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Business Value Highlights

Average five-year ROI

418%

Five-year discounted benefits per terabyte

\$266,000

Payback period

Four Months

Faster queries compared with previous environment

92%

Five-year TCO savings versus on-premise Hadoop

63%

IT staff efficiencies versus on-premise Hadoop

66%

The Business Value and TCO Advantage of Apache Hadoop in the Cloud with Microsoft Azure HDInsight

EXECUTIVE SUMMARY

Nearly every enterprise of any size has large quantities of unexamined data in various forms: textual notes from sales and support data, machine-generated data such as sensor output, email, contextual data hidden in production databases, and so forth. From this data may be gleaned valuable intelligence regarding business operations, customers, competition, and sales opportunities. Until recently, collecting, examining, and organizing such data and then extracting, formatting, and analyzing the key data components were not possible given the time and cost involved.

Apache Hadoop, along with associated software, offers a low-cost platform for rapidly collecting, sorting, analyzing, and extracting great value from the data. Many organizations, however, have been stymied by their experience with Hadoop due to the cost and complexity of setting up Hadoop clusters and hiring staff with the kind of expertise necessary to get real value out of these critical data collections. An alternative that some are exploring involves turning to a cloud-based Hadoop service, where the basic blocking and tackling of setting up and administering the Hadoop cluster is part of the service, and the enterprise can focus on finding, formatting, and analyzing the data collected in Hadoop. This white paper examines the experiences of enterprises that have turned to Hadoop in the cloud with Microsoft Azure HDInsight and the Azure Data Lake.

IDC interviewed both organizations using Hadoop in the cloud with Microsoft Azure HDInsight and organizations running on-premise Hadoop. Based on these interviews, IDC's analysis shows that Microsoft Azure HDInsight customers are achieving substantial business value by running Hadoop in the Microsoft cloud, projecting that these organizations will achieve average five-year discounted benefits worth \$266,000 per terabyte of data in their

Hadoop environment and an average five-year return on investment (ROI) of 418%. In addition, IDC's comparison of the costs of using Microsoft Azure HDInsight and on-premise Hadoop deployments shows that HDInsight has a 63% lower average total cost of ownership (TCO) on a per-terabyte basis. These business and cost benefits of using Microsoft Azure HDInsight result from it:

- » Enabling employees who work with data to maintain and transform data into insightful analytical outputs in less time and more efficiently through the Hadoop platform
- » Providing a highly scalable and agile Hadoop environment to meet evolving business demand
- » Requiring less IT staff time to deploy, manage, and support Hadoop and data-related operations
- » Costing less than provisioning on-premise IT infrastructure to run Hadoop
- » Minimizing up-front costs of using Hadoop and supporting an opex-centric Hadoop use case, including paying for Hadoop by the minute

Situation Overview

The combination of data-driven competitive pressure and the need to analyze data from new sources has made the adoption of a technology such as Hadoop imperative. Maintaining Hadoop clusters is difficult and expensive, however, and keeping them operational on a continuous basis is even more daunting. Large enterprises with deep pockets may be able to hire teams of expert technicians to manage their Hadoop environments, but most enterprises lack those resources. In many cases, they turn to cloud-based Hadoop management services as a way to address this issue. The effect of this is not only saving operational expenses but, more importantly, realizing enhanced business value from reliable, professionally managed Hadoop data collections.

Microsoft offers a leading Hadoop service called Microsoft Azure HDInsight. This service enables user organizations to bypass the cost and risk associated with purchasing and standing up a Hadoop cluster of servers and maintaining that cluster over time. Moreover, since it is possible to pay only for what is used, they don't need to overprovision by purchasing server and networking assets for anticipated future requirements, and for Hadoop projects of limited duration, they can stand up, load, operate, and shut down a Hadoop cluster, paying only for the time of use.

The Business Value and TCO Advantage of Hadoop with Microsoft Azure HDInsight

Study Demographics

IDC conducted two sets of interviews for this study: seven interviews with organizations using Hadoop in the cloud with Microsoft Azure HDInsight and six interviews with organizations running on-premise Hadoop. The interviews with the Microsoft Azure HDInsight customers provide the basis for this study's ROI analysis, while the interviews with both the Microsoft Azure HDInsight customers and the organizations running Hadoop with on-premise infrastructure have been used for the TCO analysis.

