

# The Forrester Wave™: Privileged Identity Management, Q3 2016

The 10 Providers That Matter Most And How They Stack Up

by Andras Cser  
July 8, 2016

## Why Read This Report

In our 22-criteria evaluation of privileged identity management (PIM) providers, we identified the 10 most significant vendors — Balabit, BeyondTrust, Bomgar, CA Technologies, Centrify, CyberArk, Dell, Lieberman Software, ManageEngine, and Thycotic — and researched, analyzed, and scored them. This report shows how each provider measures up and helps security and risk (S&R) professionals make the right choice.

## Key Takeaways

### **Centrify, BeyondTrust, And CyberArk Lead The Pack**

Forrester's research uncovered a market in which Centrify, BeyondTrust, and CyberArk lead the pack. Thycotic, ManageEngine, CA Technologies, and Lieberman Software offer competitive options. Balabit, Dell, and Bomgar lag behind.

### **S&R Pros Are Looking For Ease Of Administration, And Behavioral Analytics**

The PIM market is growing because more S&R professionals see PIM as part of the layered solution to address their top cyberthreat and data breach prevention challenges. This market growth is in large part due to the fact that S&R pros increasingly trust PIM providers to act as strategic partners, advising them on top PIM decisions.

### **Scalability, Windows Privilege Escalation, And Behavioral Analytics Are Key Differentiators**

As the PIM market matures (especially when the password safe is concerned), customers are looking to see proven, easily manageable, and scalable PIM solutions that offer productized help desk integration, cloud support, Windows privilege delegation and escalation, their own behavioral analytics of privileged sessions, and PIM-as-a-service availability.

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### Notes & Resources

Forrester conducted lab-based evaluations in March 2016 with 10 vendor companies: Balabit, BeyondTrust, Bomgar, CA Technologies, Centrify, CyberArk, Dell, Lieberman Software, ManageEngine, and Thycotic.

### Related Research Documents

[Counteract Cyberattacks With Security Analytics](#)

[Brief: Top 10 IAM Trends From The RSA Conference 2016](#)

[Market Overview: Security User Behavior Analytics \(SUBA\), 2016](#)

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## PIM Is Critical For Defeating Threats And Minimizing Data Breaches

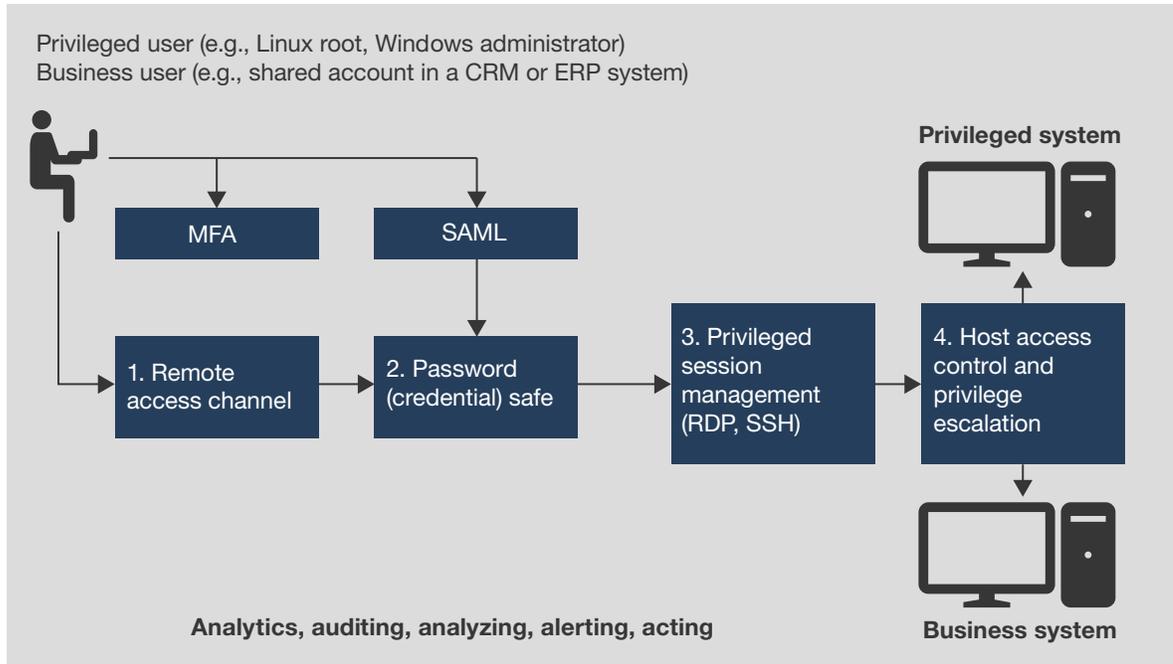
Previously, regulatory compliance and administrative efficiency were the key drivers for implementing privileged identity management (PIM) solutions.<sup>1</sup> However, security and risk (S&R) leaders today rightly view PIM solutions as key components of their multilayered defenses against cyberthreats, alongside elements like network security, security analytics (SA), security user behavior analytics (SUBA), identity and access management, cloud security solutions, and endpoint security solutions:

- › **Cyberthreat involves use of privileged credentials.** Forrester estimates that 80% of security breaches involve privileged credentials. It's understandable: After an intruder gains access to the employees' devices, they try to snoop the network and install keylogger to get higher privilege credentials (such as root or administrator). Privileged credentials provide greater scope for stealing data en masse than individual accounts do: With privileged credentials, attackers can dump the entire database, bypass network traffic limitation, delete logs to hide their activity, and exfiltrate data easier. Most vendors plan cyberincident response and remediation or at least integration with security analytics and SUBA vendors.<sup>2</sup>
- › **S&R pros can't eliminate shared and business credentials, so must manage them.** In an ideal world, there are no shared passwords or recycled/shared functional accounts. Reality, however, often demands that admin users share passwords to a shared functional/service account.<sup>3</sup> For example, in a retail store environment, multiple store managers may have access to one password that allows them to cancel or override transactions in an application or give a discount to customers. Our interviewees report that because these credentials give users access to powerful functions, they need to manage and audit the use of these credentials more carefully.
- › **Cloud adoption brings in new admin types and access channels.** Adoption of infrastructure-as-a-service (IaaS) (from providers like AWS, Azure, and Rackspace) and software-as-a-service (SaaS) (like Salesforce and Office 365), public cloud applications, private cloud, and outsourcing creates a new kind of administrator (or privileged user): one who is an employee of the public or private cloud provider (AWS, Azure, SoftLayer, etc.) and interacts with your workloads on their behalf. These users may not have VPN access to your environment and often require very controlled, limited, and closely monitored access to your workloads.
- › **PIM demands an integrated approach from admin's entry point to the target system.** Security teams increasingly find that they cannot maintain homegrown and/or point solutions for managing privileged access without expending prohibitive amounts of effort. Beyond multifactor authentication (MFA) and security assertion markup language (SAML) compatibility, a PIM solution needs be able to do four things: 1) provide its own, web-based channel for access; 2) provide its own, tamperproof password safe (credential storage); 3) spawn, monitor, and intercept privileged Windows and Linux sessions (privileged session monitoring, or PSM); and 4) control privilege escalation on the endpoint (such as sudo replacement and revoking administrative rights on Windows from end users) (see Figure 1).

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**FIGURE 1** Anatomy Of Privileged Identity Management



## The PIM Market: More Endpoints, Policies, And Behaviors

Here are the key trends in the PIM market:

- › **Support for more endpoints, including containers and business solutions.** To ease integration, every vendor has plans to expand the number of supported endpoints. Vendors plan to add support in PIM solutions for not only administrative uses to virtualization solutions (VMware) but also containers (Docker, Open Stack, etc.) and high-privileged users in business applications (Office 365, Salesforce, etc.). Suppliers also plan to expand support for the following: 1) SSH private key rotation and updates; 2) managing SCADA systems in mission-critical environments; 3) access request management workflows; and 4) native PIM governance.<sup>4</sup>
- › **Support for PIM to the cloud and for PIM from the cloud.**<sup>5</sup> Vendors plan to expand support for IaaS and SaaS APIs to allow the PIM solution to fully orchestrate admin and business user actions. Almost every PIM vendor plans to expand the RESTful APIs available to programmatically modify the PIM solution's policies, and they're redesigning policy storage to support multitenancy of policy stores natively. Finally, vendors are embracing SaaS: Centrify has created a PIM-as-a-service password safe, and Forrester expects others to follow suit.

