 1 September 2017, Micro Focus announced the completion of its acquisition, via a spin/merger deal, of the software division of Hewlett Packard Enterprise (HPE). The acquisition of HPE software assets gave Micro Focus an entry into the APM market with products that date back to the early 2000s, when they were offered by Mercury Interactive. The vendor provides mostly on-premises APM products, with some components that are delivered via SaaS.

The Micro Focus offering comprises various components and includes BPM, RUM, Diagnostics and SiteScope, which are at various levels of product maturity and have different deployment requirements. Customers benefit from the vendor's (and previously HPE's) broad geographic presence and service and support. However, the APM product's competitiveness has fallen behind the market in recent years. Micro Focus offers a broad set of monitoring tools beyond APM as part of its ITOM portfolio, and includes support for legacy as well as modern environments that customers often have in their hybrid IT architectures.

Since the HPE transaction completed, Micro Focus has embarked on a modernization of its APM product offering, expanding support for modern languages and simplifying integration among the various components and products. Additionally, the vendor's roadmap includes plans to continue targeting its customer installed base with education campaigns to highlight product and services evolution, primarily through the OpsBridge suite.

Micro Focus' wide geographic reach includes direct as well as partner-based sales and support. Its APM product offering is best-suited for midsize to large organizations that manage large and complex application environments. Micro Focus' revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $75 million and $125 million.

Strengths

- Micro Focus offers midsize and enterprise organizations its APM solution as part of a broader portfolio of ITOM tools.
- Buyers benefit from the vendor's extensive network of direct and local partners that provide service and support across many geographies.

- Micro Focus offers strong support for on-premises applications with integrations to other third-party ITOM tools.

Cautions

- Micro Focus has a complex mix of products for its APM solution, requiring users to switch between products and inconsistent UIs.
- The vendor has machine learning technology capabilities, but they are limited to on-premises only, lack automation and provide weak visualizations, compared with competitive analytics offerings.
- Micro Focus' strategy of acquisition of infrastructure software and maximization of mature offerings sacrifices innovation as it attempts to integrate the broad set of offerings in its portfolio.

Microsoft

Headquartered in Redmond, Washington, Microsoft, a public company has been a provider of APM solutions since 2012. Microsoft offers a SaaS-based APM solution, although it can provide some capabilities for application monitoring through its older System Center Operations Manager on-premises product.

In 2018, Microsoft Application Insights was integrated with Azure Log Analytics to form the new Azure Monitor. Azure Monitor, the Microsoft SaaS-based multitenant APM solution, is deeply integrated with Microsoft Azure. In the current release, the new Azure Monitor provides umbrella support for the monitoring of applications, infrastructure and platform. It provides monitoring and analytics for .NET and Java applications, as well as those written in Python, Go and Node.js. It also provides log analytics, DEM and cloud-native monitoring for Azure, with support for containers and Kubernetes.

Microsoft has extended Azure Monitor to include support for W3C Distributed Tracing and OpenCensus, a new smart alert framework with deeper support for anomaly detection, storage monitoring and enhanced diagnostics across VMs, containers and microservices. The roadmap also includes additional algorithms to reduce event noise, forecast performance and detect outliers, as well as support for multiple geographic regions.

For large enterprises, Microsoft sells direct via the Microsoft worldwide commercial sales organization. For small and midsize businesses, Microsoft sells via its Azure cloud platform, and its partner ecosystem of global system integrators, independent software vendors and managed service providers. Microsoft's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $75 million and $125 million.

Strengths

- Strong integration into Microsoft's development tools makes Azure Monitor an attractive solution for enterprises aligned with those tools.

- Microsoft provides solid analytics that scale to analyze large volumes of events, logs, metrics, transactions and security.
- The new pay-as-you-go consumption-based pricing model is a competitive differentiator distinguishing Microsoft from many vendors.

Cautions

- Azure Monitor is a SaaS offering optimized for Microsoft environments that cannot natively be deployed on-premises in a customer's data center. While Microsoft System Center Operations Manager can be deployed locally, all data is still sent to the cloud.
- Infrequent capture of full-method traces may be limiting when requiring diagnostics for troubleshooting ephemeral applications using containers and microservices.
- Enterprises pursuing a multi or hybrid cloud-native strategy will find Azure Monitor limited in its native integration to AWS or Google Cloud Platform.

