



Sponsored by: **Lumen**

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Business Value Highlights

>2.5:1
benefit-to-investment ratio

10 months
to payback

63%
more efficient IT
infrastructure teams

44%
lower capex costs

41%
lower five-year cost
of operations

83%
less unplanned downtime

2.2%
higher net productivity
from improved application
performance

Lumen IT Solutions Deliver Efficient, Agile, and High-Performing Platforms for Business-Critical Applications and Services

EXECUTIVE SUMMARY

A key first step in any organization's efforts to transform its business is the move to a modernized, cloud-based IT infrastructure. Cloud, however, is not about a specific datacenter or a specific cloud IaaS environment. Cloud is about the timely and effective delivery of new applications and enhancement of existing applications in internal datacenters and in a growing range of shared public cloud facilities. Easy application migration and ongoing optimization of applications and data are critical.

IDC interviewed organizations that are using Lumen Inc.'s IT solutions, including Lumen Cloud, Adaptive Networking, Managed Hosting, and Managed IT/Cloud Services, to understand their impact on their IT costs, IT teams, and business outcomes. Study participants reported benefiting from Lumen's broad expertise in managing many facets of their evolving IT environments as well as having greater confidence in making new investments due to the strong performance and reliability of their Lumen environments. As a result, study participants are achieving significant value, which IDC quantifies as being worth an average of \$250,400 per 100 users per year, in the following ways:

- **Reducing the burden of managing infrastructure**, thereby optimizing staffing requirements and freeing up valuable time to focus on other initiatives
- **Lowering IT infrastructure costs** by lowering capital expenditures (capex) and ongoing IT costs
- **Bringing down the overall cost of operating applications and workloads**, thereby allowing their businesses to invest in other technologies and processes to deliver better customer experiences and strengthen their market positions

- **Minimizing business risk and risk-related costs** by cutting the frequency and impact of unplanned outages affecting key business applications and taking advantage of Lumen’s expertise with new environments to more quickly invest in new applications
- **Achieving more effective business operations through improved performance and agility**, which results in higher employee productivity and revenue gains

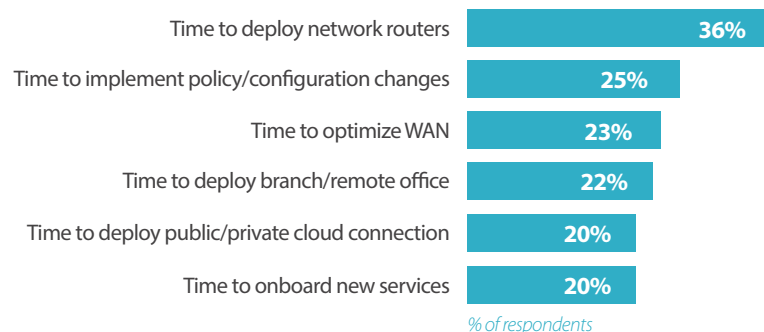
SITUATION OVERVIEW

The need for organizations to engage in digital transformation is ubiquitous in every industry. For most of the past 50 years, business leaders viewed financial capital as their most valuable resource. With digital transformation, we are now entering an economy where an organization’s most important resource is its ability to acquire, analyze, and act on information drawn from data sources that are increasing at unprecedented rate. Further:

- Organizations must accelerate their ability to develop and deliver new products and experiences built on a digital, cloud-based foundation.
- Many businesses want to multiply their returns on investments (ROIs) in physical assets and business processes through greater use of analytics and automation.
- Every organization must ensure that their employees can better serve customers, patients, or constituents by having access to the right resources and data.

One consequence for CIOs and their IT teams is that the pace of business change is faster than ever before. The biggest bets by senior business leaders when it comes to reinventing the corporation focus on customer experience/engagement transformation, information collection, distribution/analysis transformation, and business operating model transformation (see Figure 1).

