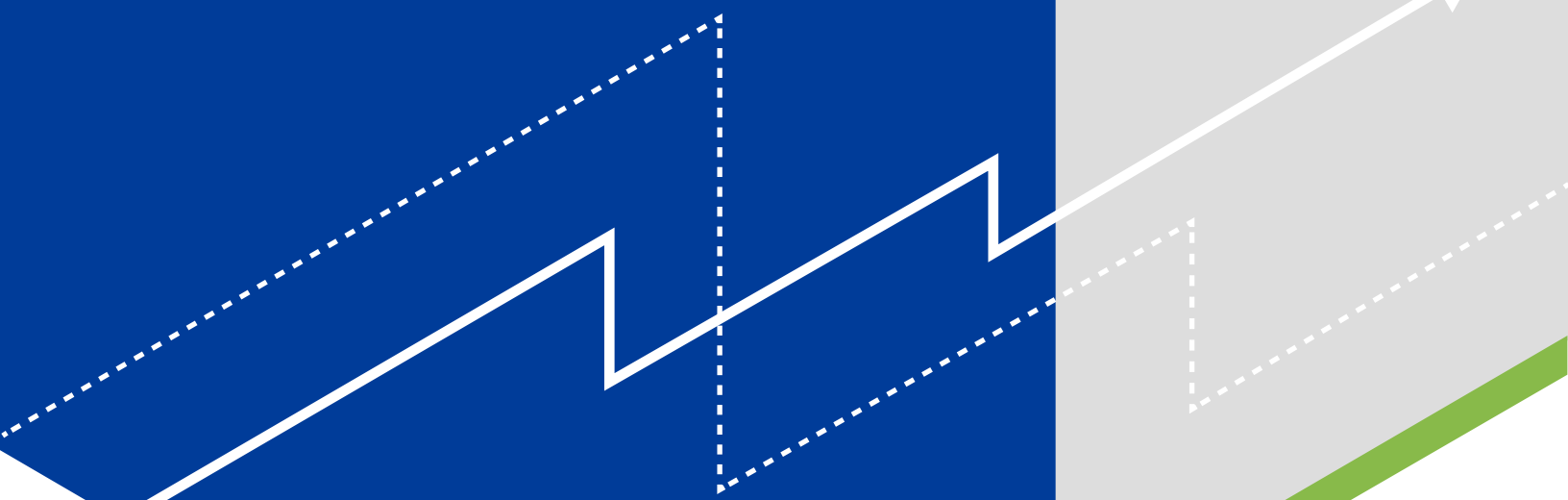
A Forrester Consulting
Thought Leadership Paper
Commissioned By Actian

August 2017

Harness Hybrid Data Management And Integration To Drive Business-Driven Analytics

Modern Data Management And Integration Strategies Can Drive Dynamic Analytics For The Hybrid Enterprise



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82% of respondents agree that their use of business intelligence tools for reports and dashboards deliver strategic business value; however, organizations face significant challenges with a lack of skill and knowledge to use existing tools.

79% of respondents agree that they need to analyze more data to stay competitive.

Executive Summary

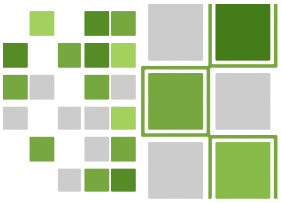
In today's digital enterprise, fast and actionable insights are the goal. This is increasingly a tall order as data resides in higher volumes, in greater variety, and in more locations throughout the enterprise and as an increasing number of business users demand that data. This, coupled with the complexity of multiple cloud environments, makes management and integration extremely challenging. To succeed, enterprises should adopt a hybrid data approach to all things data and analytics. The term "hybrid data" is a new strategy to embrace, unify, and simplify the entire ecosystem of best-fit data management, data integration, and analytical engines for both on-premises and cloud environments in order to extract business value from previously siloed data sources.

