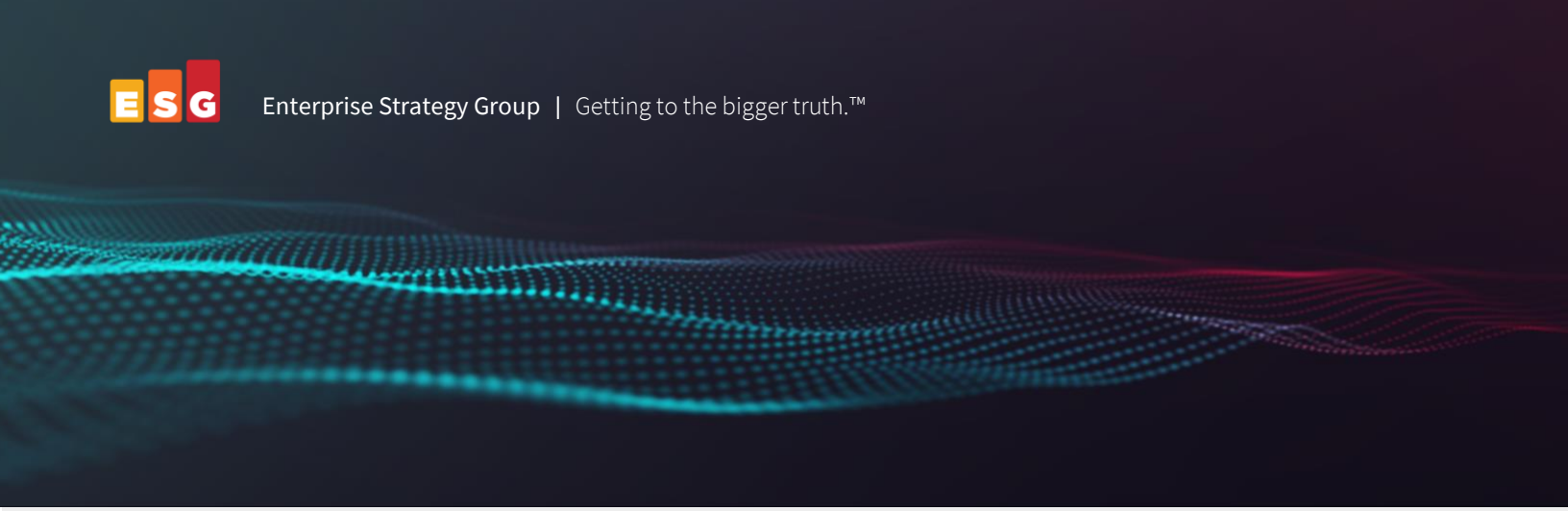

ESG RESEARCH INSIGHT PAPER

Data Protection Trends in Virtual Environments

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Executive Summary

Virtual machine (VM) environments, both on-premises and in the cloud, offer a unique set of challenges for IT professionals. ESG recently took a closer look at this topic on behalf of Dell Technologies with a focus on data protection. The perspectives in this paper are underpinned by a survey conducted by ESG and Dell Technologies. For further details on survey specifics, see the Appendix: Demographics and Methodology.

Virtualization technology is well established yet many environments still are not fully virtualized. Deployments of virtualization technology are now overwhelmingly hybrid, almost equally split between on-premises and public cloud, on average. While overall, IT organizations are very comfortable with virtualization technology, they struggle with skill sets and, operationally, with data protection. Backup and recovery remain crucial issues.

On-premises, backup and recovery SLAs still have room to improve. VM recovery failures come at a cost and can lead to significant operational efficiency loss and business impacts. The backup infrastructure is seen as the leading cause for missing data protection SLAs. This creates both a mandate and an opportunity to improve backup and recovery for IT leaders. One of the fundamental keys to success discovered as a result of this research is the integration and back-version compatibility with VMware.

The annual VM growth rate is expected to be higher in the cloud than on-premises in the next 24 months, so there is no question that virtualization and cloud are intertwined moving forward. One important aspect of "going to the cloud" is to secure the right processes and technologies to effectively migrate workloads and associated data protection services to the cloud, an area in which channel or third-party service providers are critical.

Virtualization Landscape

Overall, organizations are very comfortable with virtualization management. Yet, IT professionals on average highlighted that only 59% of these systems had actually been virtualized to date. This means that another 41% are still operating as physical infrastructure.