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- › **Support for better control of privileged sessions.** To have even deeper insight into and control of privileged sessions, PIM vendors are planning to include optical character recognition and to use remote desktop protocol (RDP) session metadata in privileged sessions. Based on better captured information, we see plans for: 1) command analytics and enrichment of session data; 2) filtering and enforcing policies for what commands the administrator can type; 3) support for four-eye review of sessions; 4) automatic and manual termination of risky or unauthorized sessions; and 5) using both web-based and native terminal and session emulation tools.
- › **Greatly expanded privilege escalation for Windows endpoints.** Disallowing excessive and risky privileged access of nonadmin users on endpoints helps limit the potential for data loss. With CyberArk acquiring Viewfinity and Thycotic scooping up Arellia, Forrester expects that the PIM market will advance privilege escalation to: 1) include Windows, virtualization, and container-based endpoints; 2) improve policy management, including wizards and workflow support; and 3) enforce finer-grained policies and use blacklists, whitelists, and greylists of commands.
- › **Use of concepts from and integration with security analytics.** To respond to cyberthreats and to prevent data losses, PIM solutions must understand long-time and short-time behaviors of privileged users and servers. Balabit's Blindspotter, BeyondTrust's Retina, and CyberArk's Privileged Threat Analytics provide the machine learning and predictive behavior analytics capabilities. These mathematical models automatically build a heuristic normalcy baseline of administrator activity and then detect and alert on behaviors that differ from that baseline. That way they highlight suspicious or threat activity. Almost every vendor integrates or plans to integrate with a security analytics vendor like FireEye or Splunk.

## PIM Evaluation Overview

To assess the state of the privileged identity management market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top PIM vendors. After examining past research, user requirements, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria. We evaluated vendors against 22 criteria, which we grouped into three high-level buckets:

- › **Current offering.** We evaluated the ability of PIM solutions to deliver the following features and capabilities out of the box: 1) a privileged password (credential) vault; 2) users, roles, and help desk integration; 3) privileged session management and recording; 4) host access control and privilege delegation/escalation; 5) cloud support; 6) reporting; 7) largest number of managed endpoints; 8) overall solution complexity; 9) overall user interface intuitiveness and modernness; and 10) application-to-application password management.

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- › **Strategy.** We evaluated: 1) the vendor's future PIM development plans; 2) customer satisfaction compared with other vendors in this Forrester Wave; 3) the performance of the vendor's global implementation partner and reseller network; 4) the proportion of PIM developers to the total number of vendor employees; and 5) the proportion of PIM sales staff to the total number of vendor employees.
- › **Market presence.** We evaluated: 1) the vendor's PIM subscription and perpetual license and maintenance revenue; 2) the vendor's PIM subscription and perpetual license and maintenance revenue growth; 3) direct customer install base; and 4) direct customer install base growth.

**Evaluated Vendors And Inclusion Criteria**

Forrester included 10 vendors in the assessment: Balabit, BeyondTrust, Bomgar, CA Technologies, Centrify, CyberArk, Dell, Lieberman Software, Manage Engine, and Thycotic. Each of these vendors has (see Figure 2):

- › **An enterprise-ready tamperproof password safe with centralized policy management.** We included vendors that offer an enterprise-level, highly available password safe that is fully audited and tamperproof and can spawn privileged command line SSH and graphical RDP sessions.
- › **Web user interfaces to check out the credentials.** We included PIM solutions that do not require the installation of a desktop or endpoint agents but its users can check out passwords from a web user interface.
- › **Thought leadership in PIM evidenced by products and services.** We included vendors that demonstrated PIM thought leadership and PIM solution strategy execution by regularly updating and improving their productized PIM product portfolio.
- › **Total company revenues of at least \$15 million with at least 5% growth.** We included vendors that have at least \$15 million in revenues, including PIM solutions with at least 5% year-over-year growth.
- › **At least 30 direct-paying PIM customer organizations in production.** To ascertain the strength of the vendor's ability to sell, we included vendors that have at least 30 direct-paying (not partner-sold) PIM customer organizations in production.
- › **An unaided mindshare with Forrester's customers on inquiries.** The vendors we evaluated are frequently mentioned in Forrester client inquiries, vendor selection RFPs, shortlists, consulting projects, and case studies.<sup>6</sup>
- › **An unaided mindshare with other PIM competitive vendors.** We included vendors that other vendors mention as one of their frequent competitors in Forrester briefings, client inquiries, and other interactions.

