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PCLM Innovation Drives Competitive Differentiation In 2020



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Executive Summary

Cloud-based PC management, PC-as-a-service (PCaaS), and digital workspaces are gaining traction as modern approaches to end user computing. Why? They enable organizations to support a great employee experience (EX), alleviate IT management pressure, and enhance the security posture of the enterprise. Above all though, cloud-based management stands out as the backbone of all of these innovations, enabling faster device refresh, better access to apps and data, and a more automated employee onboarding process.

Many organizations are ready to make the transition due to the increasing maturity of vendor offerings. The question is: How? This paper outlines the realities of today's business environment that make cloud-based management necessary, describes the roadmap for the transition, and demonstrates the benefits of cloud-based management for enterprises.

In February 2019, Dell commissioned Forrester Consulting to evaluate employee experience and enterprise computing. Forrester conducted an online survey with 1,186 IT leaders across the globe to understand current PC lifecycle management (PCLM) deployment models.

KEY FINDINGS

- › **Organizations are ready for cloud-based PC management.** New PC management approaches enable IT to focus on more business-strategic tasks rather than spending excruciating time on procuring, deploying, and managing devices. With cloud-based PC management, organizations can deliver devices to employees faster, offer more flexibility to employees, and free up time for innovation.
- › **The roadmap to cloud-based management is clear.** Today's offerings are mature enough to support a full migration to cloud-based management. Doing so requires organizations to take a structured approach that includes preplanning, change management, technology acquisition, workload migration, and more.
- › **Embracing modern management yields business benefits.** From better and improved employee experience to a better IT management process and robust security — innovation drives business benefits that boost the bottom line.

Cloud-Based PC Management Is The Foundation For Computing Innovation

Top on the priority list of every CIO is the challenge of digital transformation. Today, most technology leaders know that digital transformation is key to improving customer experience (CX), employee experience, and operational excellence (opex) — and those who don't are quickly becoming obsolete. But despite the awareness and desire among CIOs to drive digital innovation at their firms, many have struggled to meaningfully transform their organizations beyond the basics of software-as-a-service (SaaS), mobility, and cloud videoconferencing, to name just a few (see Figure 1).

Many organizations struggle to drive comprehensive digital transformation because they have so many legacy technologies and processes in-house that stymie their ability to embrace new innovative technologies. Slowly but surely, however, the path to modern technology operations is becoming clearer, especially in the realm of PC lifecycle management.

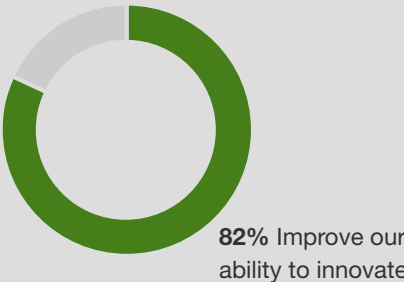
The last 20 years of the PC have been relatively uneventful compared to the release of smartphones and advent of cloud computing. Consider these three facts:

- › Incremental improvements to change the PC imaging process have made things easier, but the process of deploying a device to an end user is the same as it was 15 years ago.
- › Virtual desktop infrastructure, heralded as the future of enterprise computing that would replace physical PCs, never took off en masse and today only serves specific use cases.
- › Devices, although they've changed shapes and sizes, are still procured and paid for the same way they've always been: Sign a contract for three to four years, order the devices to the depot, and configure them on your own.

While other priorities have held the attention of CIOs for the past decade, rapid innovation is now hitting the PC space, warranting a refocusing of the CIOs' priorities. The PC lifecycle is once again back in the innovation spotlight.

Figure 1

“Which of the following initiatives are likely to be your firm’s/organization’s top PC lifecycle priorities over the next 12 months?” (Showing “Critical” and “High priority” combined)



Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

Leading the pack of PC innovations is cloud-based PC management, which serves as the foundation for all the other end user computing advancements happening today. Enhanced cloud-based APIs, conditional access capabilities, and better remote management features are the basis of cloud-based management, and they enable organizations to unlock additional computing innovations such as PCaaS, digital workspaces, and Zero Trust. Without cloud-based management, all the other enhancements become more expensive, more challenging to implement, and less suited to the needs of the modern technology organization.