In May 2017, Actian commissioned Forrester Consulting to evaluate current and future trends in big data, data integration and management, and multicloud strategies. To explore this topic, Forrester conducted an online survey with 319 respondents responsible for data management at organizations with at least 100 employees in the US, Canada, France, Germany, and the UK. We found that, to make a sustained impact on business growth, analytics needs to keep up with the pace of business demands and integrate both operational and analytic data.

KEY FINDINGS

- **Enterprises struggle to provide comprehensive analytics to support modern use cases.** Data has fueled the modern enterprise for years now, and organizations understand that they must collect data from numerous different sources to glean business-critical insights. However, they continue to struggle to blend, analyze, and harness this sea of diverse data with analytics. A hybrid data approach makes data from more sources easily available, enabling organizations to quickly generate insights in time to make decisions and take actions that positively impact business outcomes.
- **Legacy data integration technologies are major obstacles.** Enterprises struggle with legacy data management systems that often require manual, custom-coded integration — hampering their ability to drive insights or scale their systems in response to the proliferation of new data sources. A new generation of data management and analytics platforms is needed to optimally handle a variety of data sources and to grant business users quick and easy access to insights.
- **On-premises and multicloud strategies must appear seamless to users.** As data analytics architecture is built out to support the whole data ecosystem, professionals must adopt cloud-oriented strategies — even for on-premises deployments — to take advantage of scalability, flexibility, and utilization efficiencies as they deploy their analytical engines. In the end, users want increased data and reduced friction so they can get the actionable and timely insights that they need.

Your Organization Has A Multitude of Analytics Requirements Today

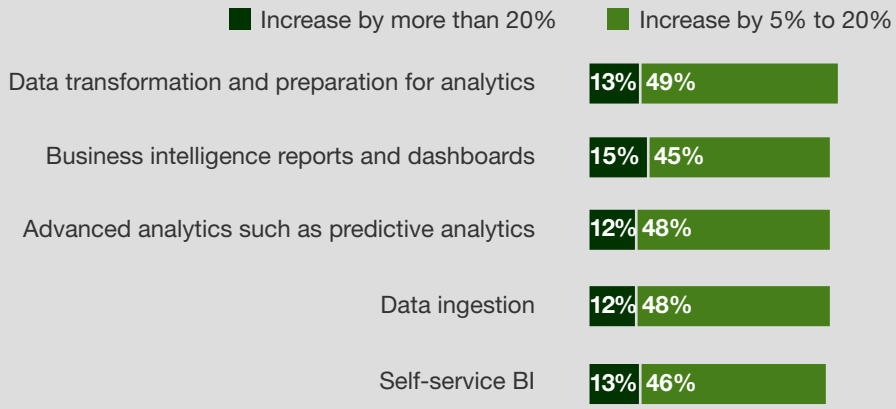


Data and analytics capabilities are no longer the responsibility of just IT — across an entire organization, various functional teams have diverse and evolving analytical requirements to support their unique real-time, operational, performance, and strategic decision-making responsibilities. This is not just about traditional business intelligence, i.e., reports and dashboards; enterprises are dramatically increasing their use of ad hoc discovery, predictive analytics, streaming analytics, advanced visualization, machine learning, and artificial intelligence (AI). In response, analytics technology vendors and open source communities have responded with a slew of new analytical engines that meet these growing enterprise needs. Across the board, investments in analytics are increasing because:

- **New analytics needs arise.** Data creation has changed significantly in just the past few years. Data is becoming not only bigger but more diverse, decentralized, and dynamic, with analytics usage increasing among business users. As a result, more than three in four organizations surveyed anticipate increasing their footprint in a wide range of analytics categories over the next year. From machine learning analytics to stream analytics and performance analytics, organizations understand that big data and analytics are the key to growth. They are investing heavily in their capabilities to unify operational and analytic data, thus enabling them to support a new generation of use cases that were previously not feasible using traditional, monolithic approaches.
- **Cloud use cases are expanding.** The majority of organizations — 60% to 62% — surveyed anticipate increasing their usage of public cloud by at least 5% over the next year for data transformation analytics, business intelligence (BI) dashboards, and predictive analytics (see Figure 1). As organizations increase their use of public cloud for analytics, they must target specific analytical engines optimized for specific workloads based on the type and volume of the data and the analysis being performed. As compelling as cloud-based data analysis appears, concerns are growing about the ramifications of "cloud lock-in" which potentially could impede rather than accentuate insight delivery.
- **Self-service analytics has dramatically increased the number of users.** Forrester's Q4 2014 Global Business Intelligence Organization Survey found that most business intelligence employees were part of a dedicated BI support organization reporting into the IT side of the house, but by 2015 this had shifted significantly, with certain roles such as business analysts and data scientists beginning to report into the business (see Figure 2). Data is expanding broadly across enterprises in not only its creation but also, importantly, in its consumption. To that end, these are largely nonspecialist users, so their skills, competencies, and access requirements need to be taken into account when building out tools and processes — 79% of respondents agree that they need to analyze more data, faster, to stay competitive.

Figure 1

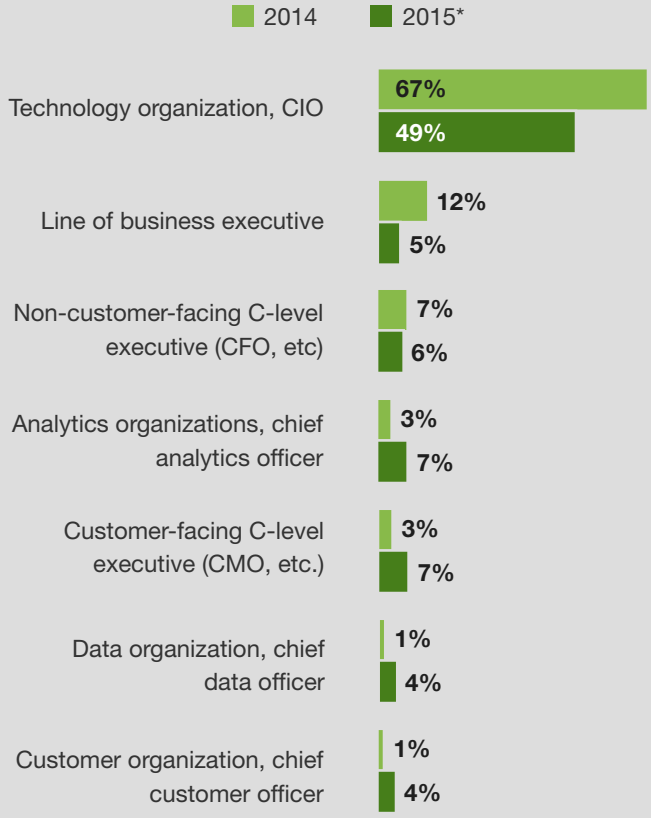
"To the best of your knowledge, to what extent do you expect your firm's use of public cloud for data and analytics to change over the next year?"



Base: 319 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

Figure 2

"Where does your BI organization report to?"



IT is not the only team that needs business intelligence insights — across an organization, teams are demanding more business-driven actionable insights.

