



# DATA CENTRE EVOLUTION.

Discover how Canadian organizations are taking  
data centre infrastructure to the next level.



## Executive Summary

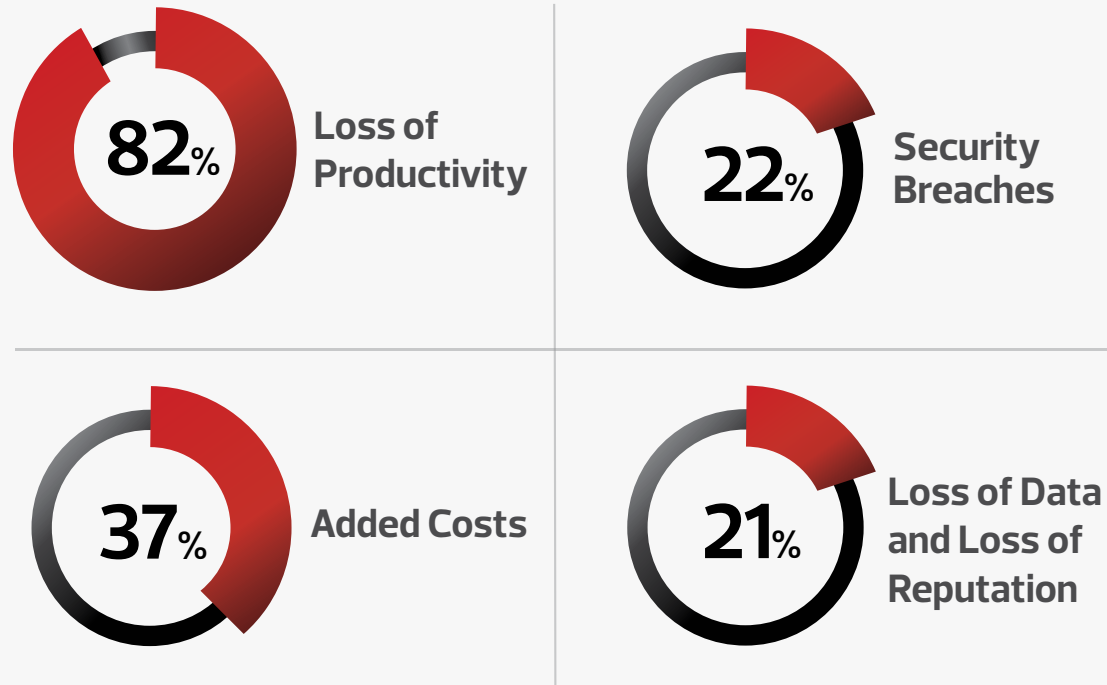
With the future of work already here, evaluating data centre performance and investment is more important than ever for Canadian organizations. Recently, CDW Canada commissioned a survey with Angus Reid to examine data centre trends and workplace transformations by speaking directly to Canada's IT professional community.

Our survey found that despite increased infrastructure investments and improvements over the last two years, many Canadian organizations remained vulnerable to data centre failures – both on-premises and cloud-based. In addition, we found that Canadian organizations who leverage public cloud services in some capacity – many of whom invested in this prior to the pandemic – experienced greater workplace agility, flexibility and productivity than those who elect for on-premises data centres only. As the economy continues to emerge from the pandemic and we look forward, our findings underscore the importance of forward-thinking investments in value-add solutions that can help organizations reach their next level faster.

Survey respondents indicated the pandemic is transforming the traditional work model, forcing organizations to look at sustainable and efficient ways to adapt to these changing operating models. However, the reality is that many organizations decreased their investments in emerging and transformative technologies during the pandemic in comparison to investments in previous years. In order to ensure business continuity as economic recovery takes place, it is important that organizations re-evaluate their investments in emerging and transformative technologies while prioritizing investments in data centre and network infrastructure improvements.

## Data centres remained a concern for Canadian organizations, and shortcomings significantly impacted workplace productivity

Over one third (35 percent) of IT professionals cited data centre failures contributed to major outages for business-critical applications in the past two years, resulting in:





## Key survey findings include:



**On-premises data centres were used by organizations across different sectors and sizes, either as a primary data centre or as a secondary/backup data centre.**