It can be concluded that, while virtualization is very pervasive, there is still some room left for it to be deployed in many environments. Our research further indicates that only 10% of large-scale VM environments are over 80% virtualized.

Most IT professionals reported that the barriers to virtualization in environments that are predominantly physical are cost- or technology-related, such as performance (cited by 45% of respondents as a gating factor to virtualization), security (46%), and availability requirements (43%). While these are very common across IT disciplines, they are significant hurdles to overcome, and typically require planning and technology updates.

Virtualization has become fully hybrid and is trending toward increased cloud adoption. Of all of the VMs currently deployed in their organization, IT professionals indicated that 52% reside in the cloud while 48% reside on-premises.

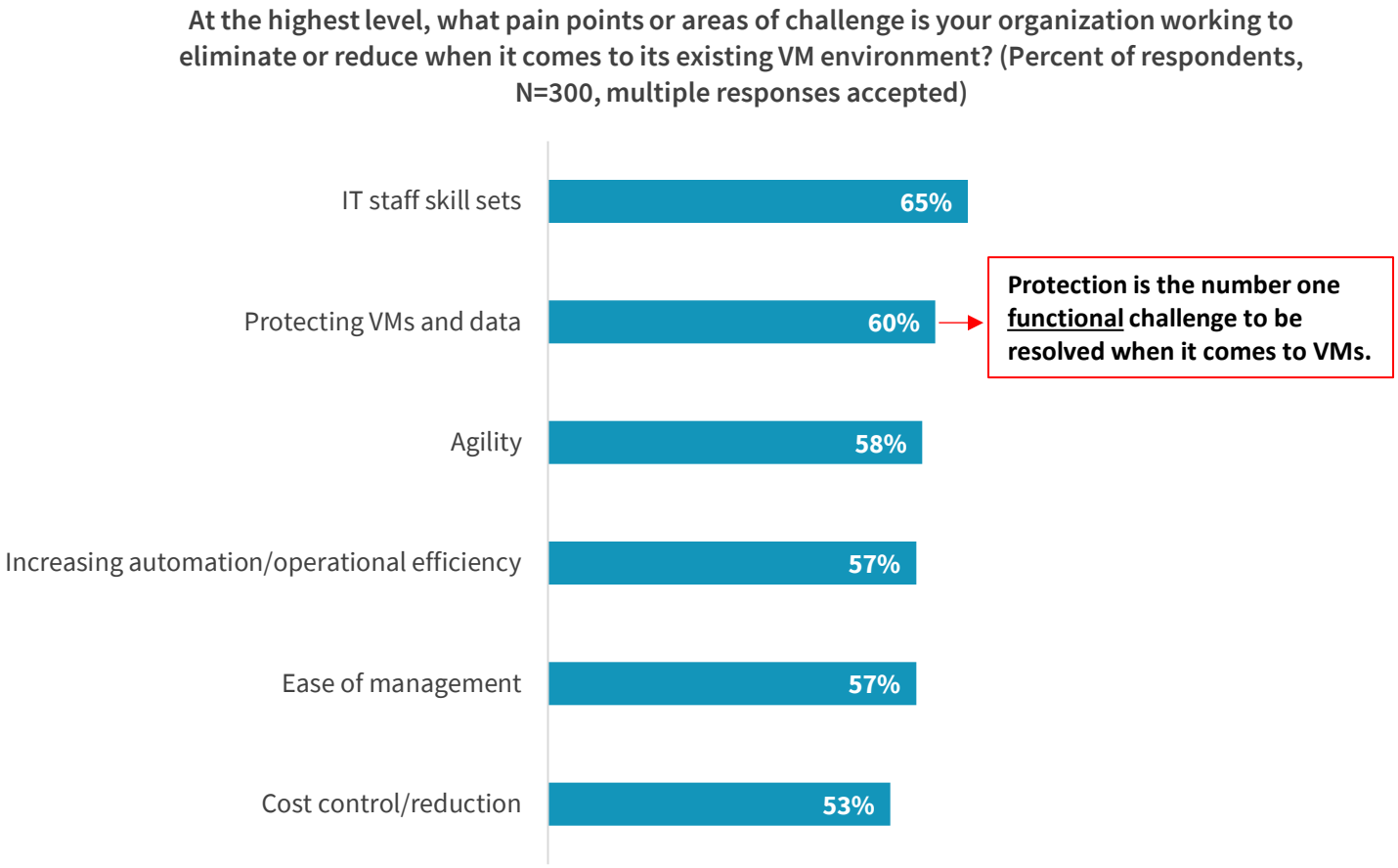
A wide variety of pain points affect organizations' abilities to fully deploy virtualization in their environments.