Base: 92 professionals with knowledge of business intelligence in their organizations
*Base: 112 professionals with knowledge of business intelligence in their organizations
Note: "Other" and "Don't know" not shown.
Source: Forrester's Q4 2014 Global Business Intelligence Organization Online Survey
*Source: Forrester's Q4 2015 Global Business Intelligence Organization Online Survey

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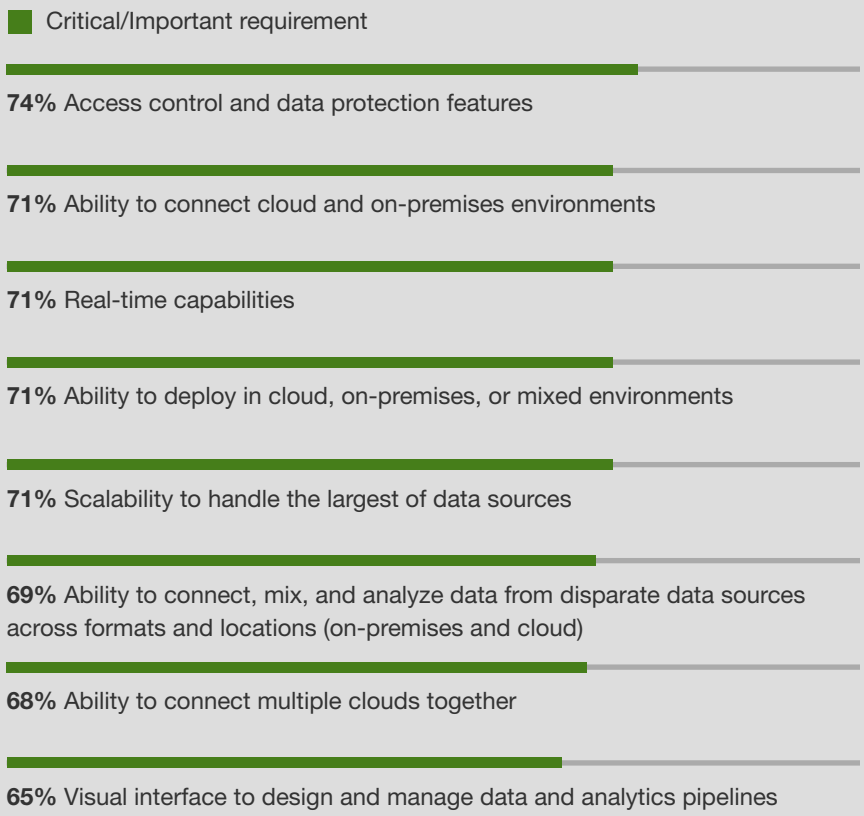
Analytics In Today's Environment Requires Modern Data Integration And Management

Data, fueling myriad business unit analytics, is regularly siloed in dozens, hundreds, and sometimes thousands of different application data stores. The net result is a challenging environment for data scientists, data interpreters, and business users to navigate. Businesses struggle with not only having the right people and skills to access the data, but also managing the complex environments in which the data is stored. Organizations realize that a centralized, traditional data warehouse approach is often insufficient and are increasingly shifting to a hybrid approach for data management, analytical engines, and on-premises/cloud deployments. To that end, they need solutions that can manage hybrid environments without vendor lock-in. Blending the best of multiple cloud environments with the best of analytical engines can help address:

- **Security and expertise concerns.** As organizations store large volumes of data from multiple applications — from traditional systems of record applications such as enterprise resource planning (ERP) or customer relationship management (CRM) data on-premises to internet-of-things (IoT) data on the cloud — they naturally struggle with security concerns around the movement of sensitive data. Notably, organizations also struggle with a variety of people- and skill-specific obstacles, including dealing with large or diverse data sets and tools enabling self-sufficiency with data analytics. Leveraging existing skills and reducing the need for specialized skills for analytics will help address some of these challenges.
- **The need to overcome integration and management of the various environments and data sources.** As data volumes and demand for diverse analytical techniques increase, legacy integration approaches are generally too rigid, hard to develop, and costly to administer to be effective for the modern organization. Going forward, platforms must be flexible enough to handle heterogenous data and must be implemented with a comprehensive strategy to deliver value across the wide data ecosystem. More than 70% of respondents cited both the ability to connect across environments and scalability as critical or important requirements that they seek from a data management/analytics platform (see Figure 3).

