

# The Forrester Wave™: Infrastructure Automation Platforms, Q3 2019

The 11 Providers That Matter Most And How They Stack Up

by Chris Gardner

August 7, 2019

## Why Read This Report

In our 31-criterion evaluation of infrastructure automation platform providers, we identified the 11 most significant ones — BMC Software, Chef Software, HashiCorp, Micro Focus, Microsoft, Northern.tech, Puppet, Red Hat, SaltStack, Turbonomic, and VMware — and researched, analyzed, and scored them. This report shows how each provider measures up and helps I&O professionals select the right one for their needs.

## Key Takeaways

### **Red Hat, Microsoft, VMware, And BMC Software Lead The Pack**

Forrester's research uncovered a market in which Red Hat, Microsoft, VMware, and BMC Software are Leaders; SaltStack, HashiCorp, Puppet, Chef Software, Micro Focus, and Turbonomic are Strong Performers; and Northern.tech is a Contender.

### **Compliance, Scalability, And Comprehension Are Key Differentiators**

As “coopetition” becomes standard, the ability to enable compliance teams, scale to a multitude of devices, and understand infrastructure trends with AI and machine learning will dictate which providers lead the pack. Vendors that offer better compliance, scalability, and comprehension are positioned to deliver the holistic automation that customers demand.

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## The 11 Providers That Matter Most And How They Stack Up



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## Table Of Contents

- 2 Compliance, Scalability, And Comprehension Differentiate This Market
- 2 Evaluation Summary
- 5 Vendor Offerings
- 5 Vendor Profiles
  - Leaders
  - Strong Performers
  - Contenders
- 10 Evaluation Overview
  - Vendor Inclusion Criteria
- 11 Supplemental Material

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## Compliance, Scalability, And Comprehension Differentiate This Market

Unlike in many other Forrester Wave™ evaluations, the platforms in this Forrester Wave are intimately dependent on one another. Nearly every participant mentioned other participants as integration points, and coopetition is in full swing. That said, the trend isn't simply to connect to more platforms. Offerings must integrate in a way that enables compliance teams to make better decisions, scale to a startling array of devices, and intelligently adjust as their infrastructures evolve over time.

As a result of this, infrastructure automation platform customers should look for providers that:

- › **Offer rich compliance functionality that goes beyond the I&O user.** The Leaders in this Forrester Wave don't focus solely on I&O users — they provide dashboards for compliance professionals to log into the system, review the overall state of infrastructure, and request changes. They also provide one or more series of compliance checks out of the box, aligned with public frameworks such as CVE, and make changes testable before execution.<sup>1</sup>
- › **Scale beyond the cloud and data center.** Increasingly, automation goes far beyond traditional data center or cloud borders and extends all the way to the edge. As companies invest in intelligent capabilities at the edge, automation to ensure manageability and dependability of a multitude of devices becomes critical.<sup>2</sup> The Leaders in this evaluation can automate a wide variety of devices and scale beyond 250,000 of them to support this.
- › **Understand infrastructure trends and adjust automation to handle them.** While AI for IT operations (AIOps) is still relatively nascent, I&O is already feeling its impact on automation. Most early uses of machine learning focused on observation, but current use cases enable I&O professionals to diagnose and act on inefficiency in real time.<sup>3</sup> Our Forrester Wave Leaders can perform basic analyses of infrastructure trends and adjust automation to compensate.

## Evaluation Summary

The Forrester Wave evaluation highlights Leaders, Strong Performers, Contenders, and Challengers. It's an assessment of the top vendors in the market and doesn't represent the entire vendor landscape.