New Relic

New Relic, headquartered in San Francisco, has offered its SaaS-only APM solution since 2008. The solution is anchored by its New Relic APM product and is joined by complementary solutions: New Relic Infrastructure, New Relic Synthetics, New Relic Browser, New Relic Mobile and New Relic Insights for analytics.

New Relic recently released support for distributed tracing; deeper integration into Google Cloud Platform, Azure and AWS environments; StatsD integration; and investment in Radar, part of its Applied Intelligence initiative. New Relic acquired Belgium-based CoScale in October 2018 to enhance its own Kubernetes containers and microservices monitoring. New Relic also extended its capabilities to include business-oriented analytics and infrastructure monitoring over the past year. Finally, the vendor expanded its geographic presence with the launch of a European data center.

In February 2019, New Relic acquired SignifAI, a vendor in the event analytics market that applies machine learning to incident management. This acquisition was not part of the vendor evaluation, as it fell outside of the research period.

New Relic's roadmap focuses on improved visibility with a better understanding of cloud dependencies, support for OpenTracing and expanding into service mesh solutions, including Istio. New Relic also plans to improve its root cause analysis capabilities, with more predictive anomaly detection for faster incident response, topology-enhanced operational event correlation, and automatic deployment tracking and regression analysis.

New Relic initially appealed primarily to small and midsize businesses and development teams. These are still important to New Relic, but more than half of its new business is now from large enterprises as security and performance concerns about SaaS become less pressing. New

Relic's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $250 million and $550 million.

Strengths

- Well-curated UIs and workflows contribute to end users continuing to identify the technology as among the quickest to deploy and deliver value.
- New Relic's acquisition of CoScale in 2018 strengthened its ability to monitor modern software architectures that utilize Kubernetes.
- New Relic is making strong investments in R&D, with support for additional cloud-native resources in AWS, Azure and Google.

Cautions

- Although the vendor's European data center has been deployed, New Relic continues to trail competitors in its ability to offer regional services outside of North America.
- New Relic's ability to collect detailed call stack traces relies on sampling and lags behind other leading APM vendors with more granular tracing.
- New Relic does not provide an on-premises offering, whereas competitors provide both on-premises and SaaS offerings.

Oracle

Oracle, a public company headquartered in Redwood City, California, has offered APM capabilities since 2008 with the addition of functionality as part of Oracle Enterprise Manager (OEM). In 2015, the vendor introduced Oracle Management Cloud (OMC), which is evaluated in this research. OMC is offered only as a SaaS product, although customers can choose OEM for on-premises deployment.

OMC is a multitenant SaaS platform with broad capabilities spanning application, infrastructure and end-user experience monitoring. In addition, it collects logs and metrics from external data sources. While the product can be deployed to monitor all main programming languages and heterogeneous environments, OMC is optimized for Oracle workloads and environments, and is often sold by the vendor as part of bundled solutions. Oracle offers OMC in various configurations, depending on the needs of the customer. Standard Edition is for APM and infrastructure monitoring; Enterprise Edition adds analytics and orchestration. There are also options for log analytics, as well as security, configuration and compliance via respective editions of the product. The platform approach allows Oracle to offer many standard features in single products, with a strong emphasis on analytics.

Oracle's roadmap includes continuing to extend support for modern languages through OpenTracing, in addition to support for Java, .NET, Ruby, PHP and Node.js. Analytics capabilities

are also being expanded and, to that end, Oracle is adding support for metrics and logs, including the use of open-source monitoring systems as data sources for the OMC platform.

OMC is targeted primarily at midsize to large organizations that are heavily aligned to Oracle products and services. Customers and prospects can purchase OMC as part of their existing Oracle Cloud subscription through universal credits. Oracle's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $20 million and $75 million.

Strengths

- Customers with a significant investment in Oracle applications can extend monitoring capabilities through OMC as part of their existing licensing.
- OMC offers a well-integrated platform delivered via SaaS that includes support for many programing languages, in addition to infrastructure, metrics and log analytics.
- Customers will find support across many geographies, thanks to Oracle's extensive reach, either direct or through partners and resellers.