Figure 3

"When considering an investment in a data management/analytics platform, what features and/or capabilities are most important to you?"

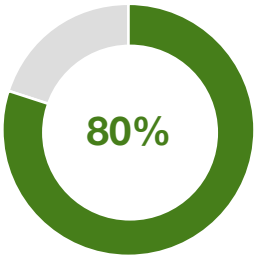


Base: 319 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

- **IT professionals' preference for best-fit solutions for specific use cases to suite solutions.** Eighty percent of respondents agree that they prefer best-fit tools that are custom-tailored to specific use cases — only 27% strongly agreed that a single analytics vendor can satisfy all of their analytical needs today, highlighting a clear shift away from monolithic one-size-fits all approaches (see Figure 4). There is no one silver bullet when it comes to analytics, data management, and/or integration — different workloads require different tools, and best-fit solutions can address the specific workload with the optimum technology at the right time and place.
- **The demand for faster and more cost-efficient insights.** Being able to derive superior comprehensive insights — and to do so efficiently — is critical to success with analytics and data management. Our survey found that those who use multiple best-of-breed cloud platforms for various use cases are able to optimize their processes and experience lower storage costs, faster software development and testing processes, and faster systems of engagement development.

Figure 4

"We prefer best-fit solutions that are custom tailored to specific use cases."



Base: 319 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

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Figure 5

"What are the biggest challenges in trying to deliver data insights to your enterprise? Select all that apply."
(Top 5 responses shown)

Base: 319 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

Adopt a Hybrid Data Approach For Analytics

As data analytics architecture is built out to support the whole data ecosystem, professionals must ensure that they not only leverage the cloud, but also a multitude of on-premises resources. Data management platforms must also be able to embrace the multicloud environment and access various data sources to drive an organization's analytic capabilities forward.

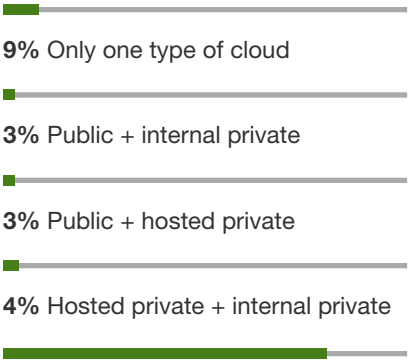
Enter "hybrid data management," a term that describes the unification of diverse data — both transactional and analytic — so that it flows across the enterprise for ready access by both technical and nontechnical users. By integrating the multitude of data sources, business units, and analytics engines, applications can be deployed more quickly and economically than before. Decision makers can get a spherical view across the entire organization and get better, more comprehensive insights that resonate across the organization since this data can be connected, shared, and analyzed at unprecedented scale and speed.

Results show that:

- **Hybrid cloud environments are the new normal.** Ninety-one percent of organizations have adopted hybrid cloud environments, with some combination of public cloud, hosted private cloud, and internal private. Eighty-one percent of organizations have all three (see Figure 6). The next step is figuring out how to best harness data across these three deployment models. Harnessing data in a frictionless way across the organization is the new benchmark for competitive advantage.
- **Organizations are moving to hybrid data models for a variety of reasons.** From lowering storage costs to backup/recovery of data, and to speed up their systems of engagement and software development, organizations are moving to hybrid environments for a number of reasons. A compelling driver is that a new class of use cases, dependent on multiple data sources like real-time retail analytics and fraud detection, require a hybrid approach. Platforms would be remiss not to double down on these drivers, and IT professionals should consider building out a number of hybrid cloud capabilities to support their multicloud strategies — hybrid data is all about moving at the speed of your business, whether it be real time or hours and weeks.

Figure 6

"What types of cloud environments does your organization currently have in place?"



Base: 211 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

81% of organizations have a combination of hosted private cloud environments, internal private cloud environments, and public cloud environments.