IT skill set shortages are a common issue across many IT disciplines and talented virtualization professionals are needed. Further ESG research identifies that this is also the case beyond virtualization, in particular, for cybersecurity and data protection skill sets.[1]

[1] Source: ESG Master Survey Results, *2020 Technology Spending Intentions Survey*, January 2020.

Beyond skill sets, data protection is the number one *functional* challenge (putting IT skills aside) to be resolved when it comes to VM environments. While technology has been available for many years and keeps improving, IT professionals still see backup and recovery as a crucial issue.

Figure 1. Protection of VMs Is the Most Common Functional Challenge

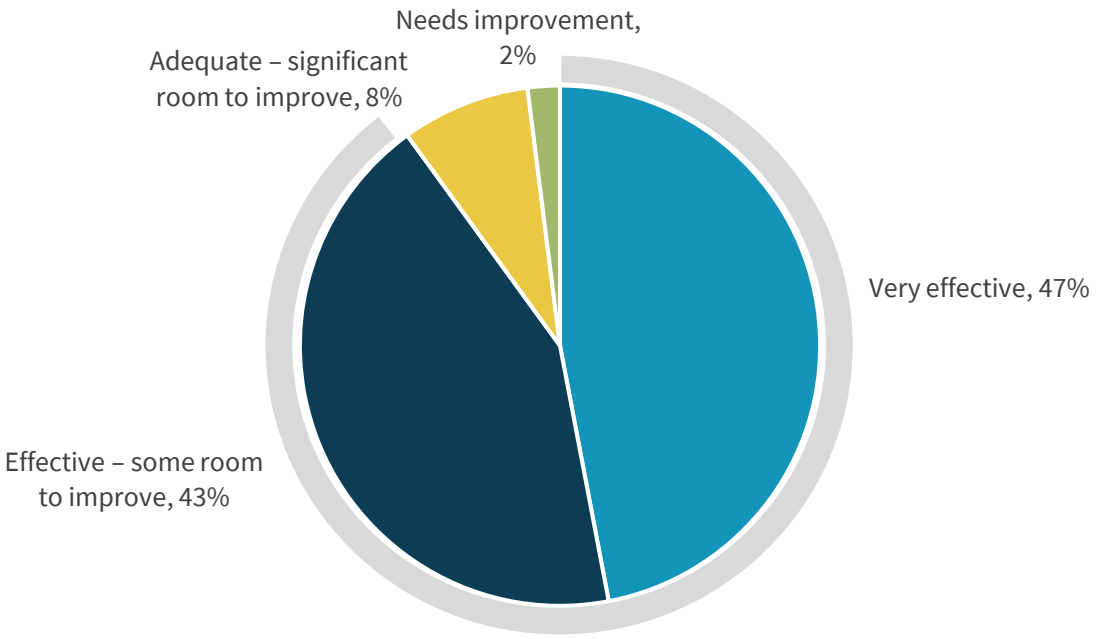


Source: Enterprise Strategy Group

Operational efficiency and cost are closely intertwined when it comes to IT, and this is also true of virtualization. The corollary, which is a perceived pain in itself, is the lack of IT agility to support the business. It is also clear that VMs are not going away any time soon. Overall, organizations are very comfortable with virtualization: 90% feel they are effective at VM lifecycle management, a sign of the maturity of the technology and good instrumentation.

Figure 2. VM Lifecycle Management Is Part of IT's DNA

Generally speaking, how effective would you say your organization is at VM lifecycle management (i.e., VM deployment, performance monitoring, issue resolution, backup and recovery, and retirement)? (Percent of respondents, N=300)



Source: Enterprise Strategy Group

On-premises VM Protection

Backup and recovery is one of the key challenges of VM lifecycle management on-premises, as are skill sets and performance management. These are pretty basic needs that organizations might expect would be well under control in the context of a mature technology. This means that constantly improving the technology solutions at play and revisiting backup and recovery is necessary.

Backup and recovery methodologies for virtualization have been in the market for many years, yet backup and recovery success, the ultimate objective, is far from a sure thing, with respondents reporting that, on average, only 77% of their VMs can be successfully backed up and restored. The problem is exacerbated when you consider the fact that many VMs run mission-critical functions and host business-critical data. Another way to look at this is that most organizations believe that nearly 25% of their VM backup and restore jobs actually fail. This is where proven solutions can make a big difference.