Cautions

- Although support for hybrid environments exists, the vendor's focus on monitoring Oracle environments may challenge end users that are not heavily invested in the Oracle stack.
- OMC is offered as SaaS, which requires customers that need to run their monitoring solution on-premises to deploy OEM.
- While universal credits provide customers with the flexibility of product utilization, the pricing model is on the higher end of the range relative to other competitors evaluated.

Riverbed

Headquartered in San Francisco, Riverbed has offered APM products since 2007. Its current portfolio consists of SteelCentral AppInternals, AppResponse, SteelCentral Portal, SteelCentral Aternity and NetIM. Riverbed offers the AppInternals and Aternity products as part of its overall APM product set, which customers can deploy either on-premises or as SaaS.

AppInternals is Riverbed's core APM product, offering agent-based, bytecode instrumentation. It is coupled with AppResponse, providing network packet-based application visibility; NetIM providing infrastructure monitoring; and Aternity providing DEM from the vantage point of the end-user device. Portal acts as a central dashboarding layer for the aforementioned solutions. Recent enhancements are focused on cloud-native monitoring, with Docker, Kubernetes and Pivotal Cloud Foundry support, and improvements in scalability. Riverbed also has enhanced its support of Office 365 and Skype for Business Online environments with its Aternity endpoint agent.

Riverbed's roadmap includes work to unify its DEM and traditional APM capabilities, with improved workflows between Aternity and AppInternals. Work continues to unify the solution's different agents to provide a single deployment across DEM, bytecode, containers, microservices and VDI. The vendor's roadmap also includes adding support for PHP, Python and Go using a distributed tracing approach based on OpenTracing.

Riverbed's APM solution is well-suited for midsize to large enterprises. Riverbed's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $125 million and $250 million.

Strengths

- Riverbed provides a consistent user experience across its on-premises and SaaS offerings.
- The vendor provides a combined and well-integrated solution that includes APM, with closely coupled DEM and NPMD functionality.
- Riverbed AppInternals' ability to collect very large amounts of fine-grained data supports the needs of monitoring complex application environments.

Cautions

- Riverbed's capabilities in tracking business journeys and synthetic transaction monitoring are lacking when compared with similar APM vendors.
- Riverbed's APM solution has limited integration within DevOps toolchain ecosystems, which may limit its usefulness for DevOps buyers.
- The vendor's SaaS-based APM solution does not support a direct-to-buyer e-commerce option, making the purchasing process more complex for potential buyers.

SolarWinds

SolarWinds, headquartered in Austin, Texas, is a provider of ITOM tools that span IT infrastructure, network and application monitoring. SolarWinds began offering an APM solution after the acquisition of APM assets from AppNeta in 2016. The vendor offers both an on-premises solution called Server & Application Monitor (SAM) and a SaaS product called AppOptics.

The SAM product, part of the SolarWinds Orion Platform, is sold alongside the Web Performance Monitor and the recently added SolarWinds Application Performance Monitor, meant for traditional IT environments. SAM employs either host agents or SNMP polling to collect and analyze OS-level metrics. SAM does not natively support deep code-level instrumentation, but does support distributed tracing when coupled with the SolarWinds APM product. Additional enhancements to the SAM product include support of application dependency mapping to understand application- and network-level connectivity. AppOptics, a combination of the former TraceView and Librato products, is meant for cloud-native

environments and supports code-level instrumentation and infrastructure monitoring. AppOptics is often sold alongside Pingdom, which is used for synthetic transaction monitoring and RUM. Recent enhancements for AppOptics include support for container monitoring, with Docker, Kubernetes and Mesos features added.

The roadmap for both of these APM products includes a focus on analytics and decreasing the complexity often associated with APM solutions by leveraging machine learning for time-series prediction and incident classification. In addition, SolarWinds is looking to further tighten integration between its two APM products, bringing tracing, metric, log and end-user data into streamlined workflows.

SolarWinds' AppOptics solution is well-suited for small and midsize organizations, while SAM has broader support for large and SMB organizations. Offerings span many IT operations segments and business applications, and are sold via a self-service sales model. SolarWinds' revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $20 million and $75 million.

Strengths

- SolarWinds' business model of inside sales only is well-suited to customers seeking an easy consumption model, and is particularly attractive to midsize enterprises.
- The vendor has a broad set of product offerings covering many segments of ITOM, including infrastructure, network and application monitoring across on-premises and cloud environments.
- SolarWinds' APM solutions are simple and intuitive, and deployments are often streamlined, with limited need for professional services.