Microsoft Azure HDInsight Customers

The seven Microsoft Azure HDInsight customers interviewed for this study have an average of 3,622 employees, ranging from only 11 to up to 15,000 (see Table 1). These organizations represent a variety of industries and geographies, with headquarters in six different countries. On average, these organizations have Microsoft Azure HDInsight environments with 19TB of data and an average of two business applications.

TABLE 1

Demographics of Interviewed Organizations: Microsoft Azure HDInsight Customers		
	Average	Range
Number of employees	3,622	11 to 15,000
Number of IT staff	134	1 to 750
Number of internal IT users	3,326	11 to 13,500
Terabytes in Microsoft HDInsight environment	19.1TB	2.4GB to 85TB
Applications in Microsoft HDInsight environment	2.1	1 to 5
Countries	United States, Brazil, Spain, Germany, Denmark, Israel	
Industries	Energy, food and drink, ISV, professional services	

Source: IDC, 2015

For the purposes of this study's ROI analysis, IDC has analyzed the impact of Microsoft Azure HDInsight on the organizations' costs, operations, and business compared with the organizations' environments before moving to HDInsight. Table 2 shows how these organizations are using Microsoft Azure HDInsight and describes their legacy environment. Table 2 indicates that they have deployed Microsoft Azure HDInsight with an eye toward supporting their operations and business with Big Data analytics, although efficiencies in preparing, processing, and maintaining data were mentioned by several organizations.

TABLE 2

Overview of Microsoft Customers Using HDInsight: Use Cases and Legacy Environments

Vertical	HDInsight Use Case	Migration to HDInsight
Technology services	Big Data for application used by customers and internal staff	Greenfield
Energy	Big Data about operations	On-premise storage, no Big Data platform
Food and drink	Big Data for research and development for products	Traditional relational databases, on-premise
ISV	End-to-end flow for statistics, data analytics for statistics	Other cloud database
Data mining	Data mining and data collection	Hadoop on-premise
ISV	Big Data applications	Hadoop on-premise
Professional services	Data preparation and processing	Greenfield, historically a mix of database solutions

Source: IDC, 2015

Organizations Running Hadoop On-Premise

Table 3 presents the firmographics of the organizations interviewed by IDC for this study that are running on-premise Hadoop. On average, these organizations are large corporations, with an average employee base of 137,292. Their Hadoop environments are also larger than those being run by Microsoft Azure HDInsight customers, at an average of 89TB, although the difference in the scale of Hadoop environments is less significant than the difference in terms of organizational size.

TABLE 3

Demographics of Interviewed Organizations: On-Premise Hadoop Users	
	Average
Number of employees	137,292
Number of IT staff	4,470
Number of internal IT users	136,479
Terabytes in on-premise Hadoop environment	89
Applications in on-premise environment	99
Industries	Technology, healthcare, telecom, financial services
Country	United States

Source: IDC, 2015

ROI Analysis of Microsoft Azure HDInsight Customers

Microsoft customers using Hadoop in the cloud reported that they are achieving substantial benefits from using HDInsight to drive their Big Data analytics operations and also to maintain large amounts of data. In particular, HDInsight has enabled much higher levels of productivity for employees who are responsible for using and transforming data to drive their organizations' operations and businesses while still serving as a cost-effective and easy-to-manage Hadoop solution.

IDC calculated the benefits these Microsoft customers are expected to achieve over five years by comparing their costs and operations with HDInsight with their costs and operations with their previous data environments. Based on this analysis, IDC puts the value of expected benefits at an average annual value of \$75,300 per terabyte over five years (\$1.81 million per organization) (see Figure 1). These benefits fall into four main categories, with business productivity and revenue gains constituting a strong majority of the value because these organizations have transformed or initiated Big Data analytics efforts with their HDInsight deployments. The four categories are:

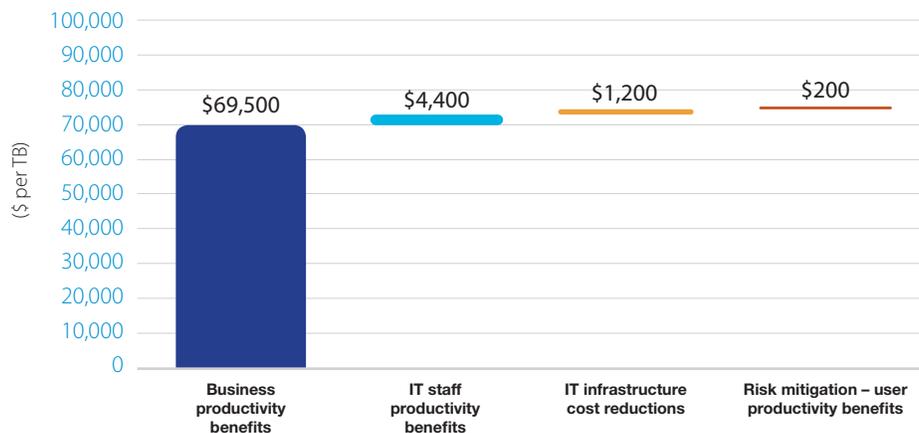
- » **Business productivity benefits.** Employees responsible for providing and leveraging analytics to drive business operations are much more productive. Data scientists and business analysts can leverage a much-improved ability to organize, maintain, and transform data into meaningful insights quickly and efficiently, making them substantially more productive. In addition, applications that depend upon analytics are more functional and released in less time with HDInsight, which increases

the productivity of line-of-business employees and can help generate additional revenue. IDC projects that the value of increased productivity and higher revenue with Microsoft Azure HDInsight will average \$69,500 per terabyte per year over five years (\$1.67 million per organization).

- » **IT staff productivity benefits.** IT staffs responsible for maintaining their data environments and infrastructures save time with HDInsight, even as their data-related operations have become much more robust. IDC calculates that these time savings and efficiencies will have an average value of \$4,400 per terabyte per year over five years (\$106,800 per organization).
- » **IT infrastructure cost reductions and avoidances.** Servers and other hardware can be decommissioned by moving to the cloud with HDInsight, even as organizations substantially improved their Big Data analytics capabilities. IDC projects that, on average, interviewed Microsoft customers will reduce and avoid costs worth \$1,200 per terabyte per year over five years (\$28,300 per organization). In addition, interviewed organizations reported avoiding the substantial costs associated with building out an on-premise Hadoop environment as well as the ability to tailor the compute and storage resources as needed to support Hadoop workloads with HDInsight.
- » **Risk mitigation — user productivity benefits.** Microsoft customers are experiencing minimal outages with HDInsight, which limits the amount of lost productive time and impact on their businesses. IDC puts the average value of increased user productivity at

FIGURE 1

Average Annual Benefits per Terabyte in Microsoft Azure HDInsight Environment



Total average annual benefits per TB: \$75,300

Source: IDC, 2015

\$200 per terabyte per year over five years, or \$5,400 per organization.

Business Productivity Benefits

Microsoft customers using Hadoop in the cloud with HDInsight have improved the productivity of highly skilled employees and better support their businesses thanks to HDInsight's performance and scalability (see Table 4). Interviewed organizations can now run analytical queries in substantially less time than before — roughly 10 minutes on average compared with more than 2 hours — and can scale their Hadoop environment in near real time — about 10 minutes on average to deploy a virtual machine (VM) compared with over 4 hours on average previously. An IT manager at German software company Ultra Tendency described the benefit of this performance and scalability: *"We are more agile and more elastic with respect to the cost of supporting our business because our workloads vary depending on the time of the day. With HDInsight, we can spin up new clusters whenever we need them and shut them down when we don't need them."*

TABLE 4

Performance KPIs with Microsoft Azure HDInsight				
	Previous Environment	Microsoft HDInsight	Difference	Benefit (%)
Average time per query (hours)	2.3	0.2	2.1	92.1
Average time to deploy VM (hours)	4.3	0.2	4.1	95.9

Source: IDC, 2015

"Instead of our data scientists working as IT people by taking care of the data, we are building a setup with HDInsight where the IT department takes care of the data and the data scientists become analysts rather than infrastructure managers."

Organizations using Hadoop in the Microsoft cloud are leveraging HDInsight's performance and scalability to improve the productivity of highly skilled employees. Several organizations noted that they were enabling data scientists, business analysts, and other employees who depend on data analytics to do their jobs. An IT manager at Danish bioscience company Chr. Hansen described the impact of HDInsight on its data scientists: *"Instead of our data scientists working as IT people by taking care of the data, we are building a setup with HDInsight where the IT department takes care of the data and the data scientists become analysts rather than infrastructure managers."* Another noted the transformative effect of HDInsight on its business analyst team: *"Our business analysts are much more effective with HDInsight. Their performance has improved drastically because they are able to do many more tasks each day. I would say that four business analysts are saving 40–50% of their time every day, and 10 others are saving 10–20% of their time."*