When things don't go well, consequences can be painful. VM recovery failures come at a cost and can lead to significant operational efficiency and business impacts. Topping the list are productivity loss (44% of organizations have experienced this in the last 12 months), data loss (43%), revenue loss (31%), damage to brand integrity (29%), and loss of employee confidence (28%).

Figure 3. VM Recovery Failures Lead to Operational Efficiency and Business Impacts

Which of the following impacts – if any – has your organization experienced in the last 12 months as a result of VM recoveries failing or failing to be completed within RTO/RPO targets? (Percent of respondents, N=300, multiple responses accepted)

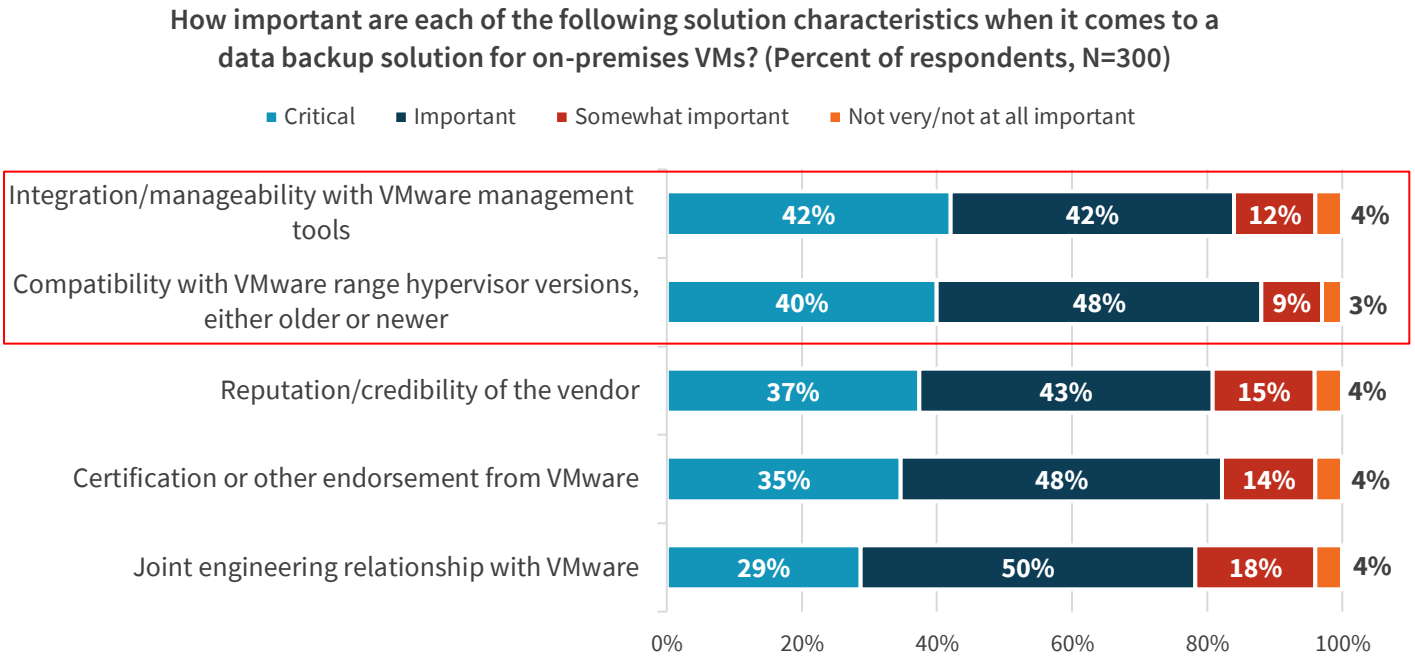
Source: Enterprise Strategy Group

Specifically, recovery time and recovery point objectives are still fairly lengthy today with a mean of over three hours each. Many organizations require immediate or instant recovery capabilities, particularly when it comes to business-critical data. This really raises the question of whether organizations have fully optimized their backup and recovery solutions for large VM deployments. The majority (53%) of respondents report the backup environment is most often the cause of RTO/RPO failures. Clearly, organizations need to do a better job avoiding the most preventable causes of backup and recovery failure.