FIGURE 1 Top Business Goals from Technological Investments



n = 400 Source: IDC’s Cloud and AI Adoption Survey, February 2019

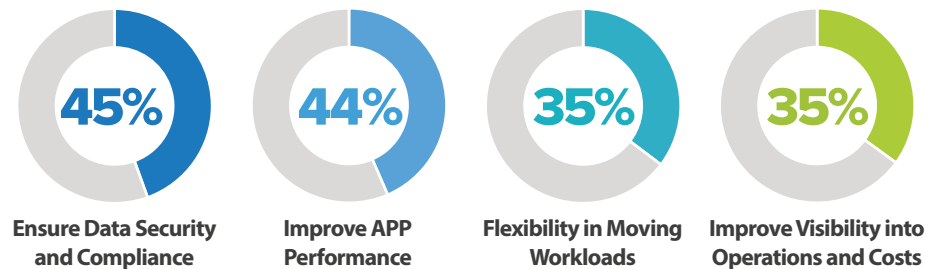
The diversified technology, workload, and data portfolios that underpin modern digital business services are the greatest source of stress for today’s CIOs and their teams, along with the acceleration in the rate of change required to sustain a modern digital service. The desire to create value, growth, and competitive advantage is jeopardized by the failure of IT organizations to convert from being the back-office enabler of internal business processes to playing a leading role as the engine powering digital business flows among people and things.

For many IT teams, this failure is due, at least in part, to the following shortcomings:

- Inconsistency in the configuration of systems that increase operational costs and reduce reliability
- Inflexible deployment options that lead to over-deployment of underused assets
- Reluctance to invest in the expertise required to adopt new technologies and engage in new service creation

IT organizations must play the leading role in moving the organization to a cloud-based IT foundation that enables the timely and orderly migration and modernization of existing applications as well as their linkage to new applications, all without jeopardizing reliability or data control. This new objective also means that IT teams’ priorities are also changing (see Figure 2).

FIGURE 2 Top Cross-Datacenter Priorities



n = 400 Source: IDC's Datacenter Operational Survey, January 2019

The benefits that organizations gain from a successful move to cloud-based IT include:

- Greater use of self-service functionalities across dedicated on-premises and shared cloud environments to ensure consistent deployment of resources and migration/movement of applications to align with changing business requirements
- Enablement of agile resource delivery at all levels (development, IT systems, and datacenters) so that the business can take early advantage of innovative technologies

- Offload/automation of the IT “chores” associated with deploying, maintaining, and updating compute, storage, and network assets so that internal IT personnel can focus on the more strategic tasks of service creation, data control, and governance

This IDC Business Value White Paper provides insights on how a number of organizations are leveraging Lumen’s consistent, but expanding, portfolio of Cloud, Adaptive Networking, Managed Hosting, and Managed IT/Cloud Services to accelerate their move to a cloud-based IT operating model that enables the more agile and secure IT service delivery required to compete in today’s digital economy. It also provides insights into how the use of Lumen solutions translates into lower infrastructure and IT operations costs as well as delivery of more agile, secure, and reliable infrastructure to support modern digital applications.

LUMEN OVERVIEW

Lumen is a leading provider of networking, cloud hosting/connectivity, managed cloud, and security services to customers around the world. The company’s goal is to provide secure and reliable services to meet the growing digital demands of businesses, acting as trusted experts/advisors that speed adoption and reduce the burden of deploying and managing the technologies required to enhance customer experiences and more effectively leverage fast-growing data sources.

For customers seeking to shift to a cloud-based IT environment, Lumen offers a wide range of services and solutions with specific focus on solutions in the following areas:

- Reducing the time and resources required to operate existing network, infrastructure, security, and applications through a portfolio of managed services offerings
- Speeding the shift to cloud-based infrastructure and applications with a broad portfolio, including:
 - Private cloud hosting/management services
 - Assessment/ongoing management of public cloud infrastructure and application services
 - Cloud connectivity, migration, and security management services
 - Industry- and application-specific services in areas such as IoT, Big Data, SAP, and disaster recovery

- A broad range of integrated security services and managed services covering network, perimeter, and threat management

An important focus for Lumen is to ensure that its broad portfolio of offerings is more than a set of complementary management services. Its teams focus on providing customers with expertise in emerging technologies and cloud services capabilities, enabling the customers to more quickly and less expensively adopt new technologies that are pivotal for any modern IT organization.

THE BUSINESS VALUE OF LUMEN IT AGILITY SOLUTIONS

Study Demographics

IDC interviewed six organizations about their use of Lumen IT solutions, including Lumen Managed Hosting, Managed IT/Cloud Services, Cloud, and Adaptive Networking solutions. Interviews were designed to understand the impact on Lumen customers of their use of these solutions in a variety of areas, including IT costs, IT staff, application performance and availability, and business results. Lumen customers interviewed were relatively large organizations with an average employee base of 6,100 and annual revenue of \$2.76 billion. They spoke to the experiences with Lumen of organizations based in the United States (4) and United Kingdom (2) as well as a variety of industry verticals, including the automotive, aviation, financial services, life sciences, manufacturing, and travel industries (see Table 1).