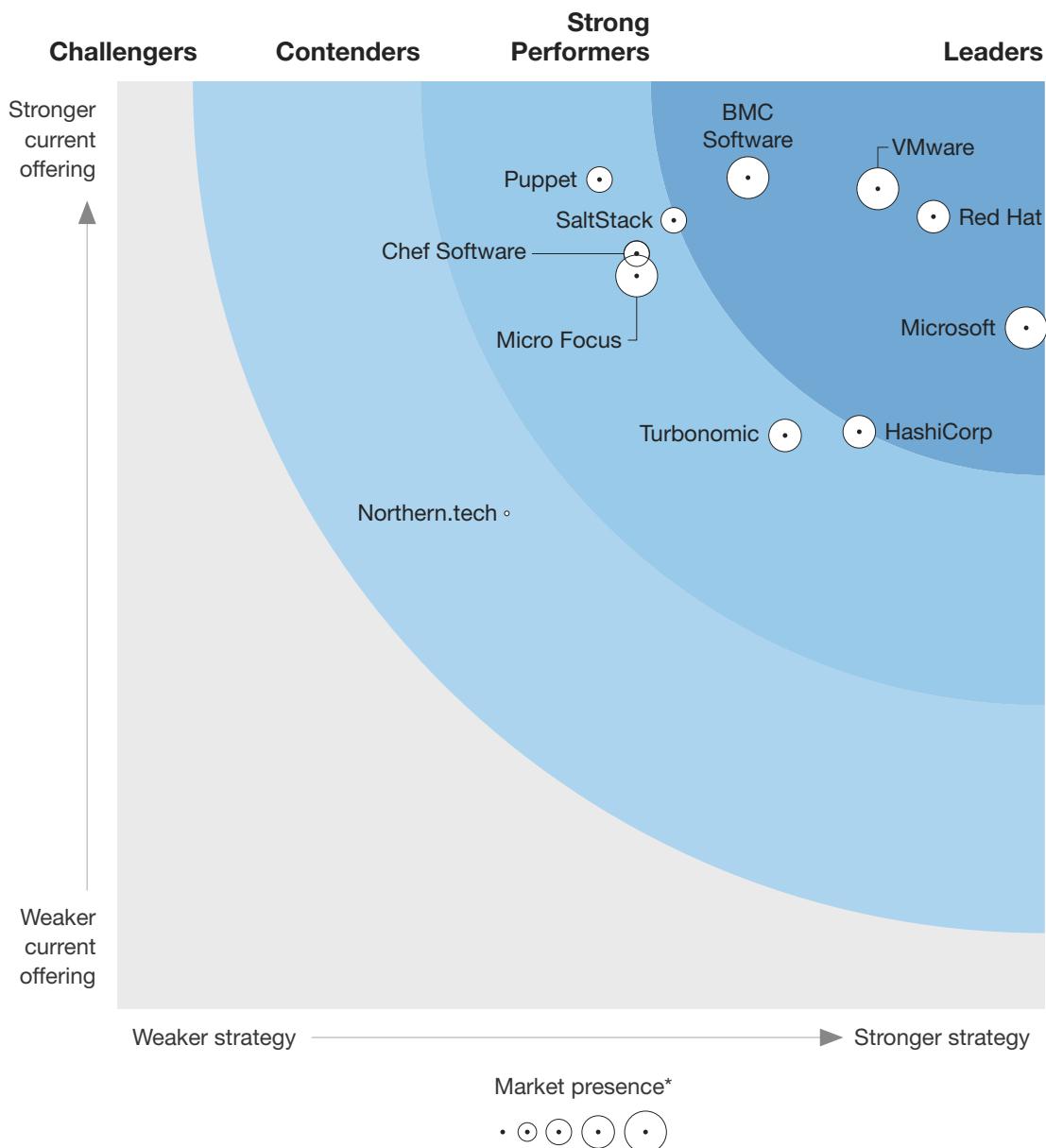
We intend this evaluation to be a starting point only and encourage clients to view product evaluations and adapt criteria weightings using the Excel-based vendor comparison tool (see Figure 1 and see Figure 2). Click the link at the beginning of this report on Forrester.com to download the tool.

FIGURE 1 Forrester Wave™: Infrastructure Automation Platforms, Q3 2019

## THE FORRESTER WAVE™

### Infrastructure Automation Platforms

Q3 2019



\*A gray bubble indicates a nonparticipating vendor.