At the same time, ESG believes this also presents an opportunity for IT professionals to look at new options and improve on their recovery objectives. ESG asked respondents what their top data protection capabilities are when considering and evaluating new solutions. The capabilities most often placed in respondents' top-three were "instant" or rapid recovery of VMs directly from the backup server/appliance (28%), the ability to use cloud services for offsite protection (26%), and the ability to automatically detect and protect VMs (23%).

The good news is that some great technologies exist today to help alleviate the challenges and shortcomings organizations are struggling with. Beyond the key capabilities cited by IT professionals, one of the fundamental keys to success uncovered in our research is the integration and backward compatibility with VMware.

Figure 4. Integration and Back-version Compatibility with VMware Are Critical for On-premises Backup

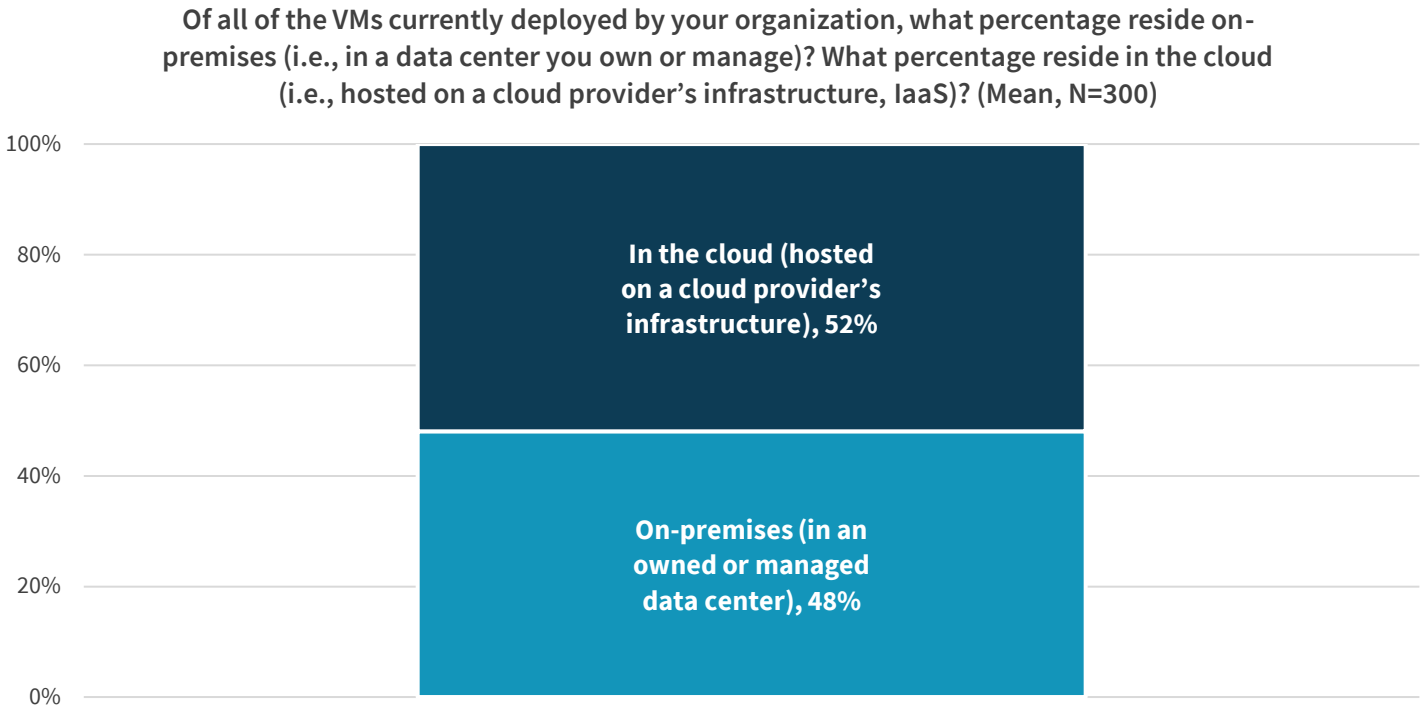


Source: Enterprise Strategy Group

Cloud Perspectives

Virtualization has become fully hybrid and it is trending toward increased cloud adoption. Of all the VMs currently deployed in their organization, IT professionals indicated that 52% reside in the cloud and 48% reside on-premises. Annual VM growth rate is also expected to be higher in the cloud than on-premises in the next 24 months, so there is no question that virtualization and cloud are intertwined moving forward. This also means that data protection processes need to "follow" the workloads, and adequately protect the data in the cloud, whether IaaS or SaaS. Backup and recovery solutions/portfolios will therefore be evaluated on their ability to deliver SLAs that meet IT and business mandates.