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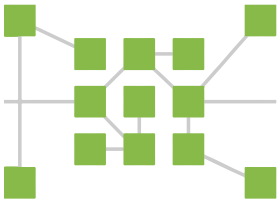
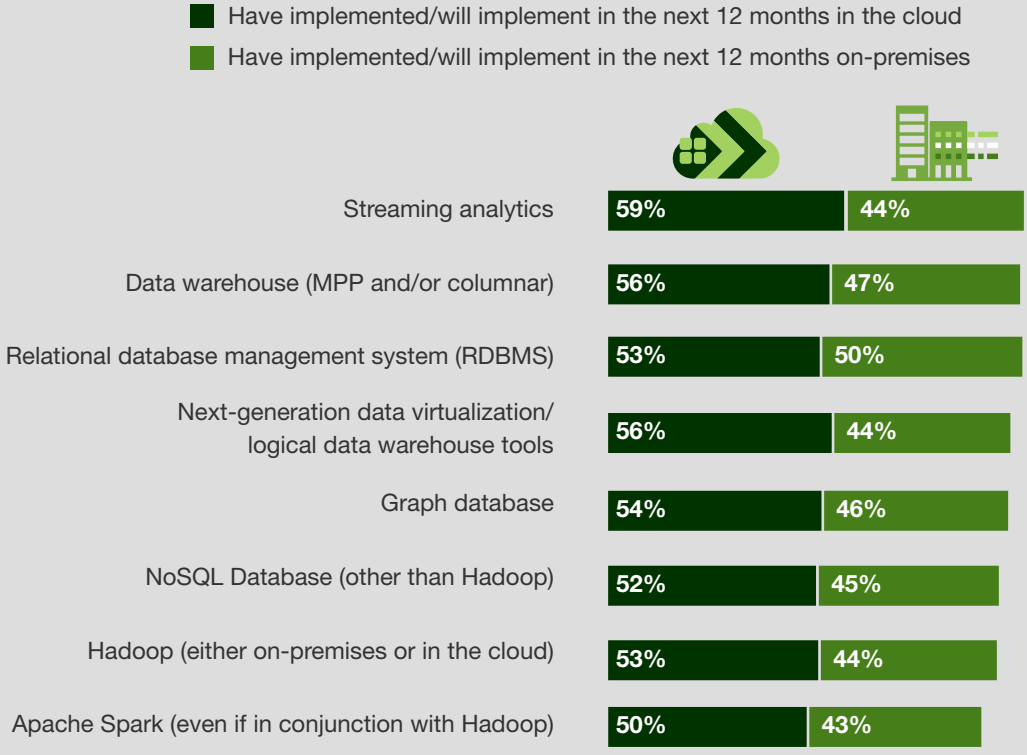
› **Historical reporting falls flat.** Traditional data warehouse approaches center on weekly reporting via predefined key performance indicators (KPIs), and dashboards increasingly fall short of delivering real value. Organizations should look to transform this rigid approach with flexible, agile, and highly analytical systems that deliver superior insight at the speed of your operational, transactional, and customer-facing processes. In this regard, organizations should focus their investments on "best-of-breed" solutions for data integration, analytical engines, and cloud/on-premises deployment.



› **Flexible integration is crucial in enabling these hybrid data models.** While cloud is a crucial part of the future of analytics, it is not the panacea, particularly due to vendor lock-in and hidden costs. As organizations build out tools both in the cloud and on-premises at nearly the same pace, seamless integration between these sources of data will be the key to ensuring that each workload can run on the best infrastructure and that the data is accessible across the organization (see Figure 7). By adopting a flexible hybrid data environment, organizations can maximize their agility to deliver comprehensive business-driven analytics that are scalable and allow for application-specific solutions.

Figure 7

"Which of the following tools or resources at your organization to process and analyze data have you implemented and/or do you plan to implement in the next year?"