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**FIGURE 2** Evaluated Vendors: Product Information And Inclusion Criteria

Vendor	Evaluated product name
Balabit	Contextual Security Intelligence Suite (CSI Suite)
BeyondTrust	PowerBroker Password Safe, PowerBroker for Windows, PowerBroker for Mac, and PowerBroker for Unix & Linux
Bomgar	Bomgar Privileged Access Management
CA Technologies	CA Privileged Access Manager and CA Privileged Identity Manager
Centrify	Centrify Identity Platform (Centrify Server Suite, Centrify Privilege Service, and Centrify Identity Service)
CyberArk	CyberArk Privileged Account Security Solution
Dell	Privileged Password Manager, Privileged Session Manager, and Privileged Access Suite for Unix
Lieberman Software	Enterprise Random Password Manager (ERPM)
ManageEngine	Password Manager Pro
Thycotic	Secret Server

**Inclusion criteria**

**An enterprise-ready tamperproof password safe with centralized policy management.** We included vendors that offer an enterprise-level, highly available password safe that is fully audited and tamperproof and can spawn privileged command line SSH and graphical RDP sessions.

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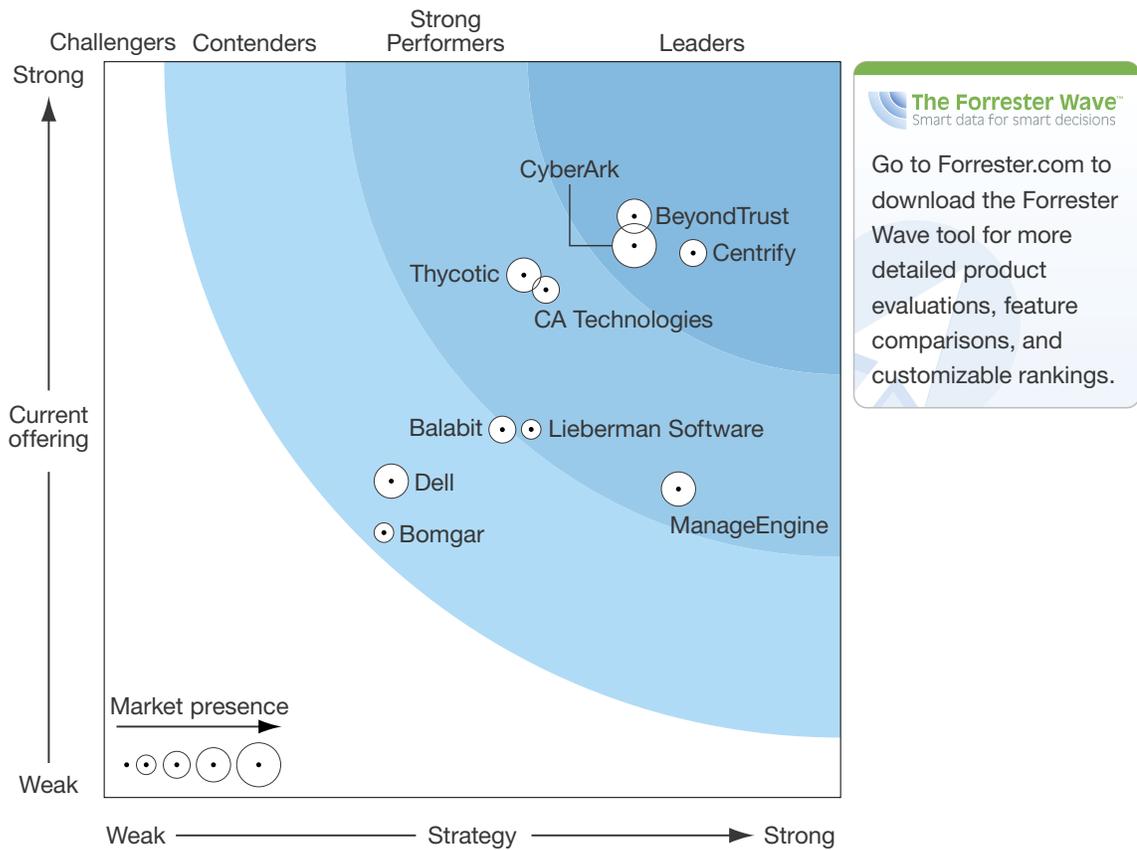
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## Vendor Profiles

This evaluation of the PIM market is intended to be a starting point only. We encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 3).