Figure 5. Cloud Is the Most Common Platform for Virtualization Deployments



Source: Enterprise Strategy Group

One important aspect of "going to the cloud" is securing the right processes and technologies to effectively migrate workloads and associated data protection services to the cloud. This where the ecosystem and the channel come in. Channel or third-party service providers are critical players for VM cloud migration: The vast majority of respondents (72%) have partnered with a third-party service provider to help migrate VMs to public cloud infrastructure. This is not only a good way to "expand" an organization's IT resources, but also a way to tap into and gain access to skills in high demand in the market.

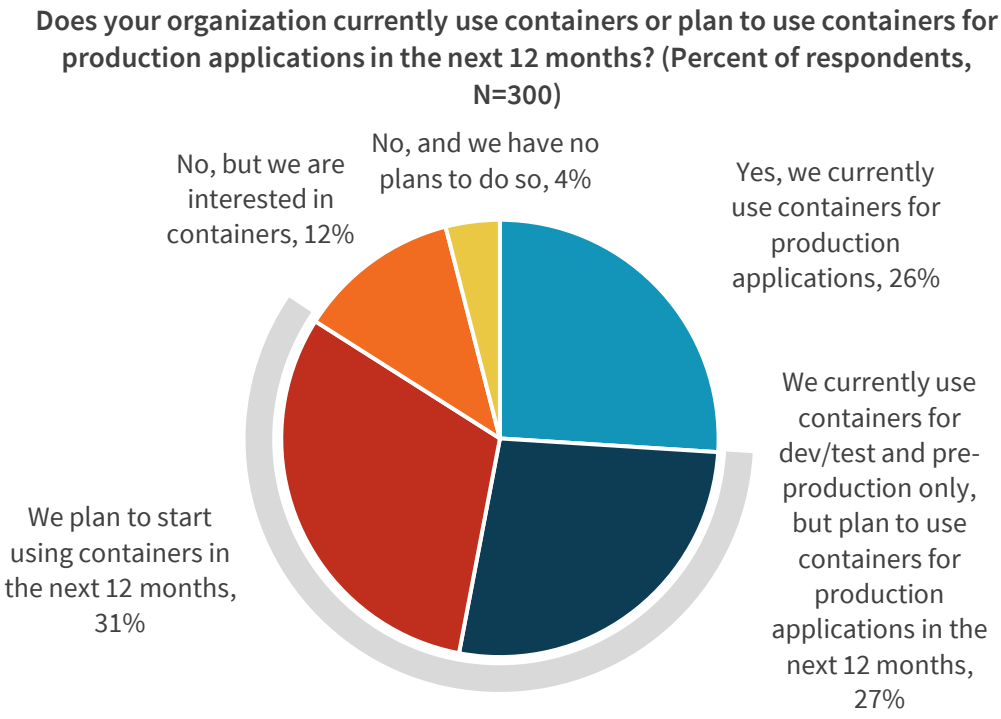
The taxonomy of partners includes cloud service providers and IT vendors who are the primary partners IT professionals turn to, followed by system integrators/consultants, and value-added resellers (VARs). To successfully "play" in the space, vendors must therefore have a solid ecosystem of partners in place with the right type of incentives and programs to support their market penetration efforts.

Figure 6. Third-party Partners for Cloud Migrations

Source: Enterprise Strategy Group

Technology is in constant evolution and one of the hot topics in the market is containers and associated tools. ESG identified that container usage is starting to pick up, with the next 12 months appearing to be an inflection point, as 58% of respondents anticipate increasing usage of containers. We expect that this will create opportunities for vendors and third-party partners to bridge the gap of data protection at the edge, core, and cloud.

Figure 7. Container Usage Starting to Pick Up



Source: Enterprise Strategy Group

The Bigger Truth

There is no question that protecting VM deployments at scale is not for the faint of heart. Organizations need to have the right type of technologies in place and access to skill sets that are currently scarce in the marketplace to succeed. Data protection is one of the challenges that must be addressed head-on to mitigate business risk and optimize operational efficiency. While this may seem like a complex undertaking, it is necessary and offers organizations opportunities to improve and make their infrastructures more resilient.

