

White Paper

The Business Value of Lumen IP Solutions

Sponsored by: Lumen

Megan Szurley
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Courtney Munroe

Peter Chahal

EXECUTIVE SUMMARY

As organizations face the full impact of the digital business evolution, they will seek to refine how they operate in more fluid and flexible hybrid work models that enable operational efficiency and business resiliency.

Organizations are embarking upon new journeys with their digital infrastructure transformation and agile managed services in the pursuit of moving beyond just connectedness. The ability for organizations to work with strategic communications service provider (SP) partners, such as Lumen, to help them on their journey will enable them to focus more clearly on key business priorities.

Through a series of in-depth interviews, IDC conducted research that explores the value and benefits for organizations using Lumen DIA or Wavelength IP Solutions to securely provide high-bandwidth internet connections to meet complex business needs. Based on this data and using a specialized Business Value methodology, IDC calculates that these customers will achieve benefits worth an average of \$1.5 million annually and a three-year return on investment (ROI) of 229% by:

- Cost effectively improving the overall effectiveness of network operations and network management
- Optimizing network performance and reliability and reducing the incidence of network degradation leading to improved application performance
- Reducing network infrastructure costs
- Minimizing the impacts of security threats and disruptions impacting the productivity of end users and customers
- Reducing unplanned downtime for end users, thereby lessening dependence on help desk operations

Business Value Highlights

- \$33,700 per 100 supported internal users
- 229% three-year ROI
- Nine-month payback period
- 66% increase in available bandwidth
- \$126,200 reduction in network costs
- 35% reduction in network costs
- 19% more efficient network administration and management teams
- 41% less help desk tickets
- 24% less time required for network performance optimization
- 6% more efficient network security operations team
- 61% less instances of network unplanned downtime per year
- 66% quicker unplanned downtime resolution
- 40% quicker application performance
- 10% quicker business transaction execution
- 8% higher end-user productivity

SITUATION OVERVIEW

The rapid pace of technology change with cloud-centric services, network virtualization, AI-enabled optimization, automation, and energy efficiency goals, coupled with the integration risks of legacy services, can complicate an organization's financial objectives of minimizing costs, increasing revenue and profits, and enhancing customer experience, all while ensuring data security. These strategic shifts in business and IT imperatives and the requirement to be judicious about capital investments are leading more organizations to depend on partners for best-in-class technology, and managed service options, that help them manage their internal skills gaps. Some important trends that are driving the digital business services transition are:

- **Cloud-centric digital application strategies** that provide compelling business and technology benefits have accelerated the implementation of digital platforms. As organizations move applications to the cloud, the right mix of secure fiber and wavelength network services become essential to underpin their digital business strategy.
- **Managed services become a more attractive option** for organizations, as cloud-centric digital strategies expand, to help simplify complex tasks through optimized network-as-a-service (NaaS) experience that can be tailored to their specific business and to help companies manage their lack of internal expertise.
- **Composable services offer flexible pricing models** by applying a consumption methodology to simplify the buying process and creating cost-effective service bundles that can help organizations reduce the cost of managed services and connectivity over the long term.
- **The evolving threat landscape** continues to drive demand for managed/cloud-based delivery models for integrated security management to address cost, complexity, and the lack of internal security staff. It is increasingly convenient for organizations to acquire integrated security features and tools as part of managed services that can also address data sovereignty concerns.
- **Intelligence of the digital infrastructure** to ensure a differentiated experience is accelerating the use of AI and GenAI models with advanced analytics to turn large amounts of data into valuable business insights, benefits, and outcomes for an organization.
- **Comprehensive API capabilities** to better expose the full value of the network, service, and partner assets help drive automation under an open environment that can integrate with a broad range of proprietary and legacy solutions.
- **ESG requirements are moving higher in priority for organizations**, in some cases, closely tracking behind profit and revenue. Sustainability is becoming an important factor in driving organizations' managed service investment requirements that can include energy-efficient as-a-service models.
- **Strategic service provider partnerships have become paramount** to help organizations embark upon new journeys that will improve operational efficiency, business resiliency, and customer experience with their digital infrastructure and services transformation, beyond just connectedness.

IDC data shows businesses continue to prioritize connectivity-related investments regardless of economic and business uncertainty. IDC's July 2023 *Future Enterprise Resiliency and Spending Survey* shows that 83% of enterprises expect to maintain or increase spending on IT over the next 12 months, with businesses investing in newer advanced connectivity capabilities as a critical piece of that spending.