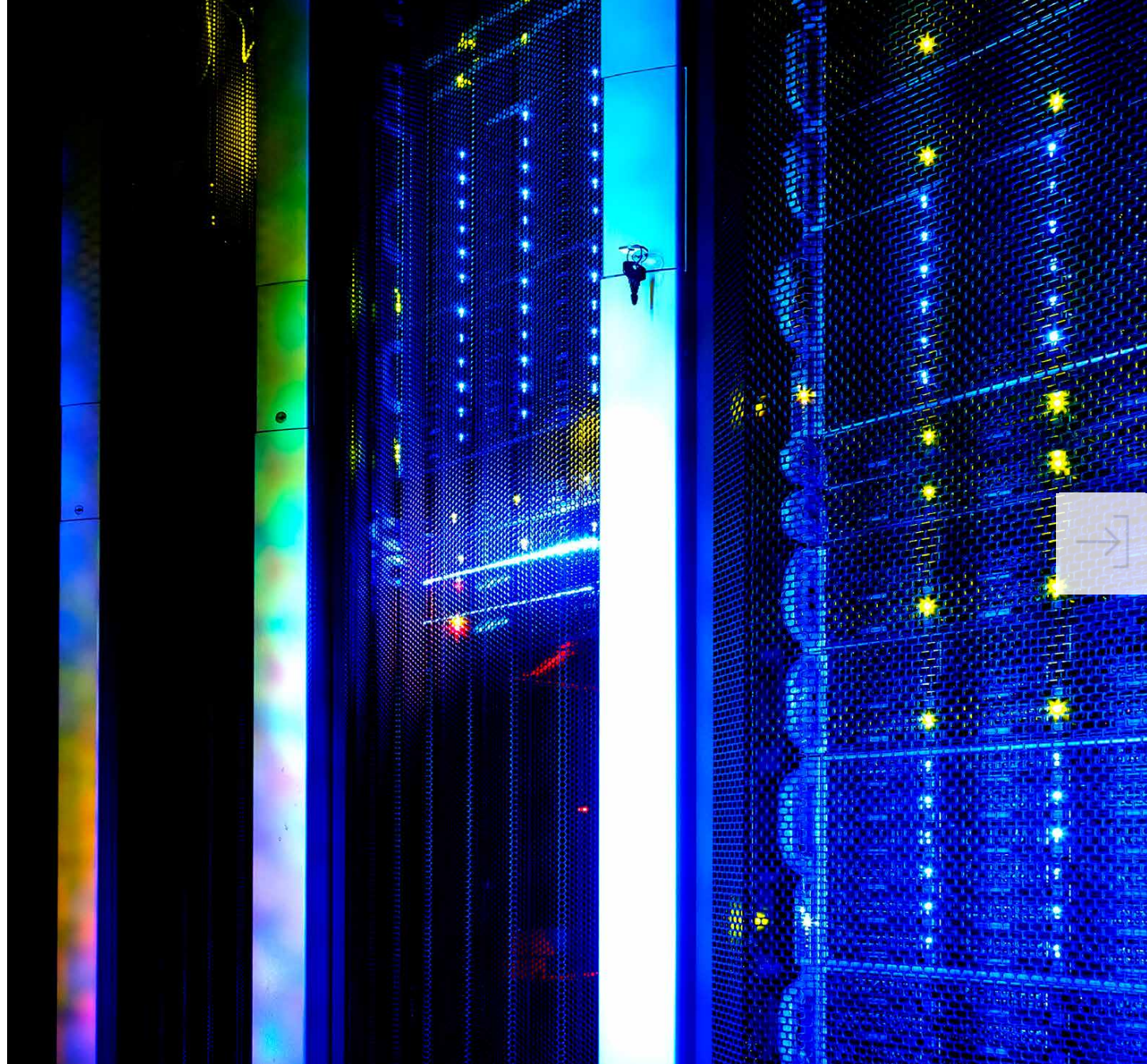
- Maintenance (50 percent), security/protection (45 percent) and costs (43 percent) were some of the biggest concerns regarding on-premises data centres. These concerns resulted in many Canadian organizations (85 percent) reporting that the adoption of public cloud services is a long-term change.
- While over half (60 percent) of Canadian organizations felt they did not need to invest in their data centre during the past two years, others continued to face barriers such as cost (27 percent), lack of awareness (8 percent) and lack of physical access (6 percent).





**Having a backup data centre or disaster recovery solution proved to be crucial to business continuity.**

- Most Canadian organizations were equipped with a backup data centre or disaster recovery solution (77 percent) should a data centre failure occur, and over half (58 percent) indicated this had an overall positive impact on workplace productivity.
- The most common types of backup data centres and disaster recovery solutions were a second physical data centre (51 percent), a disaster recovery centre built within the public cloud (26 percent) and outsourced disaster recovery services (17 percent).







**Most organizations reaped the benefits of hosting applications in the public cloud.**

- One in five (17 percent) Canadian organizations solely hosted applications in the public cloud.
- Employees with public cloud services at work cited better workplace flexibility (73 percent), agility (68 percent) and productivity (65 percent) compared to those working with on-premises data centres only.



## Q Key Findings

**Data centre failure (35 percent) and public cloud services outages (28 percent) were attributed to major business shortcomings that impacted bottom lines.**

This suggests that implementing agile, flexible and secure data centre networks and infrastructure is key to sustaining business operations and keeping the lights on – especially true in today's turbulent business environment.



**Many Canadian organizations (36 percent) made investments in emerging and transformative technologies including, artificial intelligence (AI), business process transformation tools, Internet of things (IoT) and smart office.**

This signifies that organizations are embracing digital transformation, which is increasingly important as hybrid work models continue to roll out across the country.