Cautions

- There is little synergy between SolarWinds' various products, with significant differences in features and UIs between its two APM suites: on-premises SAM and SaaS-based AppOptics.
- Even with a long history in the network monitoring space, SolarWinds lacks brand awareness for its APM solution and has made limited inroads into the DevOps community.
- SolarWinds AppOptics' granularity and scalability to handle large and complex application environments lag behind competitive offerings.

Tingyun

Tingyun, headquartered in Beijing, provides APM and DEM tools with an expanding set of offerings. The vendor entered the ITOM market in 2007 with a network monitoring solution. The majority of its revenue is in the Asia/Pacific and Japan regions, but it has a small and growing customer base in North America and EMEA. Tingyun has both an on-premises and a SaaS version of its APM solution, with differing feature sets and architectures.

Tingyun's SaaS APM offering comprises Tingyun Server, Tingyun Network, Tingyun Browser, Tingyun Business Performance Intelligence (BPI) and Tingyun App. The solution provides monitoring for end users using RUM and synthetic transactions, business performance, infrastructure, cloud, mobile, and containers, and language support for Java, .NET, Ruby, PHP, Python and Node.js. In its latest release, Tingyun provides enhancements for topology across transactions, business systems and applications; a new agent architecture; and added support for Docker, microservices and dynamic baselines. Tingyun has also launched a new pricing model based on transaction volume.

Tingyun's roadmap includes adding a new log analytics product, SDK support for C/C++, expanded root cause analysis using topological dependencies, enhancements in machine learning analytics, improvements in the collection of container metrics, and support for OpenTracing and service mesh.

Tingyun sells directly and via channel partners in the Asia/Pacific region. Sales in North America, while limited, have been conducted via channel partners. Tingyun's revenue derived from sales of APM suites (excluding professional services) in 2018 is estimated at between $20 million and $75 million.

Strengths

- Tingyun offers good support for mobile app monitoring, crash analytics and diagnostics.
- The vendor has a strong presence in the Chinese market, especially working with government enterprises.
- Tingyun has a new value-based, pay-as-you-go pricing model based on business transaction volume.

Cautions

- Automation is limited, requiring a substantial amount of manual interactions and tuning when setting up thresholds and using machine learning.
- Integration with the DevOps CI/CD (or ARO) pipeline is incomplete, requiring considerable user knowledge to determine the impact of a deployment on production.
- Expanding its footprint outside of China has been challenging for Tingyun, without local support and with user data storage limited to China.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

- Micro Focus was added as a new vendor due to its acquisition of the software division of HPE in 2017.

Dropped

- BMC is no longer marketing an APM solution.
- Correlsense did not meet the 2019 criteria for inclusion in the Magic Quadrant.
- Nastel Technologies did not meet the 2019 criteria for inclusion in the Magic Quadrant.

Inclusion and Exclusion Criteria

The provider must offer an APM on-premises (software) product and/or a SaaS-based service suite that includes all of the following APM functions and characteristics:

- DEM
  - RUM of webpages via automatic JavaScript injection performed by server-based agents
  - Synthetic transactions that replay recorded or scripted user interactions on a schedule from one or more geographic locations
- Application discovery, tracing and diagnostics (ADTD)
  - Automated discovery of web servers, Java and .NET application servers, as well as other application frameworks (such as middleware) and their relationships, through the observation of an application's HTTP/S transaction behavior
  - Automated tracing of unique, individual synchronous and/or asynchronous HTTP/HTTPS transaction execution paths from a web and/or application server entry point to a back-end data source exit point
  - Automated collection of data for Java JVMs and .NET CLRs and a minimum of one of the following other modern application frameworks (PHP, Ruby, Node.js, AngularJS, Python or Go) to aid in the detection of issues such as memory leaks, hot spots and thread locks
- AIOps
  - Automated detection of performance and event patterns or clusters, the detection of anomalies in time-series event data, and the determination of the root cause of application performance problems for HTTP/HTTPS transactions through machine learning, statistical inference or other methods.

For more detailed definitions of the markets above, see “Market Definitions and Methodology: Software.”