LUMEN IP SOLUTIONS OVERVIEW

Lumen offers a comprehensive portfolio of network as a service, security, and edge services with a goal of facilitating the dynamic AI-driven IT transformation requirements of today's enterprise. As companies transform to digital platforms, Lumen understands that secure, reliable, and high-performance connectivity has become a mandatory requirement.

Lumen's IP Solutions include a full suite of fiber-based internet services that offer internet speeds up to 1Gb. Lumen also offers secure and reliable High Speed IP transit. This global connectivity is based on a backbone capacity of 450Tbps+ and is available from over 6,300 global interconnection POPs. This network is protected by Lumen's Black Lotus Labs offering Threat Intelligence and 24 x 7 intrusion detection monitoring. Lumen's NaaS capability is supported by a dedicated internet connectivity that is provided over multiservice ports. The company's "Internet On-Demand" offers freedom from binding contracts with the flexibility of consumption-based billing and no termination penalties. The company currently offers up to 10Gbps bandwidth and can activate the service in minutes via an API-driven central network management dashboard.

For companies with large-scale data-intensive applications that require ultra-high capacity and low-latency networking, Lumen offers a full suite of Wavelength Solutions. The company can facilitate up to 400Gbps capacity for dedicated, point-to-point networking with over 2.7PB of capacity deployed to date, from 160,000 on-net fiber locations, which can also be integrated with off-net locations. IDC is projecting continued annual growth in enterprise data consumption of over 20% per year. As organizations implement AI-driven workloads, which will generate massive data sets, they will require scalable, reliable, and high-performance networking infrastructure to connect a diverse array of IT instances residing in geographically distributed datacenters and clouds datacenters and campus locations. Lumen's Wavelength solution offers 10G, 100G and 400G connectivity with a multitude of diverse route options, both intercity and at the metro edge circuits with SLA-based network redundancy, diverse route options, and gateways. Lumen also offers custom design configuration for companies to optimize specific requirements. The service also enables ultra-high capacity cloud connectivity with 125 optical cloud on-ramps throughout North America that are capable of up to 100G, has access to 125 optical cloud on-ramps serving 2,200 on-net datacenters.

THE BUSINESS VALUE OF LUMEN IP SOLUTIONS

Study Firmographics

IDC conducted research that explores the value and benefits for organizations using Lumen IP Solutions (specifically DIA and Wavelengths) to securely provide high-bandwidth internet connections. The project included interviews with seven organizations that use Lumen IP Solutions and had experience with and/or knowledge about the benefits and costs of using it. During the interviews, companies were asked a variety of quantitative and qualitative questions about the offering's impact on their network operations, core businesses, and costs.

Table 1 presents study demographics. The organizations that IDC interviewed had an average base of 4,446 employees and total average annual revenue of \$4 billion. All seven companies were based in the United States. On average, these companies had IT teams of 153 staff members engaged in supporting the full employee base. From a vertical standpoint, IDC's survey included organizations from the manufacturing, financial services, hospitality, engineering, healthcare, software, and legal services sectors.

TABLE 1

Firmographics of Interviewed Organizations

| | Average | Median | Range |
|---|---|-------------|------------------------------|
| Number of employees | 4,446 | 1,500 | 75 to 18,000 |
| Number of IT staff | 153 | 30 | 3 to 700 |
| Number of total employees using information systems for job | 4,446 | 1,500 | 75 to 18,000 |
| Number of total business applications | 108 | 100 | 10 to 264 |
| Total organizational revenue | \$4 billion | \$1 billion | \$20 million to \$18 billion |
| Countries | United States (7) | | |
| Industries | Manufacturing, financial services, hospitality, engineering, healthcare, software, and legal services | | |

Source: IDC's Business Value research, November 2023

Choice and Use of Lumen IP Solutions

The organizations that IDC interviewed described the decision criteria for their selection of Lumen IP Solutions to provide reliable support for business-critical applications and services. In selecting Lumen, interviewees commented on a number of positive benefits that shaped and informed their business decision. Cost savings were cited as an important benefit coupled with an appreciation for Lumen's ability to form good relationships with their customer base. Reputation and stability were also cited as key factors along with the company's wide service footprint and availability. Study participants elaborated on their selection criteria:

- **Cost savings and customer relationships, manufacturing organization:** *"My organization selected Lumen IP Solutions for two reasons. The first reason was cost savings, that encapsulates both technology change as well as aggressive pricing. The second reason was that Lumen forms good customer relationships."*
- **Reputation and price, financial services organization:** *"My organization selected Lumen IP Solutions for their reputation, stability, and price. We were also beginning to implement Microsoft O365 in the cloud and were concerned about the bandwidth."*
- **Decision to deploy, healthcare organization:** *"My organization decided to use Lumen IP Solutions because of their quality and cost."*
- **Strong footprint and resiliency, hospitality organization:** *"My organization's Mountain Region provider was procured by Lumen. At that time, we looked at alternatives and decided to stay with Lumen because they had a better footprint and more resiliency."*