TABLE 1 Demographics of Interviewed Organizations

	Average	Median
Number of employees	6,100	5,950
Number of IT staff	169	130
Number of business applications	210	225
Revenue per year	\$2.76 billion	\$2.1 billion
Countries	United States (4), United Kingdom (2)	
Industries	Automotive, aviation, financial services, life sciences, manufacturing, travel	

n=6 Source: IDC, 2020

Choice and Use of Lumen IT Solutions

Interviewed organizations provided various reasons for choosing Lumen IT solutions, but their decision most often came down to concluding that Lumen offered them the right mix of expertise, IT service and networking capabilities, and personalization. They were especially drawn to having the ability to obtain top-quality IT infrastructure for their compute and networking environments with knowledgeable and expert managed services to support these environments. Interviewed Lumen customers spoke to these decision criteria compared with other solutions and approaches they considered:

- **Quality and mix of hosting and networking services:** *“We chose Lumen for the quality and number of services as well as the ability to execute across both the hosting and network sides of things ... Lumen understands our business because they’ve been working with us for so long. They understand the applications we’re running and the importance of those applications to us. It’s really that custom-tailored experience that’s key for us.”*
- **Pricing and combination of network/datacenter services:** *“We chose Lumen because we thought their pricing was good and we saw a lot of synergies between the network and the datacenter services.”*
- **Better match for business with service/response:** *“Lumen had the best solution for our requirements. Their size works for us — we didn’t want to be just another number for a bigger provider — it’s more of a similar size to our company ... so we actually get better service and better response.”*

Study participants described using Lumen IT solutions in the context of cloud strategies as opportunistic. They are generally looking to move applications to public or hybrid cloud environments, but only when cost effective from both short- and longer-term perspectives. In terms of specific Lumen IT solutions, most interviewed organizations reported using Lumen managed hosting, cloud, and hybrid infrastructure services, as well as managed hosting services. Study participants are running significant parts of their businesses on Lumen IT solutions:

- Interviewed organizations were running an average of 595 virtual machines (VMs; see the Definitions section for the definition of a virtual machine) and 158TB in their Lumen environments.
- Study participants reported running core business applications and services on their Lumen platforms, including core reservation systems, online customer-facing platforms, ERP systems, Office365, and disaster recovery environments. On average, these

applications and services are associated with more than three-quarters (77%) of their revenue.

See Table 2 for additional details about interviewed organizations' use of Lumen IT solutions.

TABLE 2 Lumen Environments

	Average	Median
Number of VMs	595	550
Number of business applications	118	70
Number of internal users of applications running on Lumen	5,013	4,065
Number of terabytes	158	63

n=6 Source: IDC, 2020

Business Value of Lumen IT Solutions

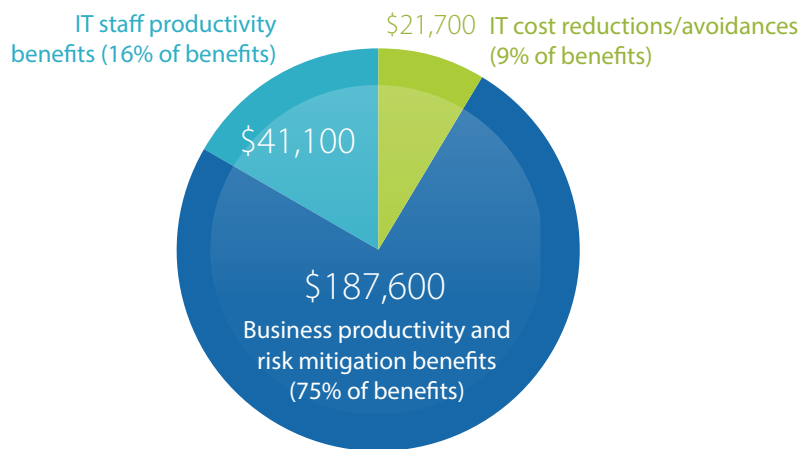
Interviewed organizations described making their IT environments more efficient, reliable, and agile with Lumen IT solutions. In particular, they valued the managed services they obtain from Lumen that enable them to provide their businesses with top-quality IT infrastructure while optimizing their overall costs of running like applications and workloads. While they cited various beneficial aspects of Lumen's IT solutions, they emphasized the expertise, quality, and personalization as driving value:

- **True managed service:** *“The most significant benefit for us of Lumen is that it is a true managed service ... Because our environment is properly managed by Lumen, we can minimize the number of outages we have and have improved performance, which makes our employees more productive.”*
- **Flexibility and customization delivered by Lumen as partner:** *“Lumen gives us flexibility and the ability to control our resources with the full ability to customize. We can do this because they are our IT resources, but controlled by Lumen, who does the work for us.”*
- **Performance and availability to support business:** *“Talking it through from an application perspective, if the environment that we set up with Lumen is that much more stable and doesn't crash, it actually enables us to serve up an offer to internal or external customers that much quicker. Then obviously, there is going to be a business benefit there for us.”*

On average, IDC quantifies the value that interviewed Lumen customers will achieve as worth \$250,400 per 100 users per year (\$12.55 million per organization) in the following areas (see Figure 3):

- Business productivity and risk mitigation benefits:** Organizations benefit from having a higher-performing and more reliable IT infrastructure platform with Lumen, which results in more robust applications and increased business agility. IDC puts the value of higher user productivity and revenue at an annual average of \$187,600 per 100 users (\$9.40 million per organization).
- IT staff productivity benefits:** Organizations require substantially less staff time to manage and support equivalent workloads by leveraging Lumen's expertise and support. IDC quantifies the value of IT staff efficiencies and productivity gains at an annual average of \$41,100 per 100 users (\$2.06 million per organization).
- IT infrastructure cost benefits:** Organizations move from capex-focused investment patterns and optimize ongoing IT infrastructure costs with Lumen IT solutions. IDC calculates that they will save \$21,700 per 100 users per year (\$1.09 million per organization).

FIGURE 3 Annual Average Benefits per 100 Users



n=6 Source: IDC, 2020

Establishing Efficient and Well-Managed IT Environments

Interviewed organizations unanimously cited the advantages of having Lumen manage and provide IT infrastructure capacity through its managed hosting and IT solutions. They noted that Lumen has expertise and knowledge that they could not easily replicate, which allows them not only to run equivalent workloads with streamlined IT infrastructure teams but also to offer more robust and agile IT resources to their businesses. Meanwhile, these efficiencies through Lumen's managed services offer study participants the opportunity to optimize overall costs and staff time requirements, which they can reinvest in new technologies and competing for new business. Interviewed Lumen customers provided examples of how they have benefited in terms of both the quality of their IT infrastructures and maintaining lean IT infrastructure teams:

- **Staff efficiencies related to expertise:** *"We get efficiencies around staffing with Lumen because we are buying managed services from them rather than trying to do everything ourselves. Our staff doesn't have to work on our systems. Lumen are experts and carry sway with other suppliers, which means we can get root causes of issues more quickly."*
- **Avoiding staffing increase to support monitoring/managing done by Lumen:** *"Without Lumen, we would have to buy hardware and additional IT systems and increase our staffing by 30 people ... It's about the capabilities Lumen brings us — we don't have to cobble together our services with other tools, which also means having people learning what the heck to do and actually doing monitoring and management, and doing all this stuff that Lumen's doing for us."*
- **Knowledge enabling efficiencies that allow for more efficient IT operations:** *"Lumen provides us with a deeper bench of knowledge for our storage and networking environments than we otherwise would have had ourselves with a small team ... As a result, we can provision additional storage and servers to an environment, add firewall rules, and add capacity to our existing infrastructure."*

As shown in Table 3, study participants reported a significant 63% gain in average efficiencies for their IT infrastructure teams from using Lumen IT solutions. This enables them not only to run significantly more workloads and applications with lean IT infrastructure teams but also to allocate more staff time to business enablement and project work. One study participant noted: *"With Lumen, people can focus less on the routine activities, so there are improvement projects that happen as a result of it. We've cut through the mountain of backlog ... As a result, we've seen some big projects go forward in improving our security posture."* For study participants, this combination of strong efficiencies for IT infrastructure teams and more robust capabilities related to Lumen's

expertise and experience in managing customer environments makes up an invaluable part of their efforts to match IT capabilities to their business operations.