Business Requirements

Business requirements were updated to reflect the maturity of the APM market and the ability of vendors to meet the needs of large global enterprises. They are:

- The APM solution vendor must have achieved at least $50 million in annual GAAP product revenue derived solely from its software-based APM products in its trailing 12-month (starting from 3 October 2018) calendar GAAP revenue, or have generated a minimum of $5 million in annual revenue derived solely from its software-based APM products, combined with a growth rate of at least 30% trailing 12-month (starting from 3 October 2018) calendar GAAP revenue, compared to its previously completed 12-month period.
- The vendor must have at least 50 paying production customers in each of two or more major world geographic regions (Asia/Pacific, EMEA, Latin America, North America).

Honorable Mentions

This list is representative of vendors that address some APM use cases, but do not meet all of the functional and/or business requirements to be included in this research:

- Correlsense
- Datadog
- Elastic
- Honeycomb
- Instana
- JenniferSoft
- LightStep
- Nastel Technologies
- SignalFx
- Splunk
- Sysdig

Evaluation Criteria

Ability to Execute

Gartner analysts evaluate vendors on the quality and efficacy of the processes, systems, methods and/or procedures that enable IT provider performance to be competitive, efficient and effective, and to positively impact revenue, retention and reputation. Ultimately, vendors are judged on their ability and success in capitalizing on their vision. The criteria are:

- **Product or Service:** Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets and skills, whether offered natively or through OEM agreements/partnerships as defined in the Market Definition/Description section and detailed in the subcriteria.
- **Overall Viability:** This includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue to invest in the product, offer the product and advance the state of the art within the organization's portfolio of products.
- **Sales Execution/Pricing:** The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.
- **Market Responsiveness/Record:** Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.
- **Marketing Execution:** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message in order to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This mind share can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.
- **Customer Experience:** Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Table 1: Ability to Execute Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Product or Service	High
Overall Viability	Low
Sales Execution/Pricing	Medium

Evaluation Criteria ↓	Weighting ↓
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	High
Operations	Not Rated

Source: Gartner (March 2019)

Completeness of Vision

Gartner analysts evaluate vendors on their ability to convincingly articulate logical statements about current and future market direction, innovation, customer needs, and competitive forces, and how well they map to the Gartner position. Ultimately, vendors are rated on their understanding of how market forces can be exploited to create opportunity for themselves. The criteria are:

- **Market Understanding:** Ability of the vendor to understand buyers' wants and needs, and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance them with their added vision.
- **Marketing Strategy:** A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.
- **Sales Strategy:** The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.
- **Offering (Product) Strategy:** The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.
- **Business Model:** The soundness and logic of the vendor's underlying business proposition.
- **Vertical/Industry Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.
- **Innovation:** Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.
- **Geographic Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or

through partners, channels and subsidiaries, as appropriate for that geography and market.

Table 2: Completeness of Vision Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	High
Business Model	High
Vertical/Industry Strategy	Not Rated
Innovation	High
Geographic Strategy	Medium

Source: Gartner (March 2019)

Quadrant Descriptions

Leaders

The APM suite Leaders quadrant is composed of vendors that provide products that are a strong functional match to general market requirements, have been among the most successful in building a loyal customer base and have a relatively high viability rating due to strong revenue growth and/or high market share. They have comprehensive portfolios that offer superior application visibility and typically do not come with major integration challenges. Leaders also show evidence of superior vision and execution for emerging and anticipated market requirements, as well as a consistent track record of innovation.

Challengers

The APM suite Challengers quadrant is composed of vendors with high market reach and large deployments. Vendors in this quadrant typically have strong execution capabilities, as evidenced by financial resources, and a significant sales and brand presence garnered from the company as a whole, if not directly from its APM-related activities. Many have previously been among the top performers in the market and thus offer broad product portfolios. However, they are all currently engaged in efforts to more fully modernize and integrate their architectures and feature sets to better compete against those in the Leaders quadrant. It is also important to note that all of this year's Challengers support broad product and service portfolios that cover

multiple IT market segments. In addition, their APM offerings are often positioned as elements of a larger solution that may even extend beyond the boundaries of ITOM.

Visionaries

The APM suite Visionaries quadrant is typically composed of vendors that provide products that have built a compelling plan to competitively address current and future APM suite market requirements, but whose current product portfolio may still be a work in progress. They have a lower Ability to Execute rating than the Leaders, which is typically due to a lower viability rating as measured by installed base or financial strength.