**Canadian organizations continued to face barriers when it came to investing in data centre infrastructure, including a lack of understanding (60 percent), concerns around cost (27 percent) and awareness (seven percent).**

This reveals that while migration and adoption are well underway across many organizations, there is still work to be done to ensure employees and decision-makers understand both the implementation benefits and repercussions of not investing appropriately in data centre infrastructure.



## Q Key Findings

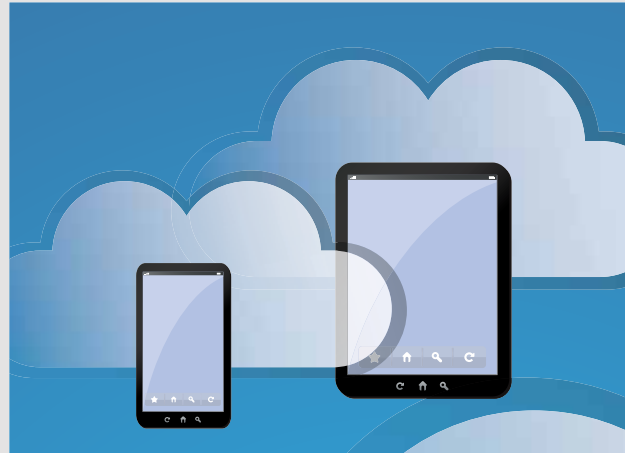
**Maintenance (50 percent), security and protection (45 percent), costs (43 percent) and scheduling equipment upgrades (35 percent) are additional barriers and challenges regarding on-premises data centres.**

This demonstrates that fulsome education is required along with prioritization at the very beginning of the organizational fiscal planning process to ensure that barriers are identified, addressed and overcome.



**Public cloud services allow organizations to sustainably support the trend of remote and hybrid work models, ensuring business continuity. Over half (54 percent) of respondents reported their day-to-day work experience improved after shifting to public cloud services.**

This indicates that moving forward, it is important for organizations to understand that implementing public cloud services can often have a positive impact on their employees.



**The overwhelming majority of IT professionals saw hosting applications in the public cloud as critical to their workplace success, especially regarding flexibility (73 percent), workplace agility (68 percent) and productivity (65 percent).**

This suggests that organizations must remain agile and open to change as the business landscape continues to evolve, as those who choose not to re-evaluate and invest in future-focused infrastructure models could be left behind.



## What is driving the change?

Organizations across different sectors and sizes are using on-premises data centres as their primary or secondary/backup data centre. However, on-premises data centres come with a number of challenges. To overcome these challenges and support changing work models, many organizations have transitioned away from dependency on on-premises data centres.

Find the complete audited findings in the appendix of this report.

## Innovation is Driving Trends in Emerging and Transformative Technologies

Many Canadian organizations made investments in emerging and transformative technologies as IT optimization and technology investments continue to rise, indicating they are preparing for future innovations. According to CDW's survey, over one third (36 percent) reported their organization made investments in emerging and transformative technologies. Interestingly, when compared to investments made in previous years, these investments have significantly decreased during the COVID-19 pandemic.

The majority (81 percent) of respondents said their organizations made investments in emerging and transformative technologies prior to the pandemic, yet only 14 percent said the same about investments during the pandemic. Unsurprisingly, enterprises (50 percent) and large-sized businesses (39 percent) made the most investments in emerging and transformative technologies, likely due to greater budgets and financial capacities.



Some of the most common emerging and transformative technologies organizations invested in include:



- Artificial Intelligence (68 percent)



- Business Process Transformation Tools (49 percent)



- Internet of Things (IoT) and Smart Office (48 percent)



- High Performance Computing (37 percent)



- Containers and Low Code Applications (30 percent)



- Edge Data Centres (27 percent)



- Augmented/Virtual Reality (27 percent)