TABLE 3 Impact on IT Infrastructure Teams

	Previous/ Other Solution	With Lumen IT Solutions	Difference	Change (%)
Staff time required to manage IT infrastructure (FTEs)	36.0	13.2	22.8	63
Number of staff hours per VM per year	114	42	72	63
Equivalent value of staff time per organization per year	\$3.60 million	\$1.32 million	\$2.28 million	63

n=6 Source: IDC, 2020

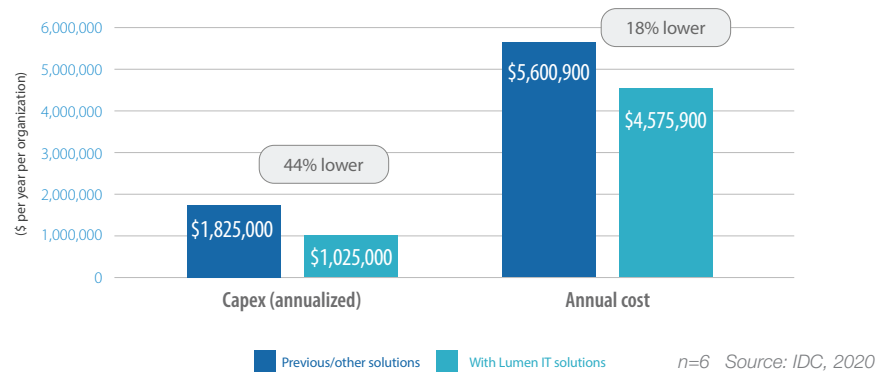
Optimizing IT Infrastructure Costs

Interviewed organizations linked their use of Lumen IT solutions to several levels of cost advantages in terms of delivering IT resources to their businesses. Several study participants noted the benefit of moving to an ongoing cost model with Lumen, thereby allowing them to move away from capital expenditure–based IT infrastructures. Moreover, a number of study participants reported that with Lumen, they have been able to deliver robust, high-performing IT infrastructures to their businesses at a lower cost than they would otherwise incur. They traced these cost savings and avoidances to their ability to establish more cost-effective overall environments with Lumen because of its expertise in management and ability to leverage on-premises, hybrid cloud, and public cloud resources depending on the workload. Study participants commented on these cost advantages:

- Cost-effective IT foundation through cost/management efficiencies, single platform:**
“If we tried to do everything ourselves, we wouldn’t be able to get the same overall price point that we get with Lumen. The cost of managing infrastructure would be much higher . . . Broadly speaking, we’d be looking at another 50% on top of what we paid with Lumen with the capex and other considerations . . . Also in terms of cloud, unless you have applications designed to run efficiently in the environments, having a couple of clouds can be a lot more expensive.”
- Move to opex model; avoid significant capital expenditure:** *“Lumen has eliminated our capex spend and turned it into opex, so we don’t have to go buy and procure servers. Before, we were buying hardware and [our partner] was managing it, but the cost of the hardware was on top of the cost of management. That hardware was end of life, so we avoided that purchase with Lumen — probably in the neighborhood of \$2 million in capex.”*

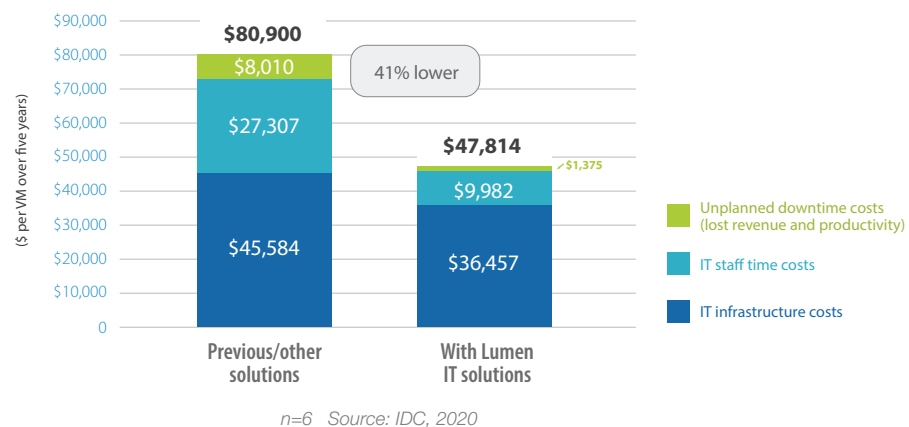
Overall, study participants reported lowering their capex spending by 44% and their annual costs by 18% with Lumen IT solutions. As shown in Figure 4, this results in annualized capex savings of \$800,000 per organization and annual cost savings of more than \$1 million per year.