Niche Players

The Niche Players quadrant is composed primarily, but not exclusively, of vendors with solutions catering to specific audiences or with limited use-case support today. Because they do not demonstrate equal depth across all three dimensions, they typically do not meet the APM suite needs of larger enterprises, or do so only within specific verticals or market segments. In addition, vendors in this quadrant may have a much more limited ability to invest in the necessary functional as well as sales and marketing capabilities to expand beyond their current focus. Inclusion in this quadrant does not reflect negatively on the vendor's value in the markets in which they choose to compete.

Context

In the course of this research, several key observations emerged from providers' responses, as well as from reference customer feedback, that should be carefully considered during an organization's APM strategy formulation and solution selection. These include:

Monitoring

- APM vendors have expanded the scope of their monitoring domain with integrated monitoring and analysis of infrastructure, including network, servers, databases and logs, cloud-native facilities, security monitoring, the relation of performance metrics with business KPIs, and the tracking of business process flows. This is indicative of the recurring industrywide pattern in which vendors periodically cycle between best-of-breed and suite (or framework) offerings. The current trend among APM vendors has been to broaden the current suite and deliver a growing all-in-one offering. The advantage for buyers is the ability to acquire add-ons as their needs expand. Organizations will have to decide whether a complete all-in-one approach is best with its advantages in purchasing, support and integration, or whether a best-of-breed strategy for areas such as ITIM and business analytics is most appropriate for them.

- We have observed increasing adoption of new approaches to monitoring microservices, including nascent distributed tracing specifications such as OpenTracing, OpenCensus and Jaeger, and the sharing of trace context via the W3C Distributed Tracing Working Group's trace context, as well as use of service mesh and API gateways.

DevOps

- DevOps continuous delivery poses additional demands on IT organizations charged with application support. DevOps drives the need for increased granularity of information to detect subtle performance changes, and IT operations needs to know the impact a deployment has on application performance. Bidirectional integration between APM and the CI/CD (or ARO) toolchain is also highly important.

Analytics

- As APM vendors build out their capabilities in using machine learning, some are starting to desire an expanded, bifurcated positioning as both an APM and an AIOps solution provider. It remains to be seen whether this will be successful or whether AIOps will continue with its current market definition as unaligned to any specific problem space.

Pricing

- Pricing continues to be a nontrivial roadblock to broader adoption across all critical applications in an enterprise, causing several vendors to start providing alternative consumption-based pricing models (pay as you go).
- Infrastructure and operations (I&O) leaders struggle with APM's cost and complexity, and remain at a loss when asked to provide a business justification for their monitoring efforts (see "Survey Analysis: The Role of Metrics in Demonstrating the Business Value of IT").

Deployment Models

- Gartner's review of customer APM proposals over the past 12 months shows that SaaS continues to be the more common deployment model for new APM purchases, although on-premises deployments remain of interest for some organizations.

Competition

- New competitors continue to declare themselves as providers of APM. Some of these vendors are specialists in a niche, such as those focusing exclusively on microservices, while others grow from infrastructure monitoring into monitoring applications. This is a sign of a healthy market, but also a warning to incumbent APM vendors to avoid complacency as we expect these newer vendors and others to increase their APM capabilities.

As always, IT organizations should not use the Leaders quadrant as a shortlist of appropriate vendors, but instead should build a list of criteria describing their current and future needs, and then select from vendors that best meet those requirements. Enterprises should select a vendor that has both a history of delivering products and support and a strong roadmap focusing on the APM market. Careful consideration should be given to required skills, training, process and

deployment investments because these factors can have a much greater impact on the overall value realized from an APM suite investment than any specific functional capability found in a given tool.

Market Overview

The APM market is one of the largest subsegments of the ITOM market, with a 2019 preliminary forecast revenue of approximately $4.1 billion and a growth rate exceeding 10% CAGR through 2022. Given this growth, it is no surprise that Gartner observes that both new and established vendors are investing in the APM market. While Gartner has observed many new startups appearing on the radar screen, we've also seen large software organizations such as IBM, Oracle and Microsoft continuing to scale up their investments. Other non-APM companies are also expressing interest in the market, such as ITIM and log analytics providers and those focused on the growing support for microservices. Vendors focused on cloud observability are likely to enter the APM market as multicloud platforms for applications become more common in later 2019 and beyond. Mergers and acquisitions continue in the ITOM market, the most notable one being the acquisition of CA Technologies by Broadcom. Other transactions included New Relic's purchase of CoScale technology and staff.