Meanwhile, improved and faster data analytical insights also help these Microsoft customers

“Because we pay for HDInsight as it is needed, it’s so much easier for us to support new customers because we can quickly onboard new customers when we win their business.”

provide improved and timely applications and services for employees and customers. HDInsight users provided several examples of these benefits:

- » **Reduced time to market for services and applications:** One interviewed organization said: *“The most significant benefit for us with HDInsight is turnaround time from the original request for development and creating a solution for our customers. The time to market on applications has gone from months to weeks — six months to six weeks on average, basically.”*
- » **Enhanced productivity of line-of-business users:** One interviewed organization explained that it is using analytics through Microsoft Azure HDInsight to make the work of several hundred field employees more efficient by putting actionable data at their fingertips.
- » **Improved business agility:** One interviewed organization noted: *“Because we pay for HDInsight as it is needed, it’s so much easier for us to support new customers because we can quickly onboard new customers when we win their business.”*
- » **More business:** One interviewed organization explained: *“HDInsight has had a big business impact on us, in the range of a million dollars per year of additional revenue. Before, we just wouldn’t have been able to scale up sufficiently with our tools and knowledge to capture this additional business.”*

Table 5 provides an overview of the average business-related benefits interviewed Microsoft Azure HDInsight customers are achieving.

TABLE 5

Business Productivity Key Performance Indicators	
Data-related IT staff impact — % of staff impacted	31.8%
Data-related IT staff impact — % of productivity gain	19.8%
End-user impact — % of users impacted	3.2%
End-user impact — % of productivity gain	3.5%
Revenue impact per organization	\$670,000

Source: IDC, 2015

IT Staff Productivity Benefits

Microsoft Azure HDInsight customers also benefit from the ease of deploying, maintaining, and supporting their Hadoop environments in the Microsoft cloud. With HDInsight, they minimize the amount of time their IT staffs must spend maintaining their data environments, and they have not had to increase the resources they devote to supporting their analytics efforts even as they have become significantly more robust. As Fernando Steler, IT manager at Brazilian retailer Direct

“The benefit of Hadoop with Microsoft Azure HDInsight is that we know we will be able to grow our Hadoop environment as much as we need. It’s a fully scalable platform for whatever needs we have, whether in six months or six years.”

One, explained about moving from an on-premise Hadoop environment: *“We are saving time because we don’t have to deal with the hardware and avoided about three hires as we’ve grown our environment with HDInsight.”* As a result, the interviewed Microsoft customers using HDInsight are saving more than 80 hours of IT staff time per year in terms of ongoing management and support per terabyte within their HDInsight environments.

IT Infrastructure Cost Reductions

Microsoft Azure HDInsight customers have expanded their Big Data analytics environments substantially, which means that their absolute IT infrastructure-related cost savings are not as significant as the impact on their operations, businesses, and IT staffs. Nonetheless, they still reported some savings by retiring or repurposing some datacenter hardware. However, for these organizations, the more important benefit of Microsoft Azure HDInsight has been its scalability and their ability to use Hadoop without needing to make a substantial up-front investment in hardware or overprovision datacenter resources. HDInsight’s ability to support an opex-driven model for using Hadoop is a key driver of their ability to use Hadoop and realize the business benefits already discussed. Javier Arratibel Hernández, IT manager at Spanish renewable energy company Acciona, explained: *“The benefit of Hadoop with Microsoft Azure HDInsight is that we know we will be able to grow our Hadoop environment as much as we need. It’s a fully scalable platform for whatever needs we have, whether in six months or six years.”* Hernández also referenced the benefit for his company of paying for only the Hadoop capacity it uses: *“We can have on-demand Hadoop with HDInsight. We have a test cluster that we can turn off at night and weekends when we’re not using them, and we don’t have to pay for them with HDInsight. When we want to test something, we start up a new cluster, do what we want, and then shut it down.”*

In addition, HDInsight customers reported benefiting from the ability with Hadoop in the Microsoft cloud to tailor compute resources to their workloads. For these organizations, this results in better performance and price efficiencies. One customer referenced the flexibility of Microsoft Azure HDInsight in onboarding new customers when it does not always know what the compute and storage demands will be: *“With HDInsight, I can get a new customer and quickly onboard it, even if I don’t know how big their data will be With on-premise, we would plan ahead, but we’d still have to have extra hardware waiting to be used to support the customer.”*