The good news is that some great technologies exist today to help alleviate the challenges and shortcomings. As discussed previously in this report and based on ESG research, one of the fundamental keys to success is integration with VMware.

The Dell Technologies portfolio for data protection is one of, if not the most, complete in the market today. It includes proven solutions adopted by thousands of users around the globe and is consistently evolving. More importantly, the portfolio offers many options to tackle hybrid VM environments at scale. This is where Dell Technologies' tight integration with VMware is critical. Its innovation with VMware and the joint engineering engagements between the teams are significant differentiators that organizations should consider as they evaluate or reevaluate their data protection environments.

Appendix: Demographics and Methodology

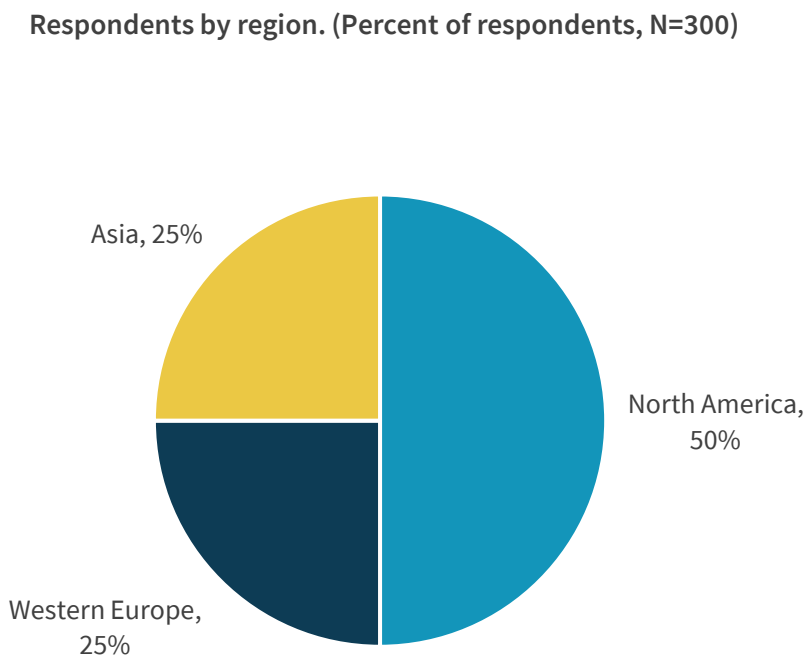
To gather data for this report, ESG conducted a comprehensive online survey of IT and VM administrators and managers with data protection responsibility at their organizations. Respondents were employed at private- and public-sector organizations that had 500 or more employees (8% large midmarket [500 to 999 employees] and 92% enterprise [1,000+ employees]), with $50 million or more in annual revenue, and 1,000+ VMs under management

The survey was fielded in November of 2019. After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on several criteria) for data integrity, a final sample of 300 respondents based in North America (50%), Western Europe (25%), and Asia (25%) remained.

All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents. Note: Totals in figures and tables throughout this report may not add up to 100% due to rounding.

The figures below detail the firmographics of the respondent base, including respondents' role within the organization, and organizations' region, industry, and total number of employees.