- **Effectively interconnect offices, legal services organization:** *"My organization selected Lumen's DIA and IP VPN solution to help interconnect all three of our offices more efficiently. The goal was to tie our phone system, our cost accounting application, printing, and a few other applications together."*

Table 2 provides a quantitative view of the organizational usage of Lumen IP Solutions at the time of interviews. Note that there was a substantial footprint across all companies with an average of 8 datacenters and 45 sites being supported by Lumen IP Solutions. In addition, Lumen was used to support 124 business applications on behalf of 4,446 internal users and 83% of average annual revenue. Additional metrics are presented.

TABLE 2

Organizational Usage of Lumen IP Solutions

| | Average | Median |
|---------------------------------|---------|---------|
| Datacenters | 8 | 3 |
| Sites | 45 | 20 |
| Internal users supported | 4,446 | 1,500 |
| Bandwidth | 296Mbps | 125Mbps |
| Business applications supported | 124 | 100 |
| Percentage of revenue supported | 83 | 100 |

Source: IDC's Business Value research, November 2023

BUSINESS VALUE AND QUANTIFIED BENEFITS

IDC's Business Value research evaluates and quantifies the benefits for companies in adopting Lumen IP Solutions as a cost-effective way to boost the overall effectiveness of their network operations by improving staff productivity. The solution served to optimize network performance and reliability, thereby reducing the incidence of network degradation. This, in turn, led to improved application performance. Lumen helped companies accomplish these objectives while reducing capex and opex network infrastructure costs.

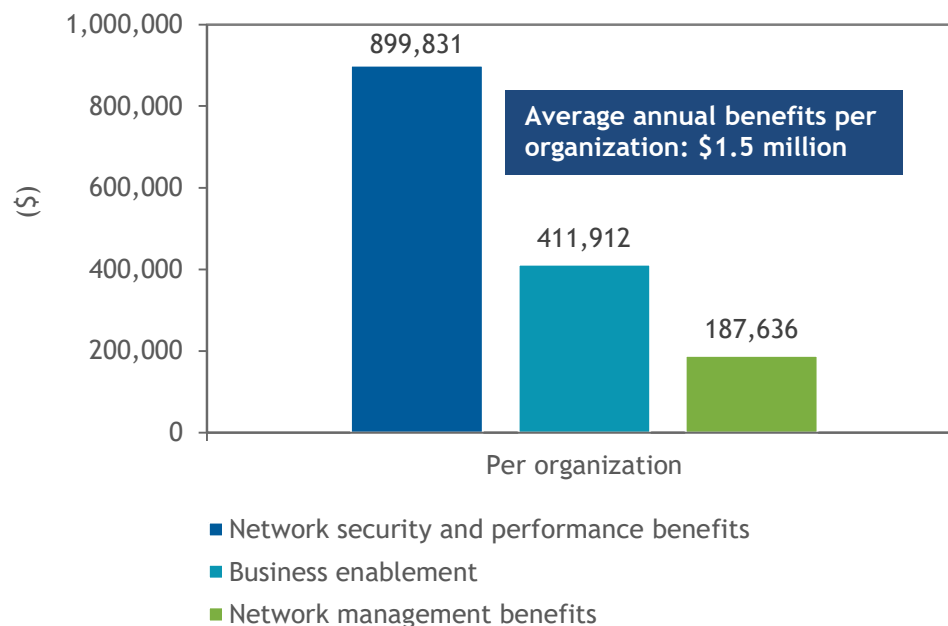
In addition, adopting Lumen IP Solutions served to minimize the impacts of security threats and disruptions that had the potential to negatively impact the productivity of both end users and customers. In addition, it reduced unplanned downtime for end users, thereby lessening dependence on help desk operations. All of these benefits combined to increase business revenue and results through better network performance and end-user productivity. Study participants offered the following comments about Lumen IP Solution's most significant benefits:

- **Agile circuit management, hospitality organization:** "With Lumen, turning up the circuits to a higher speed takes 5 days. With competitors, it takes 30-180 days. Getting that done sooner means productivity for the end users. If there is congestion on the circuits, the apps have errors and slow down."
- **Low latency and cost, healthcare organization:** "A big benefit of Lumen IP Solutions is low lag latency and the physical cost. My organization is saving roughly 30%."
- **Strong customer service, software organization:** "A big benefit of Lumen IP Solutions is that my organization can get hold of help when needed. When issues come up, Lumen has a quick turnaround time that is within 24 hours. Every second of failure counts for us because we lose customers at the edge."
- **Single-pane-of-glass network view, legal services organization:** "The most significant benefit of Lumen IP Solutions is that my organization can get most of the service under a single pane of glass. This enabled us to more seamlessly support our office connectivity."
- **Better speed and performance, engineering organization:** "Lumen IP Solutions give my organization better speed; this enables better performance for end users."