**FIGURE 3** Forrester Wave™: Privileged Identity Management, Q3 '16



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**FIGURE 3** Forrester Wave™: Privileged Identity Management, Q3 '16 (Cont.)

	Forrester's weighting	Balabit	BeyondTrust	Bomgar	CA Technologies	Centrify	CyberArk	Dell	Lieberman Software	ManageEngine	Thycotic
<b>CURRENT OFFERING</b>	50%	2.50	3.95	1.80	3.45	3.70	3.75	2.15	2.50	2.10	3.55
Privileged password safe/vault	15%	0.00	3.00	3.00	4.00	3.00	4.00	3.00	2.00	4.00	5.00
Users, roles, and help desk integration	15%	1.00	5.00	1.00	5.00	3.00	1.00	1.00	3.00	1.00	5.00
Privileged session management and recording	15%	4.00	5.00	1.00	2.00	4.00	5.00	1.00	2.00	1.00	2.00
Host access control and privilege delegation and escalation	10%	2.00	3.00	1.00	4.00	4.00	5.00	3.00	1.00	0.00	0.00
Cloud support	15%	4.00	4.00	1.00	5.00	5.00	5.00	2.00	2.00	1.00	4.00
Reporting	10%	5.00	4.00	2.00	2.00	4.00	4.00	1.00	2.00	3.00	2.00
Largest number of managed/monitored endpoints	5%	2.00	4.00	0.00	0.00	5.00	1.00	3.00	5.00	0.00	5.00
Overall solution complexity	5%	4.00	3.00	3.00	2.00	1.00	2.00	4.00	4.00	5.00	5.00
Overall interface intuitiveness, modernness, and ease-of-use	5%	3.00	2.00	4.00	2.00	2.00	4.00	2.00	3.00	5.00	4.00
Application-to-application password management	5%	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
<b>STRATEGY</b>	50%	2.70	3.60	1.90	3.00	4.00	3.60	1.95	2.90	3.90	2.85
Future development plans	20%	3.00	3.00	2.00	5.00	3.00	3.00	3.00	3.00	2.00	2.00
Customer satisfaction	25%	2.00	3.00	5.00	4.00	3.00	2.00	1.00	4.00	5.00	3.00
North American implementation and reseller partners' strength	15%	3.00	4.00	0.00	0.00	5.00	5.00	2.00	2.00	4.00	3.00
Central and South American implementation and reseller partners' strength	10%	2.00	4.00	0.00	3.00	5.00	4.00	3.00	3.00	5.00	3.00
EMEA implementation and reseller partners' strength	10%	3.00	4.00	0.00	1.00	5.00	4.00	2.00	2.00	5.00	3.00
APAC implementation and reseller partners' strength	10%	3.00	4.00	0.00	4.00	4.00	5.00	2.00	2.00	5.00	3.00
Proportionate solution development strength	5%	4.00	5.00	3.00	2.00	5.00	4.00	1.00	2.00	2.00	3.00
Proportionate solution sales strength	5%	3.00	4.00	2.00	2.00	5.00	5.00	1.00	4.00	1.00	4.00
<b>MARKET PRESENCE</b>	0%	2.50	3.50	2.00	3.00	2.25	4.50	3.50	1.75	3.25	4.00
PIM subscription and perpetual license and maintenance revenue	25%	3.00	5.00	1.00	4.00	3.00	5.00	4.00	2.00	1.00	2.00
PIM subscription and perpetual license and maintenance revenue growth	25%	5.00	3.00	5.00	3.00	1.00	5.00	2.00	1.00	2.00	4.00
Direct customer install base	25%	1.00	3.00	1.00	2.00	3.00	4.00	4.00	2.00	5.00	5.00
Direct customer install base growth	25%	1.00	3.00	1.00	3.00	2.00	4.00	4.00	2.00	5.00	5.00