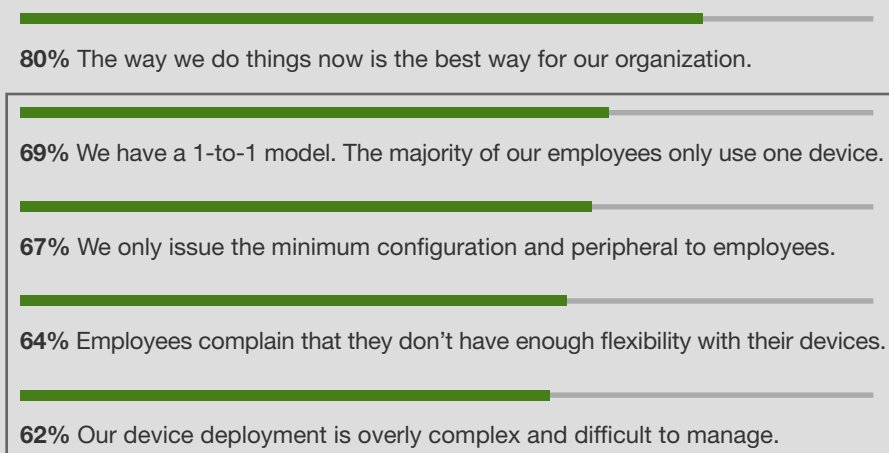
So what's the value of cloud-based PC management? Our research found that it helps technology leaders better cope with the needs of the modern business world. Specifically, it helps companies (see Figure 2):

- › **Automate the device deployment process significantly.** When we asked tech leaders what they need to improve with regard to PC lifecycle management to compete in the market, 35% said improving automation (see Figure 3). Cloud-based management can fully automate each stage of the PCLM process, meaning IT can focus on other more strategic tasks, such as end user experience improvement. In fact, over the next 12 months, 40% of respondents said their firms plan to invest in automation as part of their innovation strategies.
- › **Overcome the constraints of 1-to-1 device environments more easily.** Today's organizations provide employees with one device (69%), and — what's worse — organizations issue minimum configuration and peripherals for their employees (67%). Yet 64% of employees complain that they don't have enough flexibility with their devices. Because cloud-based management can deploy devices quickly from the factory or via employee self-service, organizations can better enable their employees with a many-to-one strategy. It can also enable organizations to take advantage of PCaaS models so that employees can quickly swap out devices based on business need.
- › **Set the stage for digital workspace delivery.** A digital workspace is an application delivery mechanism through which employees can securely access all of their data and apps (including virtualized apps) via a single workspace client. Cloud-based management leverages a lightweight agent to provide access to this workspace, enabling employees to access all of these apps across all of their devices, even non-PC form factors.
- › **Lighten IT management overhead through conditional access.** The entire lifecycle of managing devices — researching/evaluating, procuring, onboarding, ongoing management, supporting and troubleshooting, and retiring devices — is highly manual and time-intensive. Sixty-two percent of technology leaders said current deployment models are overly complex. Cloud-based management uses conditional access capabilities embedded with AI to improve manageability, enabling IT organizations to dynamically adjust policies based on time, location, user behavior, etc. without having to set unique group policy objects (GPOs) for each behavior they're attempting to restrict.