Figure 1 presents IDC's calculations of cumulative customer benefits after adoption of Lumen IP Solutions including both DIA and Wavelength offerings. As shown, average annual benefits were quantified at \$1.5 million per organization (\$33,700 per 100 supported internal users)

FIGURE 1

Average Annual Benefits per Organization



n = 7

Source: IDC's Business Value research, November 2023

Network Management Benefits with Lumen IP Solutions

In their interviews with IDC, study participants discussed various operational benefits associated with their Lumen IP Solutions deployments. They appreciated how these services allowed them to create leaner network configurations. They pointed out that Lumen enabled their organizations' network management teams to focus on other projects that were more business oriented. They also called out the platform's inherent network scalability that made it much easier to upgrade the bandwidth requirements of circuits in use. In addition, they highlighted Lumen's simplified network architecture and monitoring functionality. Study participants elaborated on the following benefits:

- **Ability to do more with less, financial services organization:** *"My organization can do more with less. We have one Lumen circuit that is used to realize the majority of our traffic, as opposed to having two."*
- **Benefits IT staff and saves time, legal services organization:** *"Lumen IP Solutions has enabled my organization's network management team to focus on other aspects of the company that are of interest, like moving into ediscovery. Lumen has freed up time for my organization to focus on other activities like never before."*
- **Easier network scalability, hospitality organization:** *"Lumen made it easy to upgrade circuits. My company can put large ports out there and be able to upgrade circuits from 100Mbps up to 1Gbps with a phone call. We can scale our network with need."*
- **Simplified network architecture, manufacturing organization:** *"Lumen IP Solutions has simplified network architecture and monitoring."*

To arrive at an accurate picture of postadoption experiences and benefits derived from Lumen IP Solutions, IDC evaluated a variety of impacts beginning with overall cost-effectiveness. Interviewed organizations reported that Lumen IP Solutions significantly decreased network costs for their organizations by enabling them to consolidate datacenters and lower circuit provisioning costs. IDC calculated that adoption resulted in a 66% increase in available bandwidth. Table 3 quantifies these cost benefits showing an annual savings of \$126,258 for each organization, representing a 35% decrease.

TABLE 3

IT Cost Avoidances

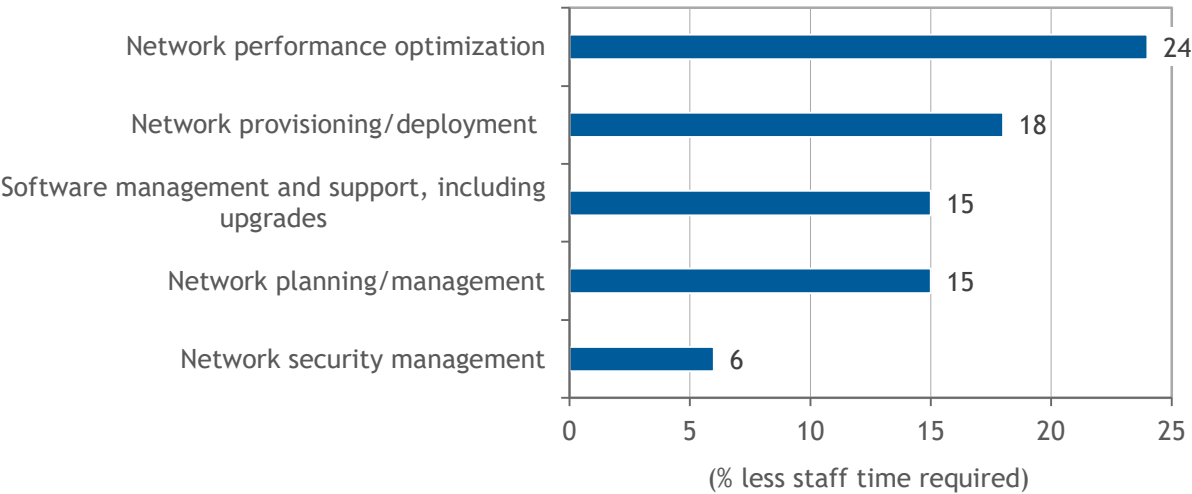
| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|----------------------|--------------------------------------|----------------------------|------------|---------|
| Annual network costs | \$359,686 | \$233,429 | \$126,258 | 35% |