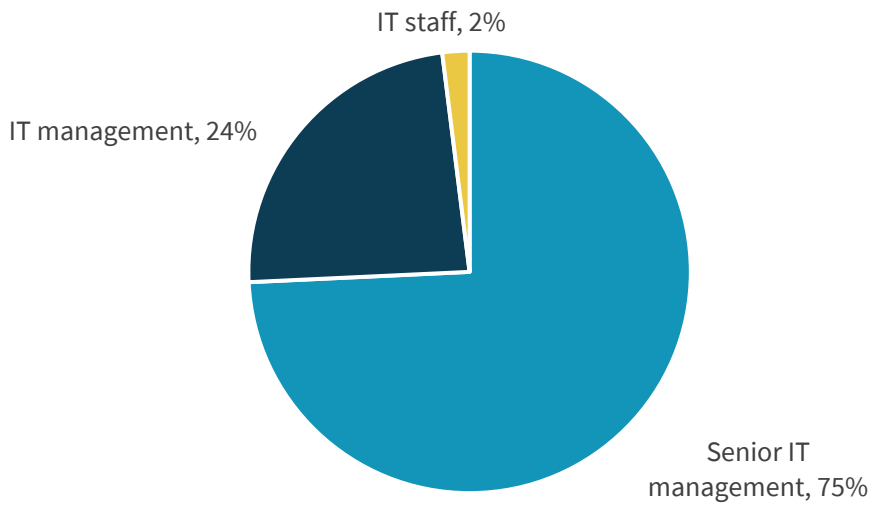
Figure 8. Regional Scope of Research



Source: Enterprise Strategy Group

Figure 9. Respondents' Seniority

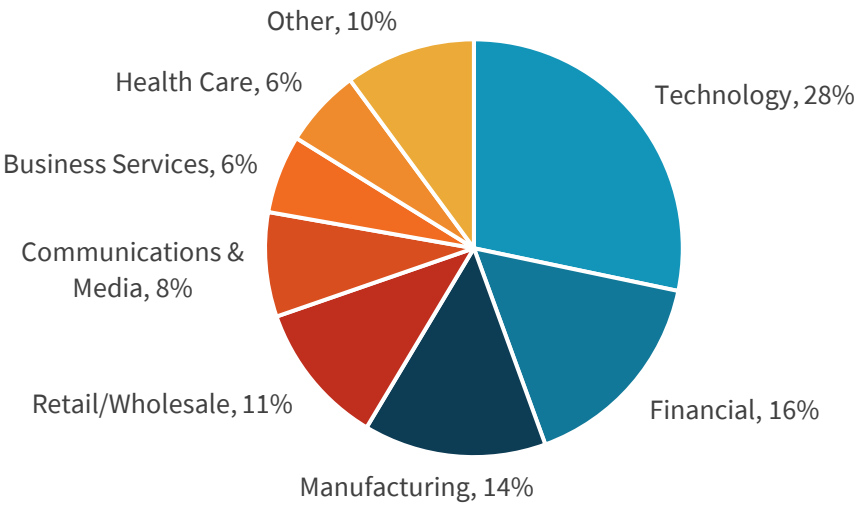
Which of the following best describes your current role within your organization? (Percent of respondents, N=300)



Source: Enterprise Strategy Group

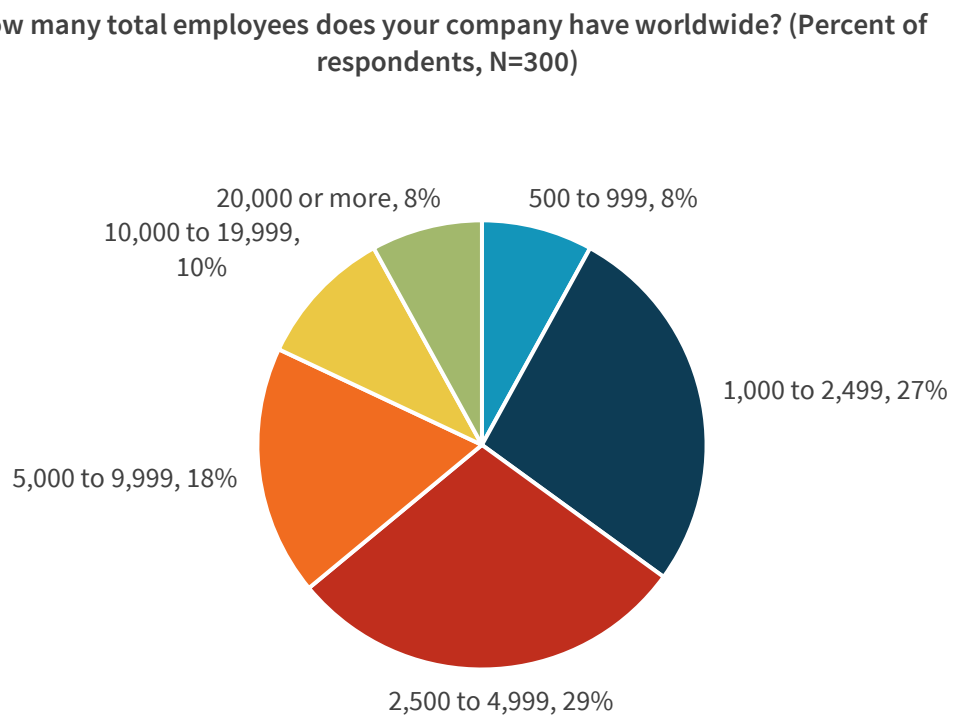
Figure 10. Industries Represented

What is your company's primary industry? (Percent of respondents, N=300)



Source: Enterprise Strategy Group

Figure 11. Respondents by Company Size



Source: Enterprise Strategy Group

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