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

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**Leaders**

- › **Centrify offers the first SaaS PIM password safe in the industry.** The SaaS-only password safe solution supports clustering but does not offer a policy management GUI to manage high-availability. While it offers integration to ServiceNow, it does not offer Remedy help desk integration. It has outstanding support for SaaS apps and IaaS platforms and offers flexible and customizable reporting features. The solution is much more complex than the median complexity of solutions evaluated in this Forrester Wave, and its interface is somewhat less intuitive than other solutions. The vendor plans to: 1) expand its multifactor authentication framework; 2) add privileged access request; and 3) add support for containers.
- › **BeyondTrust excels with its privileged session management capabilities.** The solution supports command line filtering on managed sessions. Remedy and ServiceNow help desk integration is productized. The solution today does not provide AWS API support or Windows registry control capabilities and can't act as a SAML 2.0 Relying Party.<sup>7</sup> The solution is about as complex as other solutions evaluated in this Forrester Wave, and its interface is somewhat less intuitive than other solutions. The vendor plans to: 1) support SaaS deployment for password management; 2) expand its channels through MSSPs; and 3) expand its analytics to support third-party log and information feeds.
- › **CyberArk has the largest PIM market presence.** Of the solutions evaluated in this Forrester Wave, CyberArk has the largest market presence (based on combined revenues, revenue growth, direct customer install base, and growth). The solution provides SAML 2.0 Relying Party services and broad productized two-factor authentication (2FA) options for its vault. It does not provide productized Remedy and ServiceNow help desk integration. The solution is somewhat more complex than other solutions evaluated in this Forrester Wave, but its interface is somewhat more intuitive and modern than other solutions. Forrester expects that the vendor plans to: 1) improve discovery of Unix accounts and 2) broaden support for more cloud platforms (AWS, Azure, etc.).

**Strong Performers**

- › **CA Technologies combines the Xceedium password safe with Privilege Manager.** CA Technologies acquired Xceedium and integrated its password safe into the solution. The solution has productized Remedy and ServiceNow help desk integration and very broad support for IaaS (AWS token service and SSO). It offers a kernel-based privilege escalation for both Windows and Linux endpoints and has some of the broadest integration with security analytics and identity governance solutions as well as managing users in SaaS applications. The solution is somewhat more complex, and has a somewhat less intuitive user interface than other vendors evaluated in this Forrester Wave. Forrester expects that the vendor plans to expand Azure support and add machine learning analytics and multitenancy support.

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- › **Thycotic plans to extend to privilege management on endpoints.** The solution has a broad set of capabilities for discovery of endpoints, SAML, and 2FA and supports Remedy and ServiceNow help desks with productized, out-of-the-box integration. The solution cannot index and search for keywords across recordings of sessions and can't filter commands that system administrators type. While the solution today does not have machine learning-based identification of suspicious user activity, the vendor plans to implement this. The solution is much less complex and has a somewhat more intuitive user interface than other solutions evaluated in this Forrester Wave.
- › **ManageEngine offers the most up-to-date and intuitive user interface.** It offers built-in command line and graphical session emulation and also allows the administrator to use the system administrator's own desktop tools (putty, RDP, etc.). It also supports managing privileged users in IaaS consoles. The solution does not have session recording capabilities and does not support privilege escalation or setting policies on command line filtering on endpoints. The solution is much less complex than other solutions evaluated in this Forrester Wave. The vendor plans to expand its PIM suite to business users, add more target systems and analytics, and add least privilege and host access control.
- › **Lieberman Software offers powerful endpoint discovery features.** The solution has 2FA support and productized ServiceNow help desk integration, allows system administrators to use their own tools, and can search all recordings for commands typed by an admin. The solution's policy management is split between a native Win32 application and web admin interface, which may be limiting for larger deployments (the vendor plans to migrate all policy management into the web admin interface). The vendor plans to implement more multitenancy, implement SAML authentication, and expand Linux support.

**Contenders**

- › **Balabit adds organically grown privileged analytics and a simple vault to the PIM suite.** The solution's strongest points are the privileged session management, recording and search, and applying policy filters to apps and commands typed by administrators on monitored sessions. It has very strong integration and extensibility features for additional protocols and SIEM systems. The solution does not support endpoint discovery, SAML, or agents on either Windows or Linux endpoints. It does not have support for app-to-app password management. The solution is somewhat less complex than other solutions evaluated in this Forrester Wave. The vendor plans to further integrate with IAM solutions, implement a RESTful API for search and policy management, and revamp the user interface.
- › **Dell has a large install base but an aging password safe solution.** The solution provides nice autodiscovery features, a strong Linux privilege escalation facility, and searching through recordings of sessions. Customers were significantly less satisfied with the solution than with other vendors evaluated in this Forrester Wave. The solution is somewhat less complex and has

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a user interface somewhat less intuitive than other solutions evaluated in this Forrester Wave. The vendor plans to modernize its user interface, unify solution components, integrate with its identity governance framework for attestation and separation of duties checks, and rationalize the solution's RESTful APIs.