Source: IDC's Business Value research, November 2023

IDC then examined overall network performance impacts by identifying and measuring key performance indicators (KPIs) typical of network operations. Figure 2 shows the impact of Lumen IP Solutions on a number of network support tasks. The greatest improvements in lowering staff time investment were seen in *network performance optimization* (24% less time required), *network provisioning/deployment* (18% less time), and *software management and support, including upgrades* (15% less time).

FIGURE 2

Impact of Lumen IP Solutions on Network Support Tasks



n = 7

Source: IDC's Business Value research, November 2023

IDC then drilled down further in terms of benefits derived for network management teams. Interviewed organizations found that with Lumen IP Solutions, they were able to consolidate their network architectures, thereby simplifying the process of monitoring, scaling, and upgrading their networks. On average, after adopting Lumen, this team needed the time of nearly one fewer FTE to manage their network than with their previous solution. This frees up time for highly skilled employees to innovate. In total, this amounted to an efficiency gain of 19%, valued at \$106,670 per organization annually (see Table 4).

TABLE 4

IT Network Administration/Management Efficiency Gain

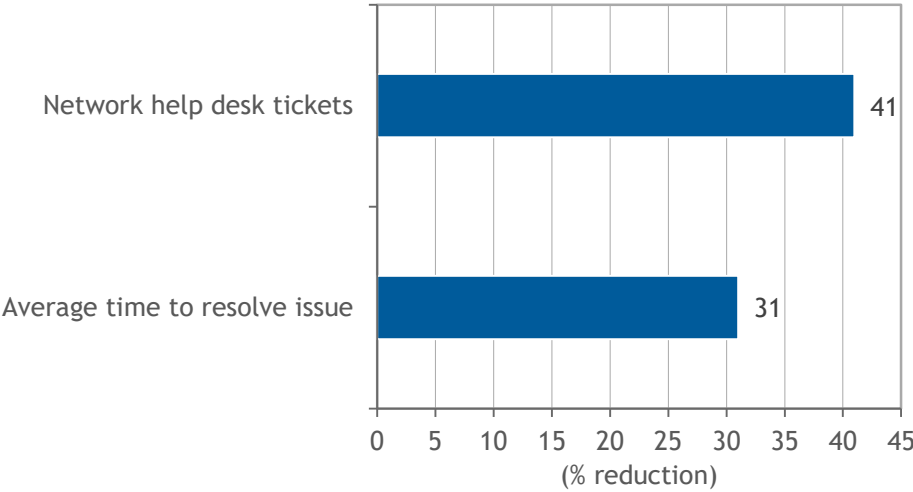
| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|------------------------------|-----------------------------------|-------------------------|------------|---------|
| FTE count | 5.5 | 4.4 | 0.9 | 19% |
| Value of staff time per year | \$548,670 | \$442,000 | \$106,670 | 19% |

Source: IDC's Business Value research, November 2023

IDC then looked at impacts for help desk teams. Running more efficient and reliable network operations translated into fewer glitches and operational disruptions occurring. This meant that the workloads of help desk operations at interviewed companies were correspondingly alleviated. After adoption, network help desk tickets were reduced by 41%, and the average time to resolve issues that did occur was reduced by 31% (see Figure 3).

FIGURE 3

Impact of Lumen IP Solutions on Network Help Desk



n = 7

Source: IDC's Business Value research, November 2023

Security and Performance Benefits for Lumen IP Solutions

In their conversations with IDC, study participants pointed out specific benefits from Lumen IP Solutions associated with network security and performance. Study participants attributed these gains to several factors. Increased scripting agility was cited along with easier patch and firmware maintenance. Companies also noted that they had fewer issues related to network performance and downtime. In addition, they enjoyed higher overall bandwidth after adopting Lumen IP services by avoiding the need to purchase expensive MPLS options. Participants explained the benefits in greater detail:

- **Increased scripting agility, software organization:** *"Lumen IP Solutions has helped my organization with scripting. We are probably 25% faster at getting things moving."*
- **Easier patch and firmware maintenance, legal services organization:** *"Lumen IP Solutions did save my security team time when maintaining patch levels and firmware levels. They are at least 20% more efficient."*
- **Fewer network problems and higher bandwidth, manufacturing organization:** *"My organization has less issues related to network performance. Instead of having an expensive MPLS with low bandwidth, we buy big pipes. We had to increase our bandwidth to be able to do all of this, but we saved a quarter million dollars, and we've tripled the bandwidth."*
- **Less downtime, finance services organization:** *"Lumen IP Solutions has enabled my organization to meet business strategy by providing quicker turnaround on downtimes, more uptime, and better bandwidth. Our customers notice the difference."*