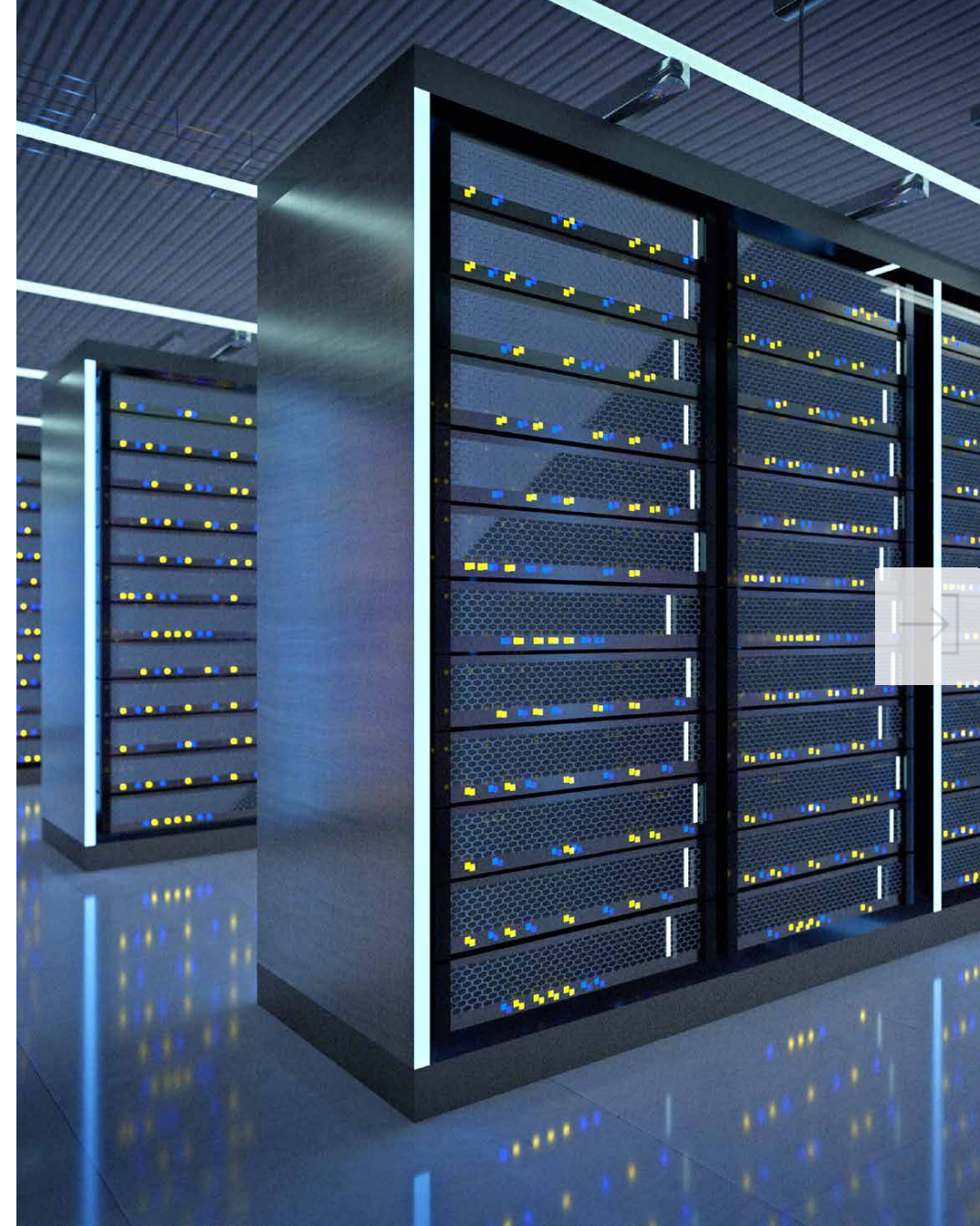


# Prioritizing Data Centre Infrastructure Investments and Optimization



**Many Canadian organizations have made investments in their data centre infrastructure and adopted innovative technologies that helped optimize their work performance and mitigate business losses.**

- Nearly half (42 percent) of respondents said that their organization's data centre infrastructure experienced improvements over the last two years.
- Interestingly, over half (61 percent) reported their organization invested in data centre infrastructure over the last two years.
- This indicates many organizations are prioritizing IT infrastructure investments and optimization, but there is still work to be done for the balance of organizations whose IT infrastructure could benefit from reevaluation.