**The Forrester Wave™: Infrastructure Automation Platforms, Q3 2019**

The 11 Providers That Matter Most And How They Stack Up

**FIGURE 2** Forrester Wave™: Infrastructure Automation Platforms Scorecard, Q3 2019

	Forrester's weighting	BMC Software	Chef Software	HashiCorp	Micro Focus	Microsoft	Northern.tech*	Puppet	Red Hat	SaltStack	Turbonomic	VMware
<b>Current offering</b>	50%	4.48	4.07	3.11	3.95	3.67	2.67	4.47	4.27	4.25	3.09	4.42
Deployment	10%	5.00	5.00	4.50	2.70	2.60	3.30	5.00	3.50	4.40	4.50	5.00
Infrastructure management	10%	4.00	3.60	3.50	4.50	4.10	2.60	4.00	3.40	4.60	3.90	3.40
Automation engine capabilities	25%	4.50	2.50	2.50	4.50	4.00	2.50	4.00	4.50	4.00	3.00	4.50
Integrations	10%	5.00	4.30	4.30	3.50	3.50	2.00	4.20	3.00	4.00	3.50	5.00
Governance and monitoring	25%	5.00	5.00	1.80	4.60	3.00	3.40	5.00	4.60	5.00	3.00	3.80
Community support	20%	3.50	4.50	4.00	3.00	4.50	2.00	4.50	5.00	3.50	2.00	5.00
<b>Strategy</b>	50%	3.40	2.80	4.00	2.80	4.90	2.10	2.60	4.40	3.00	3.60	4.10
Planned enhancements	25%	5.00	3.00	5.00	3.00	5.00	1.00	3.00	5.00	3.00	3.00	5.00
Road map perception	25%	3.00	1.00	5.00	1.00	5.00	3.00	1.00	3.00	3.00	3.00	3.00
Vision	15%	3.00	3.00	3.00	3.00	5.00	1.00	3.00	5.00	3.00	5.00	5.00
Market approach	10%	5.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	3.00	5.00	5.00
Consulting, training, and support	20%	1.00	3.00	3.00	3.00	5.00	3.00	3.00	5.00	3.00	3.00	3.00
Innovation in pricing	5%	5.00	5.00	3.00	5.00	3.00	1.00	5.00	3.00	3.00	5.00	5.00
<b>Market presence</b>		4.20	3.00	3.80	4.40	4.40	1.00	3.00	3.80	2.20	3.80	5.00
Customer-installed base	40%	3.00	3.00	5.00	5.00	5.00	1.00	3.00	5.00	1.00	5.00	5.00
Average deal size	30%	5.00	3.00	3.00	5.00	3.00	1.00	3.00	3.00	3.00	3.00	5.00
Product revenue	30%	5.00	3.00	3.00	3.00	5.00	1.00	3.00	3.00	3.00	3.00	5.00

All scores are based on a scale of 0 (weak) to 5 (strong).

\*Includes a nonparticipating vendor

## Vendor Offerings

Forrester included 11 vendors in this assessment: BMC Software, Chef Software, HashiCorp, Micro Focus, Microsoft, Northern.tech, Puppet, Red Hat, SaltStack, Turbonomic, and VMware (see Figure 3).

**FIGURE 3** Evaluated Vendors And Product Information

Vendor	Product evaluated
BMC Software	TrueSight Automation For Servers, TrueSight Automation for Networks, TrueSight Cloud Security, TrueSight Orchestration, BMC Discovery, BMC Cloud Lifecycle Management, and BMC Release Lifecycle Management
Chef Software	Chef Enterprise Automation Stack (Chef Infra, Chef InSpec, Chef Habitat, Chef Automate, and Chef Workstation)
HashiCorp	HashiCorp Terraform
Micro Focus	Data Center Automation and Hybrid Cloud Management
Microsoft	Azure Automation and Powershell DSC
Northern.tech	CFEngine
Puppet	Puppet Enterprise and Bolt
Red Hat	Red Hat Ansible Automation (Ansible Engine, Ansible Tower, and Insights)
SaltStack	SaltStack Enterprise
Turbonomic	Turbonomic
VMware	VMware vRealize Suite, VMware vRealize Code Stream, VMware vRealize Network Insight, and VMware Log Intelligence

## Vendor Profiles

Our analysis uncovered the following strengths and weaknesses of individual vendors.

### Leaders

- › **Red Hat leverages a powerful open source community to quickly grow.** In 2015, Red Hat acquired Ansible, an automation tool built on top of the popular open source project. Since then, Ansible has become a brand that Red Hat weaves throughout multiple products. Red Hat Ansible

Automation drives orchestration, configuration management, and governance at an enterprise scale. Red Hat Insights augments the solution by providing recommendations and remediation suggestions for the automation to execute.

Ansible is growing very quickly, making inroads particularly with those trying to automate networks. The solution excels at orchestration and integration with other types of automation. Compared with its competitors, it could do better at model editing and scalability. Reference customers said they were replacing other tools mentioned in this Forrester Wave with Ansible and praised the solution's ability to bridge operations and development. They were less impressed with the current version's cluster functionality. Red Hat's solution is best for customers that want a holistic infrastructure automation solution and could stand to rationalize a few unneeded tools out of their portfolios.