IDC verified these anecdotal observations with quantified data. Interviewed companies reported that the built-in levels of threat protection provided by Lumen IP Solutions enabled network security operations teams to optimize network resiliency to better meet the changing requirements of business demand. Table 5 shows the full set of calculated benefits. After Lumen adoption, interviewed companies saw a 6% efficiency gain for their network security operations teams. This resulted in an average annual business value of \$30,916 for each organization.

TABLE 5

Network Security Operations Efficiency Gain

| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|------------------------------|--------------------------------------|----------------------------|------------|---------|
| FTE count | 4.8 | 4.5 | 0.3 | 6% |
| Value of staff time per year | \$480,916 | \$450,000 | \$30,916 | 6% |

Source: IDC's Business Value research, November 2023

Better security translated to more network resiliency for end users and customers that depended on the network to support their business-critical applications. Study participants reported that Lumen IP Solutions significantly reduced the frequency of unplanned network downtime outages while reducing the time required to resolve outages and disruptive events. This ultimately served to improve end-user productivity levels.

Table 6 provides metrics on these impacts. As shown, after adoption, there was a substantial 61% reduction in the annual frequency of events. In addition, the time required to resolve disruptions when they did occur was reduced by 66%. As a result, 87% less end users were impacted by unplanned downtime. This yielded an annual productivity-based business value of \$606,660 for each organization.

TABLE 6

Network Unplanned Downtime Impact – End-User Productivity Impact

| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|--|--------------------------------------|----------------------------|------------|---------|
| Number of outages per year | 15.2 | 5.9 | 9.3 | 61% |
| MTTR | 11.1 hours | 3.8 hours | 7.4 hours | 66% |
| Number of users impacted by downtime | 197 | 197 | | |
| Percentage of productivity loss | 56 | 56 | | |
| Calculated number of FTEs impacted | 10 | 1.32 | 8.7 | 87% |
| Value of lost productive time per year | \$698,915 | \$92,255 | \$606,660 | 87% |

Source: IDC's Business Value research, November 2023

Because unplanned network outages were less frequent and quicker to resolve, Lumen IP Solutions also drastically reduced the impact of network downtime in terms of lost revenue. The number of outages occurring annually was reduced by 61%, while the associated revenue loss per outage was reduced by 84%. Factoring in a 15% operating margin, IDC calculated that interviewed organizations avoided a total revenue loss of \$479,455 (see Table 7).

TABLE 7

Unplanned Network Downtime Impact – Revenue Impact

| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|---|--------------------------------------|----------------------------|-------------|---------|
| Number of outages per year | 15.2 | 5.9 | 9.3 | 61% |
| Percentage of outages impacting revenue | 75 | 75 | | |
| Revenue loss per outage | \$300,167 | \$49,333 | | 84% |
| Total revenue loss value per organization | \$3,414,396 | \$218,026 | \$3,196,370 | 94% |
| Total revenue loss value — IDC model | \$512,159 | \$32,704 | \$479,455 | 94% |

Source: IDC's Business Value research, November 2023

Business Enablement Benefits for Solutions

Last, IDC found that these improvements had measurable impacts on the business results of the organizations that were interviewed. In large part, this was because Lumen IP Solutions, as described, cost effectively improved the overall effectiveness of network operations; optimized network performance and reliability, thereby reducing the incidence of network degradation; and minimized the impacts of security threats and disruptions that had the potential to diminish the overall productivity of end users and customers.

Study participants cited other business benefits specific to their organizational profiles. They cited greater end-user productivity from higher speed, which, as will be shown, translated into significant cost savings. Study participants noted the value of optimized interoffice connectivity that increased the ability of end-user teams to participate in various multi-departmental projects. They also noted increased productivity for their end users through better performance. Study participants elaborated on the following benefits:

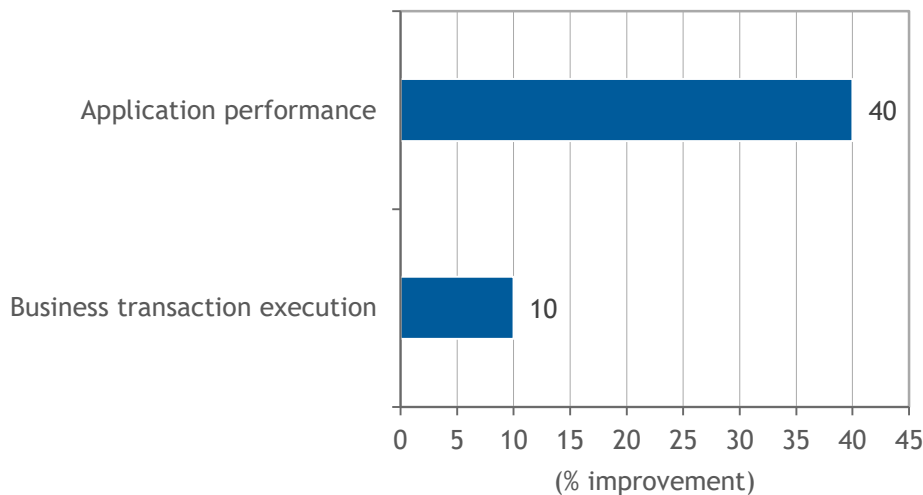
- **Greater end-user productivity from higher speed, healthcare organization:** *"Lumen IP Solutions has provided my organization with cost savings, greater user productivity, and higher speed."*
- **Increased interoffice connectivity, legal services organization:** *"The greatest benefit of Lumen IP Solutions is increased end-user productivity. It enabled interoffice connectivity so that anyone could jump on a case as needed. This connectivity has increased productivity by 20%."*
- **Better network stability and reliability, software organization:** *"My organization is getting a better overall network with Lumen IP Solutions. This has increased the reliability and stability of our network for end users."*

- **Increased productivity through better performance, financial services organization:** *"If my organization had not added the Lumen circuits, network performance would have gone down. As a result, I believe end users would have been less productive. We've avoided a 10% decrease in employee productivity."*

The much-improved network performance provided by Lumen IP Solutions helped organizations better support their customer needs and requirements. This was the result of enjoying better performing and more reliable network performance that supported the consistent use and availability of business-critical applications. Figure 4 shows the impact of Lumen IP Solutions on network performance. After adoption, application performance improved 40%, while business transaction execution improved 10%.

FIGURE 4

Impact of Lumen IP Solutions on Network Performance



n = 7

Source: IDC's Business Value research, November 2023

Network end users gained productivity from having business-critical applications that performed with greater speed, availability, agility, and functionality. This had corresponding impacts on end-user productivity and business results. IDC quantified these revenue gains showing an 8% improvement in end-user productivity with interviewed companies realizing an average annual business value of \$511,339 (see Table 8).

TABLE 8**Business Enablement – End-User Productivity Gain**

| | Before/Without Lumen IP Solutions | With Lumen IP Solutions | Difference | Benefit |
|---|---|----------------------------|------------|---------|
| Equivalent productivity level (FTEs per organization) | 593 | 642 | 48.7 | 8% |
| Equivalent net productivity level (FTEs per organization) | 593 | 600 | 7.3 | 1.23% |
| Calculated value of productivity | \$41,500,000 | \$42,011,339 | \$511,339 | 1.23% |

Source: IDC's Business Value research, November 2023

ROI Summary

Summing up Business Value benefits, Table 9 presents IDC's return-on-investment analysis for study participants' use of Lumen IP Solutions. As shown, IDC projects that these companies will achieve three-year discounted benefits worth an average of \$3,501,100 per organization through better network performance and security, related staff efficiencies, and improved business performance. These benefits compare with total three-year discounted costs of \$1,064,600 per organization. These levels of benefits and investment costs are projected to result in an average three-year ROI of 229% and a break-even point in their investment occurring in nine months.

TABLE 9**Three-Year ROI Analysis**

| | Per Organization | Per 100 Supported Internal Users |
|----------------------------|------------------|----------------------------------|
| Discounted benefits | \$3,501,100 | \$78,740 |
| Discounted investment | \$1,064,600 | \$23,943 |
| Net Present Value (NPV) | \$2,436,500 | \$54,797 |
| Return on investment (ROI) | 229% | 229% |
| Payback period | 9 months | 9 months |
| Discount factor or rate | 12% | 12% |

Source: IDC's Business Value research, November 2023

CHALLENGES/OPPORTUNITIES

The ongoing challenge to the evolution of connectivity shows that there is no actual final state of connectedness. Instead, it is a road map that improves agility, increases business flexibility, and allows organizations to adapt to change as market or business conditions shift. With the growing implications of AI, cloud connectivity, cybersecurity, and application visibility and performance management, the road map to becoming agile and connected becomes more intelligent, automated, and complex. These trends will all become inflection points for organizations in their decision-making process of how to manage the complexity and which service or technology provider will be the best strategic partner for them.