Risk Mitigation — User Productivity Benefits

Microsoft Azure HDInsight customers reported that they are benefiting from the strong uptime and reliability of HDInsight as their Big Data analytics platform. On average, each user of IT services at these organizations is losing only 0.3 hours of productive time per year due to unplanned downtime with HDInsight. As with infrastructure costs, it is challenging to compare the impact of unplanned downtime experienced by organizations after deploying

Microsoft Azure HDInsight with the impact of unplanned downtime in their previous environments because the organizations' data analytics operations have become much more robust with Microsoft Azure HDInsight. Still, even with this increased functionality, these organizations reported that they are losing 65% less productive time due to unplanned downtime with Microsoft Azure HDInsight and 54% less productive time when also considering planned outages.

ROI Analysis

IDC interviewed Microsoft customers using HDInsight and recorded their results to inform this study's analysis. IDC used the following three-step method for conducting the ROI analysis:

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment.** In this study, the benefits included user productivity increases, increased revenue, IT staff time savings, and IT infrastructure cost reductions.
- 2. Created a complete investment (five-year total cost analysis) profile based on the interviews.** Investments go beyond the solution's costs and can include additional costs related to the solution, such as planning, consulting, configuration or maintenance, and IT staff or user training.
- 3. Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments over a five-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

Table 6 presents IDC's analysis of the average discounted benefits, investment, and ROI for the Microsoft customers interviewed for this study. Based on this analysis, IDC projects that the organizations will invest a discounted average of \$51,300 per terabyte in their Microsoft Azure HDInsight environments (\$1.19 million per organization) over five years, which IDC calculates will result in benefits worth a discounted average of \$266,000 per terabyte (\$6.17 million per organization). For these organizations, these benefits and investment costs would result in an average five-year ROI of 418% and a payback period of 3.9 months.

TABLE 6

Five-Year ROI Analysis		
	Per Organization	Per TB in HDInsight Environment
Benefit (discounted)	\$6.17 million	\$266,000
Investment (discounted)	\$1.19 million	\$51,300
Net present value (NPV)	\$4.98 million	\$214,700
Return on investment (ROI)	418%	418%
Payback period	3.9 months	3.9 months
Discount rate	12%	12%

Source: IDC, 2015

TCO Comparison of Microsoft Azure HDInsight and Hadoop on-premise

In addition to the business and scalability benefits of using HDInsight, Microsoft customers noted that HDInsight offered a lower TCO in terms of datacenter costs and IT staff time costs than an on-premise Hadoop solution. To compare the cost of running Hadoop in the Microsoft cloud with HDInsight with operating on-premise Hadoop, IDC compared datacenter- and IT staff-related costs based on interviews with HDInsight users and organizations running on-premise Hadoop. IDC calculates that when normalized on a per-terabyte basis from the organizations' Hadoop environments, HDInsight customers have a 63% lower TCO on average over five years.

Avoided Infrastructure Costs

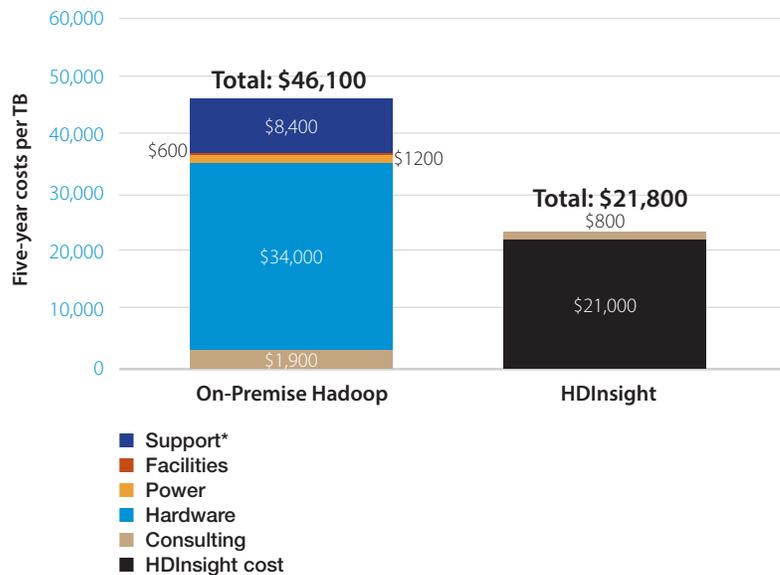
Microsoft Azure HDInsight customers avoid costs for their Hadoop environments because they do not need to pay for hardware, power and facilities, and support. On a per-terabyte basis, IDC's analysis shows that the average cost of HDInsight is 53% lower than the annualized cost of building out the on-premise infrastructure needed to run Hadoop (see Figure 2). In addition to these cost efficiencies, the cost structure of HDInsight, which enables organizations to pay based on their actual use, mitigates concerns of overprovisioning (and overpaying) and increases confidence that Hadoop environments will match business demand. The manager at Chr. Hansen explained: *"We had very low initial costs with HDInsight compared with installing Hadoop on-premise. We did some initial costing and found that on-premise would have cost \$100,000 just to start up. That would have been 100 times more than we*