› **Microsoft's evolving strategy shores up its platform.** Microsoft provides multiple tools for automating infrastructure across environments. The company has iterated on Azure Automation, a software-as-a-service (SaaS)-based solution, extremely quickly. The solution provides robust governance tools and integration with other automation engines. Microsoft has augmented it with PowerShell DSC, an open source project, which enables configuration management on Linux and Windows. Customers can now execute many use cases in Azure Automation that were previously possible only through System Center.

While Microsoft's solution wasn't technically the most advanced in this evaluation, it still excelled at model creation and editing, DevOps integration, and compliance. Integrations with service delivery tools and configuration management databases (CMDBs) were less impressive. Reference customers appreciated the solution's ease of use and were looking forward to new features. They cited concerns around enterprise scalability and the older version of Python in PowerShell DSC. Microsoft's solution is a good fit for enterprises with an established relationship with Microsoft or those looking to get up and running quickly with a swiftly improving automation stack.

› **VMware provides a menu of solutions that work well together.** VMware submitted five products for this Forrester Wave, consisting of 10 underlying application services. The vRealize Suite, which includes Automation, Log Insight, Operations, Orchestrator, and Suite Lifecycle Manager, orchestrates automation workflows; provides cost, performance, compliance, and capacity management; and monitors and troubleshoots large, heterogeneous hybrid cloud environments. Cloud Assembly, Code Stream, and Service Broker, SaaS-based products that empower organizations to orchestrate infrastructure and application delivery, make up Cloud Automation Services. vRealize Network Insight enables network microsegmentation and troubleshooting. Lastly, VMware Log Intelligence feeds insight back into these tools to drive more-intelligent decisions.

In our evaluation, VMware excelled in most areas, including model creation and editing, application awareness, and access management. It didn't do as well as its competitors, however, with complexity. Customer references appreciated the tools' extensibility. However, most found it

difficult to implement, and all of them said VMware's messaging around the suite's capabilities could use some work. VMware is best for companies that want a highly extensible solution but can also spend time deciding which parts they absolutely need to integrate.

- › **BMC Software provides the most functionality of the all solutions we evaluated.** BMC Software has been a player in this space for some time, going back to its 2008 acquisition of BladeLogic. Since then, a diverse group of applications (many now under the TrueSight brand name) has come together to form BMC's automation solution. TrueSight Automation for Servers and Automation for Networks enable deep bare-metal automation and OS management. BMC Cloud Lifecycle Management and TrueSight Cloud Security ensure efficient management and maintenance of hybrid cloud environments. BMC Release Lifecycle Management provides infrastructure-as-code capabilities. Finally, BMC Discovery helps administrators find unmanaged infrastructure, both on premises and in the cloud, and bring it under control.

BMC Software excelled in nearly all parts of the current offering portion of our evaluation, showing off advanced automation across myriad types of infrastructure. The solution was especially good at analytics, reporting, and compliance. Customer references appreciated the tools' scalability but cited concerns around the user interface and agent management. BMC Software is best for I&O professionals who manage a diverse set of heterogeneous infrastructure components and are also able to manage a little complexity.

## Strong Performers

- › **SaltStack has strong features led by scalability.** SaltStack Enterprise focuses primarily on automation of hardware and software on-premises and in the cloud. It scales to automate the greatest number of nodes of any vendor in this evaluation. After discovering resources to automate, SaltStack Enterprise customers can build out human-readable infrastructure states using YAML and JSON. Salt Beacon, included with Enterprise, monitors for many different types of events; Salt Reactor executes changes based on those events.

SaltStack had a strong showing in many parts of the current offering portion of our evaluation. Its discovery capabilities were far better than those of most of its competitors. Likewise, it was considerably less complex to set up. However, the solution was average in other areas such as integrations and community support. In addition, its strategy was average compared with those of competitors. Customers told us that SaltStack Enterprise was efficient at scale and that the company provides good support overall. However, they said that Salt could improve its road map and should be more opinionated on how customers use its tools. SaltStack is best for companies that need to automate on a massive scale with an easy-to-use toolset.

- › **HashiCorp is a crucial integration factor that nearly all other vendors mentioned.** HashiCorp's Terraform enterprise version is built on top of the popular open source project of the same name. It provides infrastructure automation with an emphasis on provisioning systems across hybrid clouds. Software providers — responsible for API interactions and exposing resources — connect

with a variety of infrastructure components. Many professionals use Terraform as a crucial part of their DevOps toolchain; in fact, nearly every other vendor in this evaluation mentioned Terraform integration as key to provisioning multicloud applications.