- › **Bomgar offers a new, immature, but long-term viable solution.** Bomgar sports a nice endpoint discovery interface, GUI-based management of high availability, and clustering. It is planning 2FA support. The solution does not provide productized integration with help desk systems, has somewhat limited session recording capabilities, and provides no endpoint privilege escalation for Linux or Windows. The user interface is more intuitive than other solutions evaluated in this Forrester Wave. The vendor plans to expand protocol tunneling support for managed sessions, dynamic endpoint threat modeling, and contextual privilege escalation.

## Engage With An Analyst

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Ask a question related to our research; a Forrester analyst will help you put it into practice and take the next step. Schedule a 30-minute phone session with the analyst or opt for a response via email.

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## Supplemental Material

### Online Resource

The online version of Figure 3 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

### Data Sources Used In This Forrester Wave

Forrester used a combination of four data sources to assess the strengths and weaknesses of each solution. We evaluated the vendors participating in this Forrester Wave, in part, using materials that they provided to us by June 24, 2016.

- › **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted vendor calls where necessary to gather details of vendor qualifications.
- › **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with three of each vendor's current customers.
- › **Product demos.** We asked vendors to conduct demonstrations of their products' functionality and provide click-through instructions we could independently follow in the demonstration environment. We used findings from these product demos to validate details of each vendor's product capabilities.
- › **Unsupervised demonstration environment usage.** We asked vendors to provide us with uninterrupted and unsupervised access to the demonstration environments in which we could test the products' features and recreate the product demos at will.

### The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

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We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve. For more information on the methodology that every Forrester Wave follows, go to <http://www.forrester.com/marketing/policies/forrester-wave-methodology.html>.

### Integrity Policy

We conduct all our research, including Forrester Wave evaluations, in accordance with our Integrity Policy. For more information, go to <http://www.forrester.com/marketing/policies/integrity-policy.html>.

### Endnotes

- <sup>1</sup> Forrester sees companies implement PIM solutions to respond to nearly all compliance mandates, but most predominantly: PCI, FERC/NERC, GLBA, and HIPAA.
- <sup>2</sup> Security and risk (S&R) leaders are struggling to prevent data breaches, threats from malicious insiders, and fraud. Solutions for security user behavior analytics (SUBA) aim to provide S&R pros with a unified view of user activity across the enterprise in order to detect suspicious activity and stop it before it causes lasting harm to the business. For more information, see the “[Market Overview: Security User Behavior Analytics \(SUBA\), 2016](#)” Forrester report.  
  
Security analytics (SA) has garnered a lot of attention during the past few years. However, marketing hype and misunderstandings regarding SA have confused the market, making it difficult for security and risk (S&R) leaders to make informed decisions. To learn more, see the “[Counteract Cyberattacks With Security Analytics](#)” Forrester report.
- <sup>3</sup> A functional/service account does not belong to a single human being, but instead is used by multiple people, and even applications, to perform a limited selection of tasks such as making a database backup or recycling a network interface or a system.
- <sup>4</sup> Forrester defines PIM governance as the management of who has access to what accounts, why he or she has that access, and who approved the access.
- <sup>5</sup> As organizations rapidly adopt cloud-based infrastructure, platform, and application services, cloud security continues to be a major concern. Now, security and risk professionals need to provide a way of securely connecting to cloud services and infrastructure (security to the cloud); they need to validate the security posture of their cloud providers’ environment (security in the cloud); and they need to apply effective controls for on-premises applications using cloud services (security from the cloud). And because empowered business owners can procure their own services without IT’s involvement, it’s critical that you build strong relationships with the business to ensure they consult you during cloud service procurement decisions and negotiations. To learn more, see the “[An S&R Pro’s Guide To Security To, In, And From The Cloud](#)” Forrester report.
- <sup>6</sup> The term “unaided” in this context means that the customer has to mention the vendor in the following context: “We looked at vendors A, B, and C in our vendor selection process.”
- <sup>7</sup> A Federation Relying Party is an application that can accept SAML assertions from an identity provider (IdP) where the authentication takes place. Source: “Understanding Key AD FS Concepts,” Microsoft, November 1, 2013 ([https://technet.microsoft.com/en-us/library/ee913566\(v=ws.11\).aspx](https://technet.microsoft.com/en-us/library/ee913566(v=ws.11).aspx)).

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