- › **Get new hires productive faster.** As the importance of employee experience grows, so too will the need to provide a smooth onboarding experience for new hires. Today, only 15% of organizations ship their base images to an original equipment manufacturer (OEM) provider, configure it in-factory, and drop-ship it to the user. That means many employees are waiting days if not weeks to use their PCs. Cloud-based management solves this problem through in-factory configuration of hardware settings, profile configuration, and application loading so that employees can simply enter in a username and password on their first day of work and start contributing.
- › **Shrink the cybersecurity attack vector.** Forrester’s Zero Trust security strategy emphasizes the importance of moving beyond network-centric security strategies and instead focusing more on securing apps and data. Cloud-based management plays its part here by containerizing applications and only providing access to enterprise resources when a multitude of conditions are met. It also does not rely on domain-joining PCs, which means IT teams are never granting full network access to PCs.

Figure 2

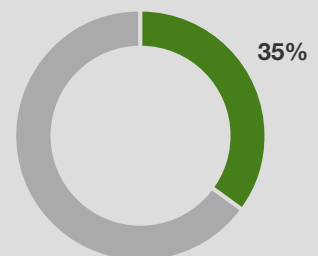
“How much do you agree with the following statements about your current device deployment model?” (Showing “Strongly agree” and “Agree” only)



Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

Figure 3: Firms Are Looking To Improve Automation To Better Compete In The Market

“What does your organization need to improve with regard to PC lifecycle management in order to better compete in the market?”



Construct Your Roadmap For Cloud-Based Management

Eighty percent of respondents said they want to move to a cloud-based management solution, indicating that now is the time to begin the transformation. But how do organizations get to a point where they are ready to innovate through cloud-based PC management? The road to modern cloud-based PC management will look different for each organization depending on their context. However, our research revealed that there are five essential steps technology teams need to take to embrace cloud-based management:

- › **Assess the current environment.** Understand your current processes, integration points, and back-end infrastructure dependencies that cloud-based management might impact.
- › **Develop a change management strategy.** Develop personas for which cloud-based management makes sense, and involve critical stakeholders in the discussion.
- › **Transition policies, settings, and configurations to the cloud.** Translate and migrate policies from an on-prem client management tool to a cloud-based unified endpoint management (UEM) tool.
- › **Upload applications to digital workspace.** Create the digital workspace, upload SaaS and other off-the-shelf apps, and rationalize legacy apps.
- › **Transfer computing processes to OEM.** At this stage, link your modern management capability with an OEM provider to do all of this within the factory. This unlocks the drop-ship PC capability.

ASSESS YOUR CURRENT DEVICE MANAGEMENT STATE

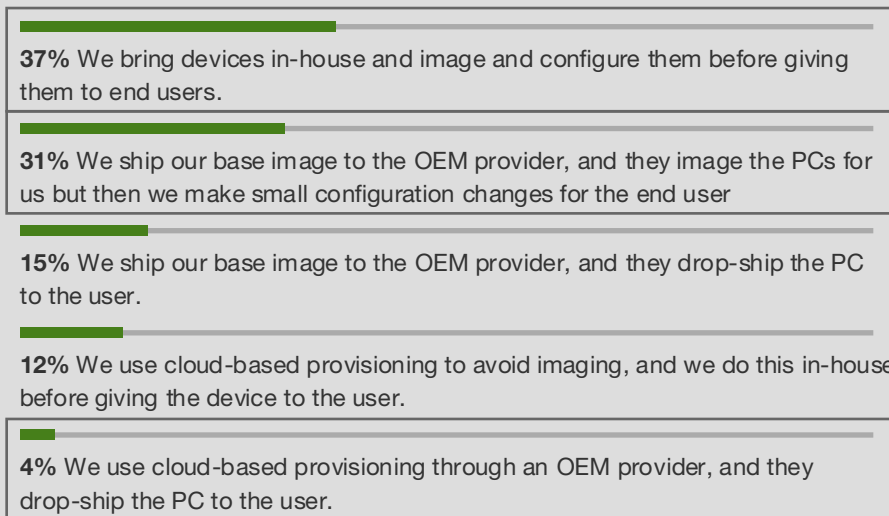
The first step in embracing cloud-based management is understanding how the organization currently manages PCs. Important areas to cover include:

- › **Imaging.** What are you doing now with imaging? Thirty-seven percent of respondents told us that they bring devices in-house and image and configure them before giving them to end users (see Figure 4). To make the change, ask yourself these questions: Does your organization have one master golden image, or does it prefer multiple images? Is imaging done in-house currently? What security and management policies are in place within the image, and are these available within the UEM settings?