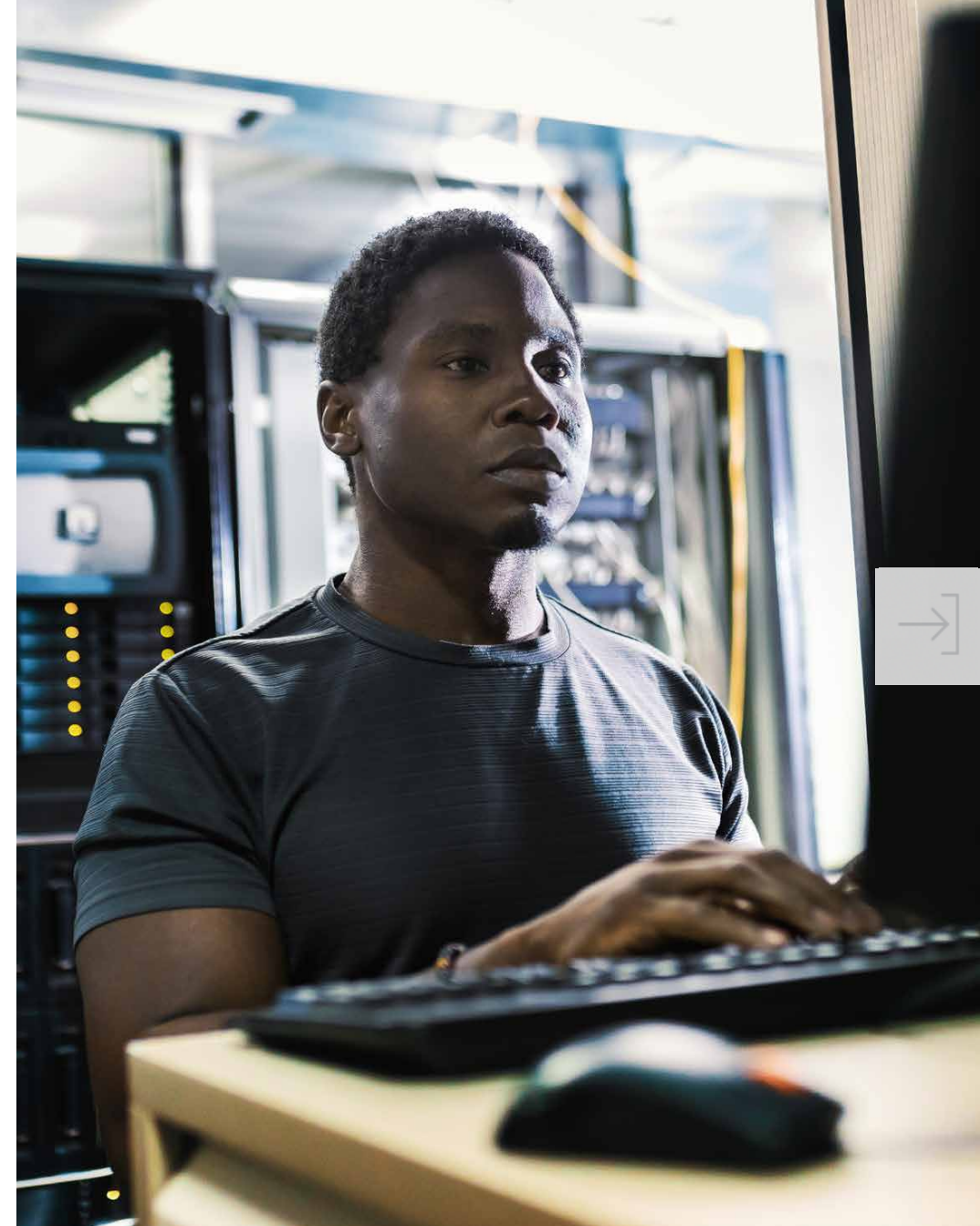
# Leveraging Data Centre Recovery Solutions to Mitigate Business Shortcomings



Data centre failures and public cloud services outages have been attributed to major business shortcomings, including loss of productivity, added costs, security breaches, loss of data and loss of reputation. It is critical that organizations protect themselves from these legitimate risks tomorrow within evaluation and investment today, as over one quarter (26 percent) of respondents reported their organizations experienced a data centre failure in the last two years.

Fortunately, the majority of Canadian organizations (77 percent) had a backup data centre or disaster recovery solution:

- Over half (51 percent) said they have a second physical data centre.
- Twenty-six percent said they have a disaster recovery centre built within the public cloud.
- Seventeen percent said they outsource disaster recovery services.





# What We're Seeing in Different Industries

## Business and Professional Services

In keeping with most IT trends we have seen throughout the pandemic, business and professional services organizations were leaders in the data infrastructure space.

When it comes to adopting public cloud services and data centre infrastructure, our data revealed that business and professional services led the field:

- Eighty-one percent indicated their organization hosts applications in the public cloud (either entirely or in conjunction with an on-premises data centre) – the highest of all industries.
- Over half (62 percent) reported their organization made investments in data centre infrastructure over the last two years – the second highest of all industries after financial services.

Given the industry's mass adoption of public cloud services, it was not surprising that most respondents said their workplace agility (72 percent), flexibility (72 percent) and productivity (66 percent) were positively impacted as a result. The majority (80 percent) of respondents said their organization's adoption of public cloud services is a long-term change, likely due to the significantly positive impact.

Less than a quarter (22 percent) of respondents said their organization experienced a data centre failure in the last two years. **This is the second lowest failure rate of all industries, after financial services**, indicating that the continued investment in data centre infrastructure had an overall positive impact on the industry's data centre resilience.



Having a backup data centre or disaster recovery solution has proven to be a key component to any organization. This ensures organizations are better positioned to navigate any challenge that comes their way.



## Government

Government lagged other sectors prior to the pandemic when it came to adopting and optimizing data centres, but this sector saw the greatest digital transformation over the past two years:

- Just over half (60 percent) said their organization was using public cloud services in some capacity before the pandemic, which is well below the industry average of 74 percent.
- Nearly a quarter (24 percent) cited their organization started using public cloud-based services during the pandemic, the highest of all industries.

Even with their slow adoption of public cloud services, most IT professionals working in government still reaped the benefits of transitioning to public cloud services. Respondents cited this shift had a positive impact on their flexibility (72 percent), productivity (59 percent) and workplace agility (56 percent). Therefore, it was not surprising that the majority (82 percent) believed this adoption is a long-term change.