"We had very low initial costs with HDInsight compared with installing Hadoop on-premise. We did some initial costing and found that on-premise would have cost \$100,000 just to start up. That would have been 100 times more than we used to start with HDInsight in the cloud."

used to start with HDInsight in the cloud.” An IT manager at Milliman Consulting attributed the lower overall cost of HDInsight in large part to its ability to avoid substantial up-front costs associated with building out an on-premise environment: “Hadoop on-premise in general will be more costly than running in the cloud due to capex investment requirements. Running in the cloud using HDInsight allows you to scale much more efficiently than on-premise, in a cost-effective pay-as-you-go model.”

FIGURE 2

Five-Year IT Infrastructure Costs: Hadoop On-Premise Versus HDInsight per Terabyte



* Assumes server refresh cycle of three years; hardware includes server, network, storage, and related costs; support includes annual fee for using Microsoft Hadoop

Source: IDC, 2015

“We have three staff members who work 100% on the HDInsight environment. If we were going to do it on-premise, we would need more people from the infrastructure department to set up servers and storage, so we’d probably have to double these resources.”

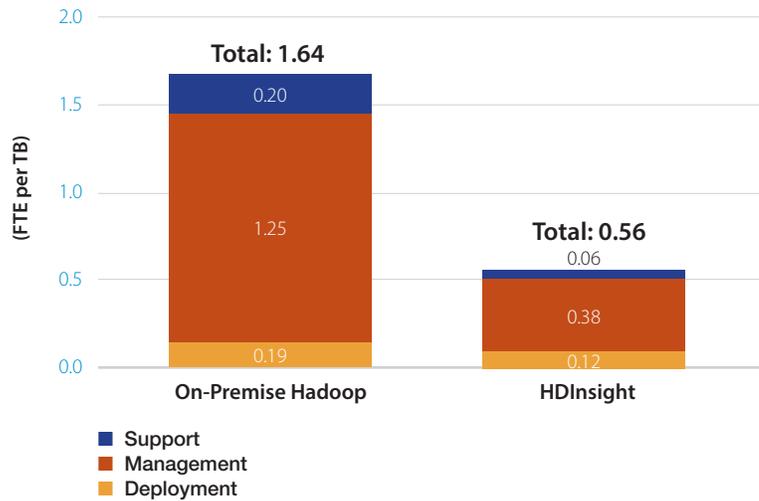
IT Staff Efficiencies

Microsoft customers also reported requiring much less IT staff time to support Hadoop in the cloud with HDInsight compared with running on-premise Hadoop (see Figure 3). The organizations uniformly told IDC that they would need more IT staff resources just to support infrastructure dedicated to Hadoop if they deployed it on-premise. Steler at Direct One stated: “We have three staff members who work 100% on the HDInsight environment. If we were going to do it on-premise, we would need more people from the infrastructure department to set up servers and storage, so we’d probably have to double these resources.” IDC’s analysis shows that on

average, organizations running Hadoop in the Microsoft cloud with HDInsight require 66% less IT staff time per terabyte in their Hadoop environments than organizations running on-premise Hadoop, taking into account time required for deploying, managing, and supporting their Hadoop environments.