Growth of data and keeping that data in motion has long been a priority for the enterprise – critical to making the right decisions at the right time to drive revenue, experiences, and outcomes. The enterprise network must scale to support the ever-growing volume of data coming from both inside and outside the organization. Employees and customers have come to expect that any digital interaction with things, applications, processes, or other people is guaranteed no matter where, when, or via what medium they choose. As organizations continue down the path of becoming mobile and cloud first, they have already been forced to adapt to hybrid work and a distributed workforce. Today, employees, customers, and partners expect seamless digital interactions with mission-critical systems and processes from anywhere. The convergence of physical and digital workspaces and storefronts and the evolution of smart spaces are driving business leaders to align technology, policy, and operations together to drive agility and revenue.

As organizations continue to transform to meet the world's evolving challenges, they realize they need strategic partners that can provide a full suite of fiber-based internet services and wavelength solutions to help them become more agile and connected enterprises. They will look for partners that can help enable connectivity programs to embrace multicloud networking, cloud connectivity services, unified communications, 5G, software-defined WAN (SD-WAN), NaaS, and cloud infrastructure and services to keep data moving securely. More importantly, these programs will continue to improve efficiency and enable data to provide real-time insights to the business. As networks evolve and business needs scale or change course, enterprise network and IT departments must align systems and processes. This will ensure business continuity, enable employees to be productive, and help organizations quickly adapt to business demands – not to mention helping them meet new market requirements and connect anytime, anywhere, and from any physical location.

CONCLUSION

Digital transformation, operational efficiency, and business resiliency are driving organizations to embark upon new journeys with their digital infrastructure transformation and agile managed services in the pursuit of connectedness. These strategic shifts in business and IT imperatives have resulted in organizations trying to address a myriad of challenges from increasing data volumes, hybrid work requirements, changing applications, and the shift to cloud-centric everything. The altering digital business landscape and concerns of long-term effectiveness of technology investments cause organizations to spend significant cycles evaluating technology and managed service options to find ways to help alleviate the stress, address skill shortages, and unlock the business value of digital to accelerate the end outcome. Hence relying on the right partner such as Lumen will enable organizations to be strategic and judicious about their capital investments.

IDC research with Lumen customers demonstrates the significant benefits that organizations can achieve using Lumen DIA or Wavelength IP Solutions to securely provide high-bandwidth internet connections to meet complex business needs. Study participants reported capturing significant network efficiencies with improved service management and optimized network costs and reducing unplanned downtime with these Lumen products. As a result of implementing these solutions, organizations can devote more of their skilled staff's time to focusing on innovative and business-enabling activities as well as delivering higher-quality applications and services to their employees and customers. This study showed companies that implemented these solutions realized cost benefits of \$1.5 million annually, representing an average three-year ROI of 229%.

APPENDIX

Methodology

Table 10 shows specific calculations for the benefits that interviewed companies derived from the use of Lumen IP Solutions.

TABLE 10

Specific Calculations: Benefits from Use of Lumen IP Solutions

| Category of Value | Average Quantitative Benefit | 15% Margin Applied | Calculated Average Annual Value* |
|--|---|--------------------|----------------------------------|
| Network cost avoidance (i.e., hardware purchase costs) | \$126,258 annual network cost avoidance | No | \$101,708 |
| IT network administration/management efficiency gain | 19% more efficient worth 0.9 FTEs — \$100,000 salary | No | \$85,928 |
| Network security operations efficiency gain | 6% more efficient worth 0.3 FTEs — \$100,000 salary | No | \$24,905 |
| Network unplanned downtime — end-user benefit | 87% less productivity loss worth 8.7 FTEs — \$70,000 salary | No | \$488,698 |
| Network unplanned downtime — revenue benefit | \$3.2 million network unplanned downtime revenue loss avoidance | Yes | \$386,228 |
| Business enablement — end-user productivity gains | 8% more productive worth 48.7 FTEs — \$70,000 salary | Yes | \$411,912 |
| Total average annual benefits | \$1.5 million per organization per year | | |

* Includes 7 months deployment time in year 1

Source: IDC's Business Value research, November 2023

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Lumen IP Solutions as the foundation for the model. On the basis of interviews with organizations using Lumen IP Solutions, IDC performed a three-step process to calculate the ROI and payback period:

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

140 Kendrick Street
Building B
Needham, MA 02494
USA
508.872.8200
Twitter: @IDC
blogs.idc.com
www.idc.com

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