Using machine learning, a key technology of AIOps for applications functionality, is considered an essential component of a Magic Quadrant-qualifying APM suite. However, APM vendors are starting to express interest in their solutions being considered as an AIOps tool. IT operations and other organizations are already awash with data, and this situation likely will become more challenging with the growth of cloud, microservices and the Internet of Things. Hence, Gartner sees companies such as Splunk and Sumo Logic, and open-source Elastic Stack (now a public company), as leveraging their current repository capabilities to act as a data lake for APM data. However, many APM vendors are now using NoSQL databases together with messaging buses, such as Kafka, acting as a buffer to scale. This may obviate the need for third-party data repositories.

Monitoring SaaS applications is presenting itself as one of the most sought-after capabilities from APM providers. Often, I&O leaders are "outside the loop" when a decision has been made to subscribe to a SaaS solution such as Salesforce, Office 365 and others. They are caught unaware when they are suddenly responsible for monitoring it. There has been some innovation in this area beyond synthetic transaction monitoring and RUM, including outside-in network analysis and modeling, image recognition, and direct integration into the OS when possible (for example, remote execution of Microsoft DLLs as part of a synthetic transaction monitoring script).

There is scant mention from most APM solution providers (other than via manual efforts) to determine configuration change or drift as a potential root cause of a problem. While many have integrated with the CI/CD (or ARO) pipeline and can correlate new release deployment with a performance issue, not much has been done with configuration changes coming from ITSM tooling. While APIs exist for integration between APM solutions and ITSM tools, leveraging these for this purpose today is largely a development effort. Gartner expects this to change over

time as greater degrees of integration with the service desk and the CMDB are developed and APM solution providers deliver this as an automated workflow. The same is true for greater incorporation of security events into root cause analysis. Security issues such as a denial of service will have a broad impact on application performance. Situations like this and other less obvious intrusions should be considered as possible causes of application performance problems.

Most APM vendors still provide their users with a complex multiagent deployment model, although there are vendors that simplify unified or single-agent technology. Vendors must simplify the installation of agents, both on hosts and in ephemeral infrastructure such as containers, to improve ease of deployment.

Growing support exists for new instrumentation frameworks for distributed tracing, as well as for efforts to share trace context, independent of monitoring tools. These are promising sets of libraries to automatically capture distributed traces and metrics, stitch the distributed traces together, and share context among various tracing tools. These are developer-intensive today but, with automation, they may replace the standard model of application monitoring, the agent. This could be a disruptive force for vendors that are slow to adopt these new technologies and impact the rate of adoption of microservices architectures and the speed of the shift-left of IT operations to development.

DEM is an important functional dimension of APM, and one that continues to evolve. DEM consists of RUM, synthetic transaction monitoring and end-user sentiment monitoring, as well as other functions. DEM solutions are certainly sought after by buyers, but the need for comprehensive monitoring of applications, from the perspective of the end user and all the way back to infrastructure, will continue to link such solutions together. APM vendors evaluated in this Magic Quadrant all have some degree of support for DEM, but we believe that DEM-specific companies will continue to proliferate and complement more classic APM providers.

Evidence

The Magic Quadrant is a reflection of a broad-based research effort involving:

- More than 615 inquiries (among three analysts) with Gartner clients inquiring about APM tools over the past 12 months, plus numerous one-on-one sessions that clients had with Gartner analysts at Gartner events.
- Many in-person and other interactions with the vendors evaluated in the Magic Quadrant.
- A review of Gartner Peer Insights data responses.
- As part of the Magic Quadrant process, Gartner conducted a survey of organizations using online tools from 16 November 2018 through 14 December 2018. The survey participants were customer references nominated by each of the vendors in the Magic Quadrant. These surveyed customers were asked 100 questions about their experiences with their vendors and solutions. The results were used in support of the assessment of the APM suite market.

We obtained 108 full responses representing companies headquartered across several different geographic regions.

- A product demonstration video from each of the participating Magic Quadrant vendors, where each was requested to provide insight into its ability to support critical capabilities (specifics are detailed in “Critical Capabilities for Application Performance Monitoring”).

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

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Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.