Despite lagging on their adoption of public cloud services, almost half (41 percent) of IT professionals within the industry noted their organization made investments in emerging and transformative technologies such as edge data centres and artificial intelligence, the second highest of all industries after financial services. This indicates the industry's desire to expand these technological capabilities in the future.

## Education

IT professionals in the education sector were industry leaders when it came to adopting public cloud services:

- Over three-quarters (79 percent) indicated their organizations host applications in the public cloud, the second highest of all industries, after business and professional services.
- The majority (84 percent) stated that their organization began using public cloud-based data centre services before the pandemic, the highest of all industries and far above the industry average of 74 percent.

The education sector benefitted the most from their adoption of public cloud services, with 61 percent reporting an improvement in their day-to-day work experience – the highest of all industries. The education sector's usage of public cloud services positively impacted flexibility (77 percent), workplace agility (70 percent), and productivity (59 percent).

It is important to note that the industry also experienced the most data centre infrastructure challenges throughout the pandemic:

- Almost half (43 percent) reported experiencing a major data outage for business-critical applications attributed to data centre failure – the second highest among all industries.
- Nearly half (40 percent) reported experiencing a major outage for business-critical applications attributed to a public cloud services outage – the highest among all industries.

According to IT professionals in the education sector, these data centre failures resulted in major business shortcomings, including loss of productivity (77 percent), added costs (32 percent) and security breaches (32 percent). This indicates the education sector could consider increasing investment in data centre recovery solutions moving forward.



**The education sector benefitted the most from their adoption of public cloud services, with 61 percent reporting an improvement in their day-to-day work experience, the highest of all industries.**



## Financial Services

The financial services sector has always been known for its strong infrastructure capabilities, so it was no surprise that over half (63 percent) reported their organization made investments in data centre infrastructure over the last two years – the highest among all sectors surveyed. It was evident that this had an overall positive impact on the industry's data centre resilience as less than one quarter (21 percent) of respondents said their organization experienced a data centre failure in the last two years – the lowest failure rate of all industries.

**The financial services sector proved to be the most well-equipped and forward-thinking when it came to crisis mitigation**, particularly regarding backup data centres and recovery solutions. This sector was also best equipped for potential data centre failure, as the overwhelming majority (81 percent) reported their organization had a backup data centre or recovery solution – the highest of all industries.

The most prevalent types of disaster recovery solutions among the financial services sector included:

- A second physical data centre (60 percent)
- A disaster recovery centre built within the public cloud (20 percent)
- Outsourced disaster recovery services (14 percent)

The financial services industry more frequently invested in emerging and transformative technologies (63 percent), compared to the 36 percent industry average. **Financial services organizations also had the highest adoption rate of automation and orchestration technologies among all industries**, at 28 percent. These findings indicate that being forward-thinking in the approach to IT has a positive impact on the data centre, which can benefit the overall organization.



## Healthcare

The healthcare sector faced internal challenges with digital transformation initiatives, with over one third (37 percent) indicating their data centres experienced some downtime over the last two years – the highest of all industries.

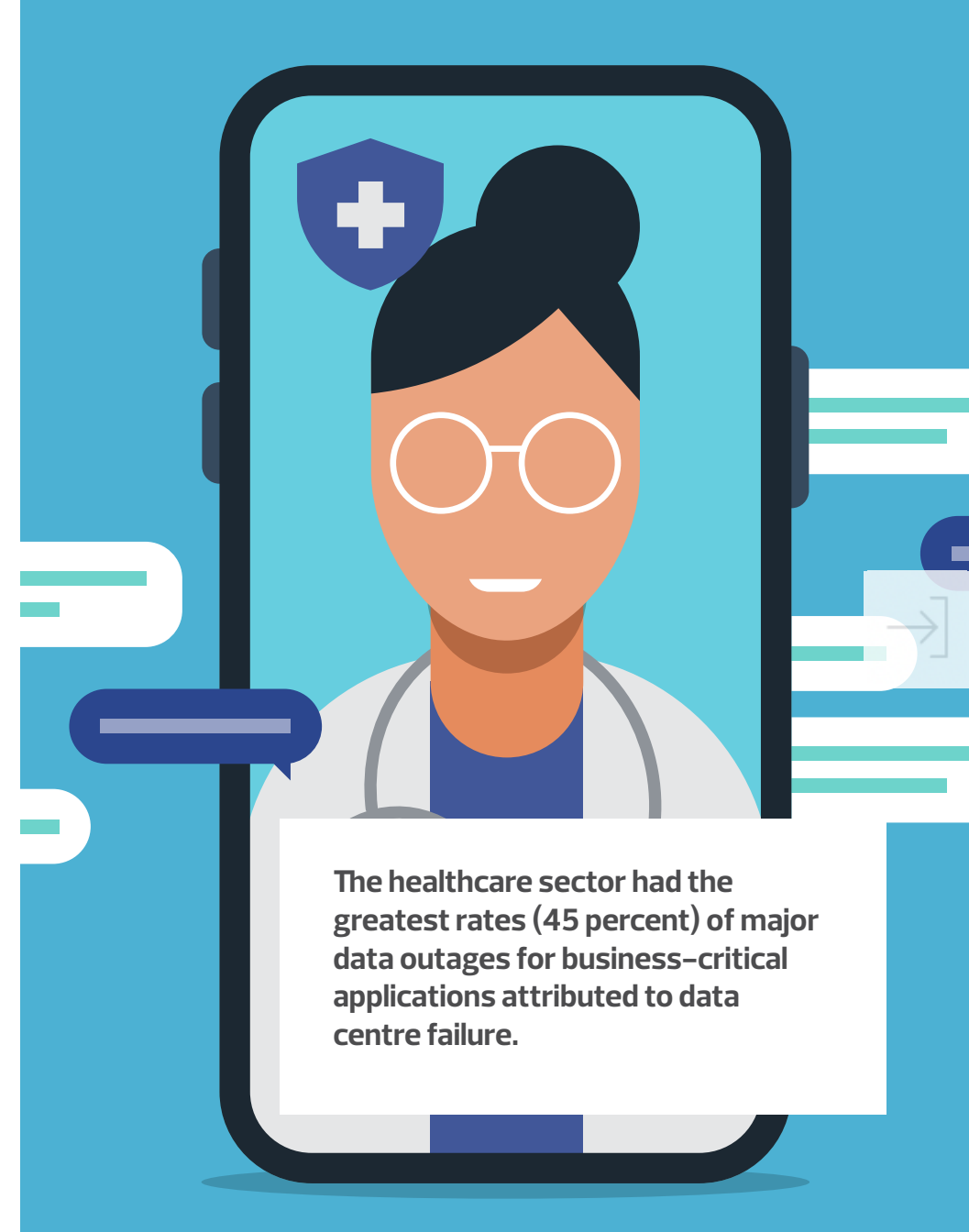
When it comes to adopting public cloud services, our data revealed the healthcare sector lagged other industries:

- Just over half (55 percent) balanced hosting applications between the public cloud and an on-premises data centre – the lowest of all industries.
- Over one quarter (26 percent) of IT professionals in healthcare reported their organization solely hosts applications in an on-premises data centre – the highest of all industries.

The healthcare sector also had the greatest rates (45 percent) of major data outages for business-critical applications attributed to data centre failure. These data centre failures resulted in major losses, including:

- Loss of productivity (88 percent)
- Loss of reputation (35 percent)
- Added costs (29 percent)

It was also evident that the healthcare industry struggled more than any other sector when transitioning to the public cloud (41 percent – the highest percentage among sectors surveyed). The healthcare sector also lagged in emerging and transformative technologies investment such as edge data centres and artificial intelligence, with just over one quarter (26 percent) of respondents indicating movement in these areas – the second lowest among all industries. This indicates that the healthcare industry could benefit from re-evaluating emerging and transformative technologies as the sector emerges from the acute challenges that arose during the pandemic.



**The healthcare sector had the greatest rates (45 percent) of major data outages for business-critical applications attributed to data centre failure.**



## Where Do We Go From Here?

As organizations continue to adapt to changing work models, many Canadian employees expect to continue relying on their organization's data centre infrastructure to be agile, manageable and future-focused. As we look to the future, the top takeaways we recommend for organizations are:

- **1. Re-evaluate your investment policies on data centre infrastructure.**

A key takeaway from this survey was the positive impact that public cloud-based services had on employee workplace agility, flexibility and productivity in comparison to organizations that were working on on-premises data centres alone. A balanced solution to have both on-premises data centres and a cloud-based solution could help create a more efficient environment for all employees.

- **2. Implement a strategy to formalize site reliability engineering and learnings from past data centre failures and continue to explore ways to optimize backup data centres or disaster recovery solutions.**

With the increasing prevalence of data centre failures and public cloud service outages, it is important for organizations to minimize any risks of business losses by formalizing a strategy to understand data centre failures better, implement more robust site reliability engineering plans and address potential gaps from those learnings. This could help organizations ensure business continuity while minimizing the risks associated with potential data centre failures or outages.





- **3. Review data centre infrastructure investment priorities and budgets on an ongoing basis.**

The major barriers Canadian organizations faced when it came to investing in data centre infrastructure included concerns around cost and lack of understanding. This demonstrates the importance of evaluating investment opportunities and implementing education at both the employee and decision maker levels to ensure that this is a priority at the onset of the organizational planning process.

- **4. Commit to investing in emerging and transformative technologies.**

Many organizations decreased their investments in emerging and transformative technologies during the COVID-19 pandemic in comparison to previous years. It is important that organizations are ready for future innovations and can maximize opportunities to stay ahead of the curve.

**CDW Canada can provide you with the tools and expertise to assess your current data centre infrastructure and help build IT environments that are agile, manageable and future-focused.**

**To learn more, contact our CDW solution and service experts at 800.972.3922 or visit [CDW.ca/datacentre](https://www.cdw.ca/datacentre).**





## Appendix – Detailed Survey Results

Despite an overall increase in data centre infrastructure investments and improvements over the last two years, many Canadian organizations were vulnerable to data centre failures which can result in detrimental business losses.