Functionally, Terraform has a different philosophy from those of most other solutions in this evaluation. Focusing on immutable infrastructure, it excelled at model editing and DevOps integration. It also scored exceptionally well in community and partner engagement. However, most other features were average compared with those of the competition, including orchestration and monolithic configuration management. While reference customers were looking forward to future additions in HashiCorp's road map, they were concerned about integrating with other enterprise-class products. Terraform is best for enterprises that will augment its strengths with other automation solutions focused on legacy infrastructure management.

- › **Puppet's integrations and community support make it a DevOps favorite.** Puppet has been in the automation business for quite some time and is a favorite with the DevOps community. The open source Puppet engine supports a wide array of hardware and software platforms. Puppet Enterprise improves upon the engine with governance capabilities. The Puppet Forge enables enterprises to download prebuilt modules, significantly shortening the automation lifecycle. Puppet Bolt — a recent addition — rounds out the offering with orchestration and task management.

Puppet's functionality is very strong. Its system support and configuration management capabilities were better than those of nearly every other solution in the evaluation. Likewise, its community engagement and integration with other types of automation were powerful differentiators. Puppet's strategy, however, was average compared with the vision and planned enhancements of its competitors. Reference customers liked the overall support they got from the company. They expressed concerns about initial installation and, more importantly, the vendor's future road map. Puppet is a good fit for enterprises looking for a robust community that's constantly building and sharing automation workflows.

- › **Chef Software's focus on governance and compliance is a key differentiator.** Chef Software has been in this space for some time and is intertwined in many DevOps workflows. The Chef stack consists of Infra, Automate, InSpec, Workstation, and Habitat. Infra provides configuration management capabilities. Automate enhances this with enterprise-class dashboards and analytics. InSpec provides a rich view for compliance professionals to verify that automation is running as intended. Workstation enables ad hoc automation. Lastly, Habitat provides application-centric automation support.

Chef Software's feature set is very strong, particularly around system support, configuration management, and integrations with popular DevOps toolchains. Its compliance suite, InSpec, is a key differentiator, enabling personnel outside I&O to review system states and request changes to correct configuration drift. Chef's overall strategy, however, is somewhat average compared with the market approach and vision of its competitors. Reference customers said it was easy to

integrate Chef with other types of automation. They weren't as keen on Chef's interface and didn't know when they would leverage Habitat. Chef Software is a good fit for companies that want strong governance and compliance for their infrastructure automation.

- › **Micro Focus provides well-rounded automation for a variety of infrastructure.** Micro Focus has been around for over 40 years. Its infrastructure automation solution consists of Data Center Automation Suite (which includes Server Automation and Operations Orchestration) and its Hybrid Cloud Management Suite. The Data Center Automation suite provides automation across heterogeneous virtual and physical servers, databases, and middleware. It also provides IT compliance and vulnerability risk management features as well as remediation capabilities across the hybrid enterprise. The Hybrid Cloud Management suite provides application release orchestration capabilities and design, deployment, and management of services across public, private, and hybrid cloud environments.

Micro Focus performed well in the current offering portion of our Wave. Strengths included model creation and editing, discovery, and analytics. It didn't perform as well in terms of scalability. Customer references said the solution is feature-rich, with a good low-level API. However, they weren't impressed with the user interface. Micro Focus is a good choice for companies that want flexible infrastructure automation but aren't as concerned about the user experience.

- › **Turbonomic leads the charge on intelligent automation.** Turbonomic has been around for more than a decade but has had its current name only since 2016 (it was formerly VMTurbo). The product focuses on intelligent automated workload placement, dynamically matching application demand to infrastructure, on-premises and in the cloud, to best take advantage of available resources. It leverages AI to make these decisions, fueled by rich knowledge of the system stack, and models infrastructure in an easy-to-understand GUI.

Turbonomic has one of the most advanced automation engines in our evaluation, leveraging AI to automate a significant number of resource management tasks. It also has a better understanding of the system stack than most other vendors. It did not, however, do so well at other automation and orchestration tasks. Customer references said the tool was easy to manage and did a great job at resource management. However, they criticized a number of bugs they had run into as well as an overly aggressive sales cycle. Turbonomic is best for companies that would like to optimize resource usage for applications but may also rely on other tools for orchestration and governance.

## Contenders

- › **Northern.tech is an automation veteran, but its features and strategy need work.** Northern.tech's CFEngine is the grandfather of many configuration management tools. The Community edition, created in 1993, quickly gets infrastructure resources into a desired state using a custom domain-specific language (DSL). The engine is very small and can run on embedded devices. Use cases include everything from automating internet-of-things (IoT) to configuring satellites. The Enterprise edition also adds basic compliance capabilities.