- › **Procurement.** How does your organization currently procure devices? Is it direct or through a third-party services provider? What are the requirements around etching, logistics, tagging, and supply chain?
- › **Policy.** How many GPOs do you have? Which ones are the most important? Which ones are already present within the UEM console, and which ones will you have to migrate?
- › **Scripting.** What scripts do you currently have developed? Which ones are completely necessary vs. nice to have? Does the UEM provider enable those same scripts to run, or will you need to reconstruct them or live without?
- › **Applications.** Nearly a quarter of respondents (24%) are unable to innovate due to older legacy infrastructure (see Figure 5). This step requires organizations to get a sense of their application estate to avoid pitfalls down the road. How many applications do end users need? What's the mix of SaaS vs. web vs. Win32 vs. virtual vs. other? Understanding what apps users find indispensable is a critical aspect of this step.

Figure 4

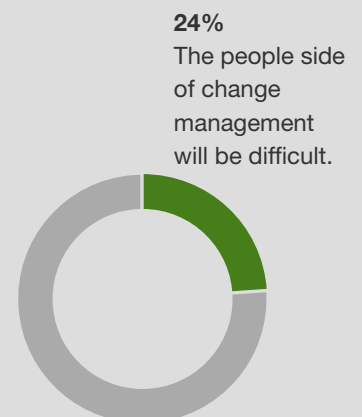
“Which best describes how your organization initially onboard/provisions devices?” (Select one)



Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

Figure 5: Legacy Infrastructure Prevents Firms From Innovating

“Which of the following is preventing you from innovating or innovating as much as you would like?”



DEVELOP A CHANGE MANAGEMENT STRATEGY

Organizations that attempted to transfer all workloads to public cloud early on found it incredibly difficult, leading to the hybrid cloud world we see today. IT teams should heed the lessons of those early cloud adopters when it comes to cloud-based management. The move to cloud-based management will be a significant undertaking for many organizations. To ease the transition:

- › **Develop personas for cloud-based management.** Not all employees will be able to make the transition immediately, due to a dependence on legacy apps, specific scripts, and/or unique GPOs that aren't yet available from the cloud APIs. Focus on those users who benefit most from cloud-based management — those who use modern apps, are highly mobile, and are tech-savvy. Remote workers, heavy travelers, and bring-your-own-device (BYOD) users are a great place to start.
- › **Create adoption materials to ease employee transition.** Cloud-based management provides a different employee experience than traditional Client Management Tools (CMT). Apps are available through self-service, not pushed through scripts. It requires enrollment of a device, rather than being domain-joined. Conditional access often requires employees to be familiar with one-time passcodes, biometrics, etc. Your cloud-based management strategy should emphasize creating guidelines, how-tos, and other learning materials to help employees mitigate this change aspect.
- › **Engage the right people from the start.** The move to modern management will affect team members involved with desktop engineering, app packaging, networking, help desk, security, and more. For example, involving security upfront helps avoid potential issues associated with the changing security paradigm that modern management introduces. To convince them that cloud-based management improves security, focus on management capabilities that reduce attack surface, such as per-app virtual private network (VPN).

TRANSITION CMT WORKLOADS TO CLOUD-BASED MANAGEMENT

Once you have assessed your current state and aligned the right people, it is time for actual deployment. Overall, there are five main steps involved with the deployment, but Forrester has found that companies often work on these five steps concurrently. Typically, they start with the least disruptive changes before moving on to areas that affect employee productivity, such as application access. In modern management implementation, I&O pros must:

- › **Enroll existing devices using a unified endpoint management agent.** This establishes a baseline of security using conditional access, ensuring that devices accessing corporate resources aren't jailbroken, have passcodes, and are generally compliant with IT policy. Already deployed devices will likely share management functionality with the existing CMT agent while net-new devices (BYOD, remote worker, etc.) will only use the new UEM agent for management.