FIGURE 3

Five-Year IT Staff Required: Hadoop On-Premise Versus HDInsight per Terabyte



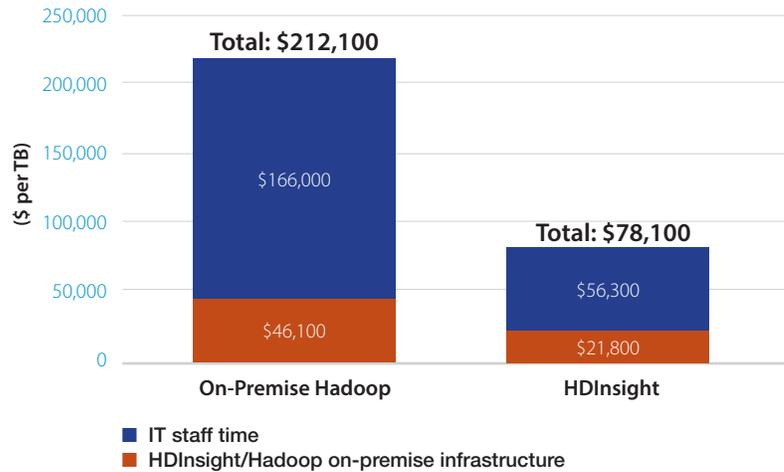
Source: IDC, 2015

TCO Analysis

Based on the analysis of costs and staff time required by interviewed organizations to deploy, maintain, and support Hadoop environments in the Microsoft cloud with HDInsight compared with on-premise Hadoop, IDC calculates that HDInsight customers spend an average of 63% less per terabyte than organizations running Hadoop with on-premise infrastructure. As Figure 4 shows, IDC projects that Microsoft Azure HDInsight customers will spend an average of \$78,100 per terabyte over five years in these areas, compared with \$212,000 per terabyte for organizations with on-premise Hadoop.

FIGURE 4

Five-Year TCO of Hadoop On-Premise Versus HDInsight per Terabyte



Source: IDC, 2015

Challenges and Opportunities

Microsoft Azure HDInsight is not the only Hadoop cloud service available, and Microsoft will no doubt be challenged by competitors for some time to come. Integration with the Microsoft Azure environment gives Microsoft a natural advantage in the case of customers that are committed to that cloud platform, but Microsoft Azure HDInsight must continue to compete well with other standalone Hadoop cloud services. Growth in the types and volume of data to be collected and analyzed, fueled in part by the still evolving Internet of Things phenomenon, will create greater demand for such services, and Microsoft will need to evolve its service to satisfy that demand.

Summary and Conclusion

Hadoop has become a key facility that enables enterprises to gather, sort, format, curate, and analyze very large amounts of data quickly and efficiently. But Hadoop is expensive to operate, and somewhat unreliable, owing to its complexity and a lack of available talent to manage it. Therefore, many enterprises are turning to cloud-based Hadoop services, such as Microsoft Azure HDInsight.

IDC's comparison of Microsoft Azure HDInsight use cases and on-premise Hadoop deployments revealed that HDInsight offers better cost management and cost avoidance, greater reliability, and more flexibility than on-premise Hadoop deployments, leading to substantial business benefits not only in terms of lower costs but also in terms of greater business opportunity.

In summary, enterprises considering their options with respect to Hadoop deployment should think about the following:

- » Adding cluster after cluster to an IT environment increases the cost of management exponentially; when Hadoop is stood up in the virtualized environment of a cloud platform, as a managed service, those costs go away.
- » Most Hadoop deployments aren't used constantly, but when deployed onsite, they are paid for constantly. It may make more sense to go with a service that enables you to pay for only what you use.
- » IDC research, in this instance, has shown that both cost benefits and revenue benefits accrue when enterprises leave the blocking and tackling of Hadoop cluster management to someone else and concentrate instead on collecting the right data and finding actionable insights.
- » When formulating a list of Hadoop services for consideration, enterprises should include Microsoft Azure HDInsight.

Appendix: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Microsoft Azure HDInsight as the foundation for the model and interviewing users of on-premise Hadoop for the TCO analysis. Based on these interviews, IDC performs a three-step process to calculate the ROI and payback period:

- » Measure the savings from reduced IT costs (staff, hardware, software, maintenance, and IT support), increased user productivity, and improved revenue over the term of the deployment.
- » Ascertain the investment made in deploying the solution and the associated training and support costs.
- » Project the costs and savings over a five-year period and calculate the ROI and payback for the deployed solution.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- » Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings.
- » Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.
- » The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.
- » Lost productivity is a product of downtime multiplied by burdened salary.
- » Lost revenue is a product of downtime multiplied by the average revenue generated per hour.
- » The net present value of the five-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.

Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings. As part of our assessment, we asked each company what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. IDC then taxes the revenue at that rate.

Further, because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

Note: All numbers in this document may not be exact due to rounding.

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