CFEngine's efficiency is great and can scale to a very large number of devices. However, its capabilities beyond this aren't nearly as strong as those of its competitors. Likewise, its community ecosystem is small, and engagement is limited. While the vendor provided no reference customers for this evaluation, customers have, in the past, mentioned a small amount of hope for the company's road map. However, Northern.tech's lack of vision may hold it back. Northern.tech declined to fully participate in the Forrester Wave evaluation process.

## Evaluation Overview

We evaluated vendors against 31 criteria, which we grouped into three high-level categories:

- › **Current offering.** Each vendor's position on the vertical axis of the Forrester Wave graphic indicates the strength of its current offering. Key criteria for these solutions include deployment options, infrastructure management capabilities, automation engine capabilities, integrations, governance and monitoring, and community support.
- › **Strategy.** Placement on the horizontal axis indicates the strength of the vendors' strategies. We evaluated planned enhancements, road map perception, vision, market approach, consulting, training and support, and innovation in pricing.
- › **Market presence.** Represented by the size of the markers on the graphic, our market presence scores reflect each vendor's customer-installed base, average deal size, and product revenue.

## Vendor Inclusion Criteria

Forrester included 11 vendors in the assessment: BMC Software, Chef Software, HashiCorp, Micro Focus, Microsoft, Northern.tech, Puppet, Red Hat, SaltStack, Turbonomic, and VMware. Each of these vendors has:

- › **Demonstrated that it can automate a wide variety of infrastructure.** This includes infrastructure in the cloud, in the data center, or at the edge.
- › **Shown integration with a wide array of other tools.** This includes enterprise service management platforms, DevOps pipeline tools, CMDB platforms, and other types of automation.
- › **Gone beyond I&O to support enterprise automation efforts.** The offerings achieve this through analytics and reporting, policy management, and compliance functionality.
- › **Been referenced by Forrester clients on inquiry calls.** These solutions have market recognition, and our clients often compare them.

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### Online Resource

We publish all our Forrester Wave scores and weightings in an Excel file that provides detailed product evaluations and customizable rankings; download this tool by clicking the link at the beginning of this report on Forrester.com. We intend these scores and default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs.

### The Forrester Wave Methodology

A Forrester Wave is a guide for buyers considering their purchasing options in a technology marketplace. To offer an equitable process for all participants, Forrester follows [The Forrester Wave™ Methodology Guide](#) to evaluate participating vendors.

**The Forrester Wave™: Infrastructure Automation Platforms, Q3 2019**

The 11 Providers That Matter Most And How They Stack Up

In our review, we conduct primary research to develop a list of vendors to consider for the evaluation. From that initial pool of vendors, we narrow our final list based on the inclusion criteria. We then gather details of product and strategy through a detailed questionnaire, demos/briefings, and customer reference surveys/interviews. We use those inputs, along with the analyst's experience and expertise in the marketplace, to score vendors, using a relative rating system that compares each vendor against the others in the evaluation.

We include the Forrester Wave publishing date (quarter and year) clearly in the title of each Forrester Wave report. We evaluated the vendors participating in this Forrester Wave using materials they provided to us by May 21, 2019 and did not allow additional information after that point. We encourage readers to evaluate how the market and vendor offerings change over time.

In accordance with [The Forrester Wave™ Vendor Review Policy](#), Forrester asks vendors to review our findings prior to publishing to check for accuracy. Vendors marked as nonparticipating vendors in the Forrester Wave graphic met our defined inclusion criteria but declined to participate in or contributed only partially to the evaluation. We score these vendors in accordance with [The Forrester Wave™ And The Forrester New Wave™ Nonparticipating And Incomplete Participation Vendor Policy](#) and publish their positioning along with those of the participating vendors.

### Integrity Policy

We conduct all our research, including Forrester Wave evaluations, in accordance with the [Integrity Policy](#) posted on our website.

### Endnotes

- <sup>1</sup> CVE stands for Common Vulnerabilities and Exposures, a public list of all known cybersecurity vulnerabilities. Source: Common Vulnerabilities and Exposures (<https://cve.mitre.org/>).
- <sup>2</sup> To understand the impact of automation at the edge, see the Forrester report "[Edge Computing Will Radically Alter Your Infrastructure Strategy.](#)"
- <sup>3</sup> To understand the two possible paths to AIOps implementation, see the Forrester report "[Take The Mystery Out Of AI For IT Operations \(AIOps\).](#)"

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