- › **Migrate existing GPOs to the UEM console.** This process can take many months but essentially involves replicating GPOs within the UEM console itself. Some tools exist to automate this process, but Forrester finds that typically only 40% of the GPOs clients use are available in a UEM console. Organizations will dedicate a significant amount of time (two to three months) replicating these GPOs. Over time, this will enable IT organizations to manage net devices enrolled in the UEM console with a breadth of capabilities similar to but easier than CMT.
- › **Rationalize application estate to deliver a digital workspace.** While all those steps are happening, companies should be modernizing and rationalizing their applications. This phase involves two steps: dumping unused or duplicate legacy applications and modernizing frequently used ones to run in a modern workspace. The preferred modernization approach is to refactor EXEs and DMGs to run in an HTML5 browser. This makes the apps easier to distribute and manage and is typically less expensive than virtualization. Still, some apps won't run well in HTML5, requiring I&O teams to virtualize them in the digital workspace.
- › **Modernize patching.** This can be one of the most difficult phases and involves creating a strategy for dealing with more frequent updates. Embracing a peer-to-peer (P2P) distribution method is key to ensuring that the new cloud-based management model doesn't throttle the network. Use of semiannual channel for updates as well as setting consistent deferment policies to limit the impact of updates on employees is critical.¹
- › **Embrace per-app VPN.** Due to the fact that VPNs are at the heart of many employees' productivity, Forrester has found that tackling this step last is crucial. Move toward a per-app VPN for apps that are highly sensitive while using conditional access for less sensitive applications. Add additional value through partners.

GET MORE FOR YOUR MONEY THROUGH OEM PARTNERSHIPS

While moving to cloud-based management will simplify ongoing management, IT teams don't implicitly solve the issue of device deployment through cloud-based management alone: They need a partner to deliver enhanced automation. While partners can help along the migration to cloud-based management, they can also serve as a final step, enabling organizations to unlock additional capabilities. IT organizations should look to:

- › **Connect to an in-factory configuration site via VPN.** Some OEM providers have the capability to upload a base image and configure it directly from the home office. Be sure to specify settings, profiles, and apps, as well as deployment-focused elements such as asset tagging, etching, and logistics. Ideally, IT teams only have to configure the image once, and the OEM provider will take care of subsequent devices.
- › **Drop-ship the device to the end user.** So long as the directory system is integrated with the cloud, end users should be able to log in a device and have all their settings and apps available to them at first boot.

- › **Develop an as-a-service strategy.** The beauty of cloud-based management is that it makes it easier to change profiles and settings quickly on end user devices. That means IT can easily swap out devices faster using an as-a-service model. IT organizations should explore PCaaS as part of this stage, noting the types of devices, refresh cadences, and contract lengths that would be optimal for their particular organization. Of the 90% of firms planning to move to a new device deployment model within the next 12 to 24 months, the majority are looking at PCaaS subscription models while 38% are planning to use more traditional corporate-owned models.

Cloud-Based Management Drives Superior Benefits

Organizations that follow the steps to implement a modern cloud-based PC management process can experience significant benefits across three key categories (see Figure 6):

- › **Improved EX.** Innovating your cloud-based PC management has clear benefits for employees as it allows for faster device refresh, enhanced self-service, and better remote support. Conditional access capabilities mean employees have less friction when accessing enterprise resources, and per-app VPN means employees don't need to launch a VPN session every time they log on to their computers. Additionally, cloud-based management serves as a basis for digital workspace enablement, allowing employees to access a wide variety of apps across many devices, not just PCs.