FIGURE 4 Capex and Ongoing IT Infrastructure Costs per Organization



These cost efficiencies in obtaining IT infrastructure capacity — along with the significant IT staff efficiencies discussed previously — contribute to study participants running like workloads and applications at an average lower cost of 41% over five years when considering the cost of unplanned outages in lost productivity and revenue. As shown in Figure 5, this translates to savings of more than \$30,000 per VM over five years (almost \$20 million per organization). As noted, these costs of operations efficiencies can be used to free up resources to invest in new technologies and innovative approaches, as well as improving customer-facing services and processes to thrive in competitive markets.

FIGURE 5 Cost of Operations over Five Years per VM



Providing the Business with a Reliable IT Foundation

Interviewed organizations explained the substantial value of having a very reliable and high-performing IT infrastructure foundation with Lumen IT solutions. As noted, these organizations are running among their most critical business applications on their Lumen environments, meaning that they can ill-afford suboptimal performance, let alone full application or service outages. According to interviewed Lumen customers, they have benefited from reducing both the frequency and the impact of unplanned outages affecting these types of business applications and services. One study participant explained: *“We are using a hybrid cloud approach with Lumen because it’s tried and tested, and they are very capable. Our historical experience with them managing physical and virtual servers has been great from a patch management and a maintenance or issue resolution perspective.”*

Overall, study participants have substantially reduced the impact of unplanned outages on their business operations. Table 4 shows that they experience 70% fewer unplanned outages with Lumen and lose 83% less productive employee time due to unplanned downtime. This accounts for significant value for interviewed organizations, with the average IT user going from losing four to five hours to less than one hour of productive time per year. In addition, outages can affect business operations and ultimately result in revenue losses that cannot be covered. On average, study participants reported saving over \$1 million per year in lost revenue with Lumen (refer to Table 5).

TABLE 4 Impact on Unplanned Downtime

	Previous/ Other Solutions	With Lumen IT Solutions	Difference	Efficiency with Lumen (%)
Number of unplanned outages per year	19.5	5.9	13.6	70
MTTR (hours)	3.2	1.8	1.4	43
Lost productive time per year per user of IT services (hours)	4.6	0.8	3.8	83
Value of lost productive time per organization per year (FTEs)	12.1	2.1	10	83
Equivalent value of lost productive time per organization per year	\$850,100	\$146,900	\$704,200	83

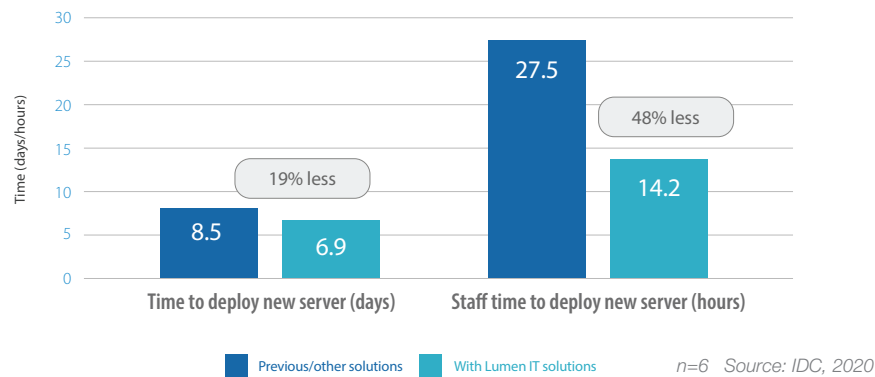
Source: IDC, 2020

Improving Business Outcomes with Agile, High-Performing IT Infrastructure

Interviewed organizations also described how Lumen IT solutions have enabled their businesses to perform with greater agility and effectiveness. They linked these improvements to their ability to provide IT resources based on business demand more readily and with less friction as well as the strong underlying performance of their Lumen platforms. For study participants, these advantages of Lumen IT solutions result in both operational efficiencies in the form of higher user productivity and revenue gains.