- Although almost half (42 percent) of respondents said there was an overall increase in data centre infrastructure improvements over the last two years, and over half (61 percent) reported investments in data centre infrastructure, many Canadian organizations were still vulnerable to data centre failures.
- Over a quarter (26 percent) of IT professionals reported their organizations experienced a data centre failure in the last two years.

Data centre failure and public cloud services outages were attributed to major business shortcomings, including loss of productivity, added costs, security breaches, loss of data and loss of reputation. This was the case across organizations that use public cloud services as well on-premises data centres.

- Over one third (35 percent) of IT professionals reported they experienced a major outage for business-critical applications attributed to data centre failure. The most common business shortcomings included:
  - Loss of productivity (82 percent)
  - Added costs (37 percent)
  - Security breaches (22 percent)

- Over a quarter (28 percent) of IT professionals reported they experienced a major outage for business-critical applications attributed to a public cloud services outage. The most common business shortcomings included:
  - Loss of productivity (78 percent)
  - Added costs (37 percent)
  - Loss of data (29 percent)

Many Canadian organizations hosted applications in the public cloud, yet some still relied on on-premises data centres.

- Over half (55 percent) of respondents reported their organizations balance hosting applications between both the public cloud and an on-premises data centre.
- Nearly a quarter (20 percent) reported their organizations only host applications in an on-premises data centre.
- Seventeen percent reported their organizations only host applications in the public cloud.
- Eight percent were unsure.



## Appendix – Detailed Survey Results

On-premises data centres were used by organizations across different sectors and sizes, either as a primary data centre or as a secondary/backup data centre. Some of the biggest concerns regarding on-premises data centres include maintenance, security/protection and costs.

- 50 percent cited maintenance as a concern.
- 45 percent cited security/protection as a concern.
- 43 percent cited costs as a concern.
- Other concerns included scheduling equipment upgrades (35 percent), supply shortages in equipment (32 percent), inefficient physical space (27 percent) and real-time monitoring (26 percent).

Having a backup data centre or disaster recovery solution has proven to be a key component to any organization.

- The majority (77 percent) of Canadian organizations are equipped with a backup data centre or disaster recovery solution if a data centre failure occurs, and over a third (32 percent) have had to use it.
- The most popular types of backup data centre/disaster recovery solutions included a second physical data centre (51 percent), a disaster recovery centre built within the public cloud (26 percent) and outsourced disaster recovery services (17 percent).
- Of those who have had to use their backup data centre/disaster recovery solutions, over half (58 percent) cited it had an overall positive impact on their workplace productivity.

Most organizations reaped the benefits of hosting applications in the public cloud. Employees who use public cloud services at work reported this had an overall positive impact on their workplace agility, flexibility and productivity compared to employees working with on-premises data centres.

- 73 percent said it has had a positive impact on their workplace flexibility.
- 68 percent said it has had a positive impact on their workplace agility.
- 65 percent said it has had a positive impact on their workplace productivity.
- For organizations that host applications in an on-premises data centre, under half said their agility (44 percent), flexibility (44 percent) and productivity (44 percent) at work was positively impacted.

Canadian organizations continued to face barriers when it comes to investing in data centre infrastructure.

- 60 percent cited a lack of understanding as a barrier.
- 27 percent cited concerns around cost as a barrier.
- Seven percent cited lack of awareness as a barrier.
- Nearly a quarter (19 percent) of IT professionals reported their organizations did not make data centre infrastructure investments over the last two years.





## Appendix – Detailed Survey Results

Canadian organizations made investments in emerging and transformative technologies including Artificial Intelligence (AI), Business Process Transformation Tools, Internet of Things (IoT) and Smart Office.

- Over one third (36 percent) of Canadian organizations invested in emerging and transformative technologies:
  - 68 percent invested in Artificial Intelligence.
  - 49 percent in Business Process Transformation Tools.
  - 48 percent invested in Internet of Things and Smart Office.
  - Other investments include High Performance Computing (37 percent), Containers and Low Code Applications (30 percent), Edge Data Centres (27 percent) and Augmented/Virtual Reality (27 percent).

On-premises data centres were used by organizations across different sectors and sizes, by either balancing applications between both the public cloud and an on-premises data centre (55 percent) or as their primary data centre (20 percent). However, on-premises data centres came with a number of challenges. To overcome these challenges and support changing work models, many organizations transitioned away from dependency on on-premises data centres.

Some of the top cited concerns regarding on-premises data centres included:

- Maintenance (50 percent)
- Security/protection (45 percent)
- Costs (43 percent)
- Scheduling equipment upgrades (35 percent)
- Supply shortages in equipment (32 percent)
- Inefficient physical space (27 percent)
- Real time monitoring (26 percent)