Base: 319 IT directors and above with responsibilities for data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

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Key Recommendations

Analytics capabilities determine the value that businesses are able to get from data. Enterprises that can provide hybrid data for analytical engines will enable the entire organization to gain actionable insights around customer behavior and market opportunities to grow market share, reduce costs, and deliver superior customer service.

Forrester's in-depth survey of 319 IT decision makers about data management and analytics yielded several important recommendations:

Value all data from all sources. It is common for enterprises to assign the highest value to data that originates from its core business applications. However, IoT data, external data, long-tail application data, and even public social media-based data can be enormously valuable for advanced analytics. Thus, in a data-driven organization, blending a variety of data sources is increasingly becoming the new normal in a competitive environment where the ability to differentiate breaking trends from unique outliers can be fundamental to an enterprise's ability to compete and win in the marketplace.

Innovate with a spectrum of analytic engines to fully harness the value of diverse data sources both within and outside the enterprise. Reports and dashboards are no longer sufficient for most organizations because they are outdated by the time they reach the business user's hands — the moment of action is gone. Advanced analytics of all genres including predictive, prescriptive, machine learning, and AI all rely on numerous different analytical engines. They are all extremely data-hungry. Don't let data integration and especially infrastructure provisioning slow your business intelligence professionals and data scientists down.

Use a hybrid data approach for both on-premises and cloud infrastructure. As organizations continue to build out hybrid environments, they require pragmatic optimization to tie together their cloud and on-premises infrastructure and make data readily available. Implement a data integration and analytics engine strategy that sees no difference between public cloud and your private cloud in order to achieve success in this area.

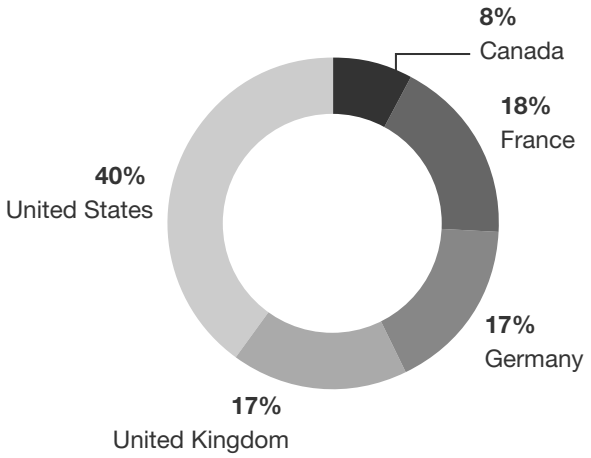
Don't settle for outdated integration techniques and technology. Not only were legacy integration technologies designed solely for on-premises deployments, they were also designed for relatively static point-to-point integrations for operational applications instead of analytical applications. Look for cloud-first, best-fit tools that meet the needs of advanced analytics. Adopt a modern data integration strategy that spans on-premises and multicloud applications. Data sources include those that are internal and external to the company.

Appendix A: Methodology

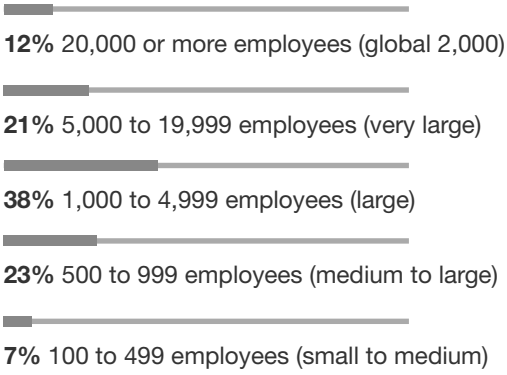
In this study, Forrester conducted an online survey of 319 organizations in North America and Europe to evaluate data management and analytics trends. Survey participants included decision makers in IT. Respondents were offered an incentive as a thank you for time spent on the survey. The study was completed in May 2017.