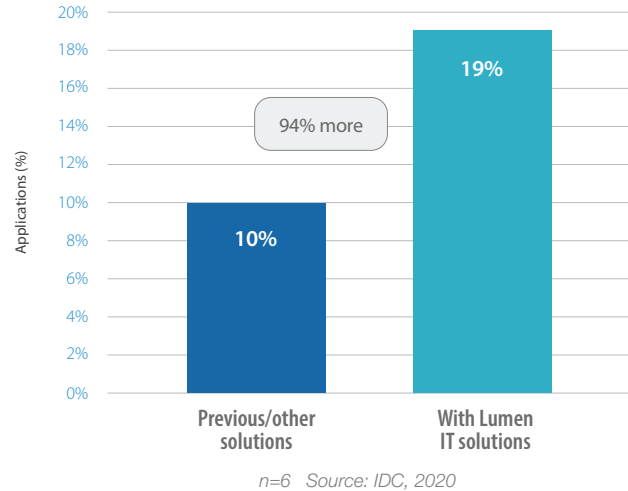
Interviewed organizations cited their ability to deploy new server resources more quickly (19% faster on average) and with less staff time required (48% less staff time) as evidence of improved IT agility with Lumen (see Figure 6). These agility benefits relate to having both Lumen’s expertise in delivering on-premises and private cloud IT capacity and improved ability to link to public and hybrid cloud resources. One study participant spoke to the business impact of increased agility with Lumen: *“With Lumen, we are able to get new offices opened more quickly and that happens probably four times per year. That takes us three months, and it would have taken four months previously ... It affects our revenue. When new offices start, they are small, but we gain a month’s worth of revenue every time.”*

FIGURE 6 IT Infrastructure Agility Benefits



Several study participants also noted improving their overall IT agility with Lumen by moving more applications to hybrid and public cloud environments. Again, they cited their comfort in making more use of these cloud environments with Lumen’s expertise and support standing behind them. On average, study participants have nearly doubled the percentage of applications they are running in the public or hybrid cloud with Lumen, going from 10% to almost 20% (see Figure 7).

FIGURE 7 Increased Use of Hybrid and Public Cloud with Lumen Solutions



Interviewed Lumen customers also related strong application and system performance to more effective overall business operations. They attributed these benefits to the quality of Lumen’s overall infrastructure offerings — including network services — and the expertise it applies to their IT environments. One study participant commented: *“Our core application needs the base quality of the service we get with Lumen in terms of the high output performance to determine how well we can spec and do our performance and environment testing. Because it uses a dedicated environment with Lumen, it’s fairly easy for us to be able to do all of those things because it’s dedicated.”*

For study participants, the result of these agility and performance benefits is more efficient and effective business operations. They described benefiting from having an infrastructure and partner that enable their growth in a cost-effective and efficient way. One interviewed organization noted: *“I think we’ve been able to grow the business as a result of having the reliable and available IT services that Lumen provides because we don’t have to scale the staffing. The staffing is right there.”* As shown in Table 5, study participants have achieved significant value through higher employee productivity and revenue gains with Lumen. IDC puts the value of those gains at an annual average of \$174,900 per 100 users (\$8.77 million per organization), demonstrating the substantial business and operational impact for these organizations of using Lumen IT solutions.

TABLE 5 Business Productivity Benefits: Higher User Productivity and Revenue Gains

	Per Organization	Per 100 Users
Impact of Higher User Productivity: Improved Performance and Agility		
Number of impacted users	2,859	57
Higher gross revenue (%)	4.2	4.2
Higher net productivity* (%)	2.2	2.2
Net productivity gain (FTEs)	135	2.7
Value of higher net productivity	\$8.56 million	\$170,700
Impact of Higher Revenue: Improved Performance and Agility		
Higher gross revenue	\$376,400	\$7,500
Higher net revenue*	\$56,500	\$1,100
Impact of Higher Revenue: Reduced Business Losses from Unplanned Downtime		
Higher gross revenue	\$1.02 million	\$20,400
Higher net revenue*	\$153,400	\$3,100
Total annual benefits: Higher user productivity and net revenue	\$8.77 million	\$174,900

n=6 Source: IDC, 2020

* IDC model assumes a 15% margin for recognizing revenue gains.

ROI Summary

IDC’s analysis of the benefits and investment costs related to interviewed organizations’ use of Lumen IT solutions is shown in Table 6. On average, IDC calculates that these organizations will achieve benefits in terms of higher employee productivity, increased revenue, more efficient IT teams, and lower costs worth \$44.11 million per organization over five years (\$745,600 per 100 users). These benefits are based on total five-year investment costs of \$16.61 million per organization (\$280,700 per 100 users). These levels of discounted benefits and investment costs would result in an average ROI of 166% and breakeven on investment in 10 months.

TABLE 6 ROI Analysis

	Five-Year per Organization	Five-Year per 100 Users
Benefit (discounted)	\$44.11 million	\$745,600
Investment costs (discounted)	\$16.61 million	\$280,700
Net present value	\$27.50 million	\$464,900
ROI (NPV/investment) (%)	166	166
Payback (months)	10	10
Discount factor (%)	12	12

n=6 Source: IDC, 2020

CHALLENGES/OPPORTUNITIES FOR ORGANIZATIONS

Lumen is well positioned to assist customers in the transition to cloud-based IT and success in the digital economy. Its portfolio of solutions can play a critical role in extending the value/reach of existing applications while also enabling faster introduction of new, innovative services, all while dramatically shortening implementation time frames and reducing infrastructure capital expenses and operational overhead. The successful shift to cloud-based IT, however, poses skills, process, and governance challenges for many of today’s IT organizations that Lumen can help minimize.

To fully take advantage of a wide range of cloud solutions, Lumen will continue to help organizations leverage the latest and greatest cloud, network, edge, and security solutions. As Lumen is taking greater responsibility for monitoring, patching, and updating the infrastructure software (and in some cases hardware), it will continually enhance its ability to monitor/manage across cloud, datacenter, and edge environments. This requirement means that Lumen will work closely with customers’ network and security teams to ensure connectivity is secure and delivered in a timely fashion.

CONCLUSION

In today’s digitally transforming world, the key to business success depends upon the adoption of innovative operating models and customer engagement strategies. For such organizations, IT is inherently hybrid. Critical workloads and data sets reside within traditional

IT environments and in a wide array of new dedicated and shared cloud-based environments. These workloads, especially emerging workloads, and the data supporting them reside in the organization's colocation datacenters, in edge locations, and in cloud service providers' facilities.

As a leader in shaping your organization's digital and IT transformation strategies, the keys for ensuring success in this new hybrid world should include:

- **Focus more on innovation:** Look for solutions and partners that enable your IT and datacenter teams to focus on delivering required compute, data, storage, and network resources via cloud-based models when and where required, not simply continuing to manage siloed sets of systems and applications in existing datacenters.
- **Drive agility and reduced operational cost:** Educate business leaders in your organization on the reality that leveraging new dedicated cloud systems and IT managed services models is critical for achieving IT agility and reducing operational costs.
- **Make the most of your resources:** Recognize that the role of cloud-based IT solutions is to acquire, analyze, and act on data but that achieving this goal requires investments in new IT skill sets/expertise through a combination of new hires, retraining, and timely use of partners' management services offerings.

The most common element that IDC finds in organizations that successfully adopt a cloud-based IT approach is the organization's selection of a partner to accelerate IT modernization, ease the shift to cloud-based IT, and establish consistent security/data management policies and procedures across all cloud options. This partner must be able to participate fully in the evaluation, deployment, and use of the right hardware, software, IaaS, and SaaS solutions across internal and external datacenters as well as edge locations. They can:

- Help IT teams determine which existing workloads can move to a cloud model and which model is optimal.
- Continuously facilitate ongoing architectural decision making and new service innovation by keeping up to date with technology and service delivery models.
- Provide choice of leading technology solutions that deliver the speed and agility required.
- Extend the reach of IT teams by covering skill set gaps, which helps internal IT to focus more on strategic business initiatives versus just managing technology.
- Support the enterprise not only through the initial implementation but also through the ongoing management and optimization of the environment over time.

APPENDIX

Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Lumen IT solutions, including Lumen Managed Hosting, Lumen Managed IT/Cloud Services, Lumen Cloud, and Lumen Adaptive Networking solutions, as the foundation for the model. Based on interviews with organizations using these Lumen solutions, IDC performed a three-step process to calculate the ROI and payback period:

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Lumen IT solutions.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.
- 2. Created a complete investment (five-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Lumen IT solutions and can include additional costs related to migrations, planning, consulting, and staff or user training.
- 3. Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Lumen IT solutions 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.

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 productivity savings. For purposes of this analysis, IDC has used assumptions of an average fully loaded salary of \$100,000 per year for IT staff members and an average fully loaded salary of \$70,000 for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- 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.

- Further, because Lumen 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.

Definitions

According to IDC's software taxonomy, virtual machine software, also known as hypervisor software, uses low-level capabilities offered by certain hardware environments or installs a complete hardware emulation layer using software to support multiple operating environments and the related stacks of applications, application development and deployment software, and systems infrastructure software. This segmentation is often referred to as server virtualization or partitioning. Hypervisors also increasingly serve as the foundational infrastructure software for public and private clouds.

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