Appendix B: Demographics/Data

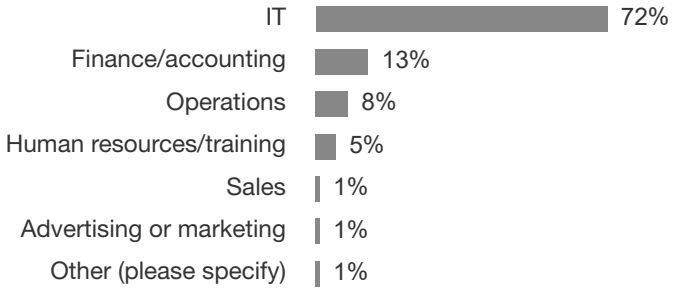
"In which country are you located?"



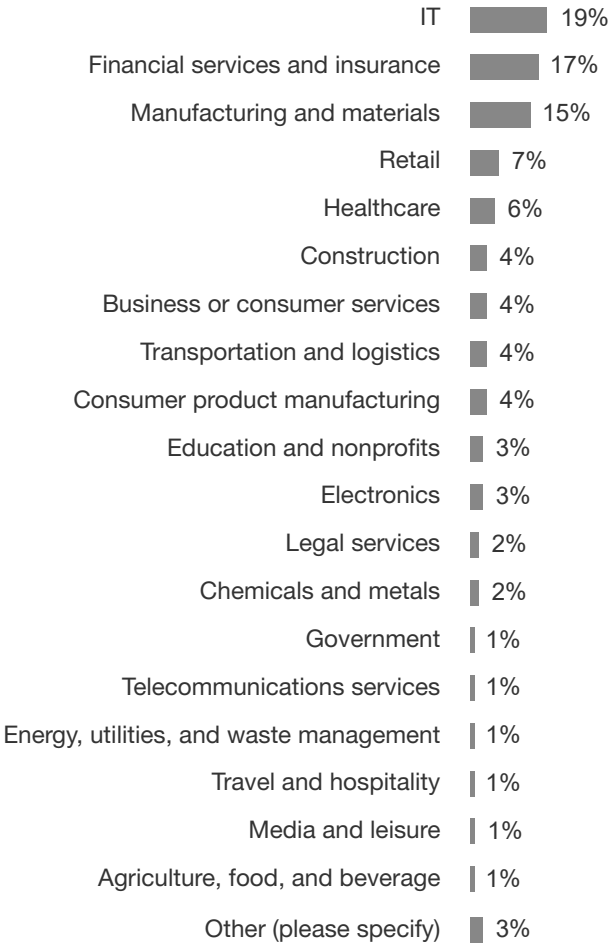
"Using your best estimate, how many employees work for your firm/organization worldwide?"



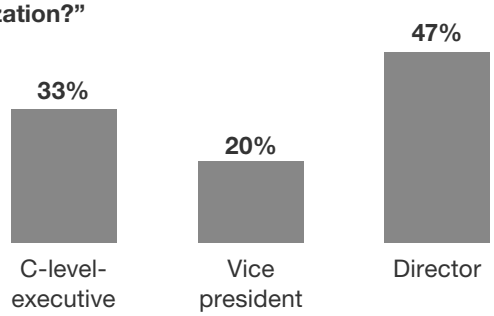
"Which of the following best describes your current position/department?"



"Which of the following best describes the industry to which your company belongs?"



"Which title best describes your position at your organization?"



Base: 319 IT directors and above with responsibilities for data management
Note: Percentages may not total 100 because of rounding.
Source: A commissioned study conducted by Forrester Consulting on behalf of Actian, May 2017

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Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

"Turn Data Into Insights With Customer Analytics," Forrester Research, Inc., April 28, 2016.

"Close The Insights-To-Action Gap With A Clear Implementation Plan," Forrester Research, Inc., December 8, 2016.

"Hybrid Cloud Is The Foundation For Storage Agility And Economics," Forrester Research, Inc., April 28, 2017.