Figure 6

Top Anticipated Benefits From Providing Employees With A Variety of Devices To Work From



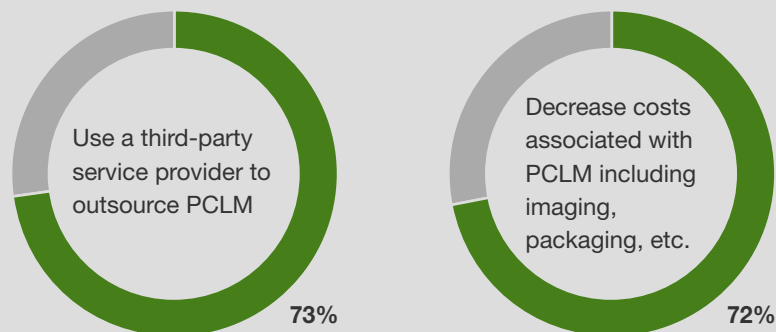
Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

› **Better IT management.** Modern cloud-based PC management can also simplify IT management, allowing IT to save time and focus on innovation. Device and application proliferation increases complexity for IT departments and makes it difficult to predict the long-term cost of hardware purchasing decisions. The typical three- to four-year refresh rate compounds this complexity, as it involves additional and often difficult-to-quantify costs such as time spent on procurement, deployment, support, recovery, management, and retirement of devices. However, with a modern cloud-based PC management model, organizations can expect to see the following (see Figure 7):

- **Less time spent imaging devices in-house.**
- **Less time spent deploying policies and apps on a device-by-device basis.**
- **Less time spent configuring and monitoring complex management GPOs.**
- **Less time spent deploying packages.**
- **Greater ability to be proactive to end user needs through proactive incident resolution.**
- **Better cost predictability.**

Figure 7

“Which of the following initiatives are likely to be your firm’s/organization’s top PC lifecycle priorities over the next 12 months?”



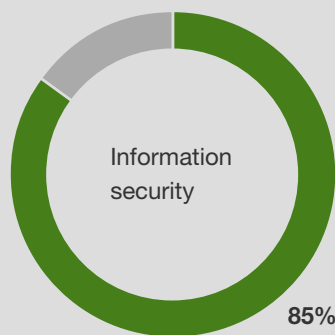
Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

In a separate study, Forrester evaluated the Total Economic Impact™ of lifecycle services; in it, we estimated the average monthly cost per device that an organization would incur if it delivered these services with internal resources. These services include: procurement services, imaging services, physical installation and basic setup, final preparation and migration, system management, support, asset disposition, and retirement. Forrester then also estimated these costs for an organization fully leveraging a vendor’s services and tools. Considering a large organization with about 4,000 end user devices, an average hardware refresh cycle of three years, and a given mix of office, remote, and mobile workers, Forrester estimated that this type of organization would be able to reduce its monthly PC lifecycle costs per device from \$21.82 to \$16.69, corresponding to a savings of 23.5%. In turn, this new type of PC management model significantly improves predictable cost structure for IT organizations.

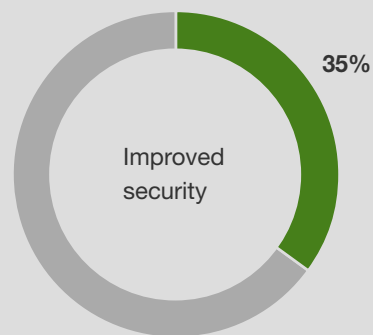
- › **Robust Zero Trust security.** One of the top reasons for adopting a cloud-based PC management process is the enhancement of security. Cloud-based management reduces the attack surface in a number of ways. First, it relies on per-app VPN connection rather than full network access that domain-joined computers give. Second, cloud-based management often leverages the latest encryption technology for hardware, and specific vendor integrations can secure down to the BIOS I level. And finally, the capability to secure apps in a containerized model reduces the risk of data loss outside of the enterprise.

Figure 8

“Which of the following technology-related initiatives is your department or division prioritizing over the next 12 months?”



By Implementing A Zero Trust Security Architecture, Firms Will Realize Improved Security



Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

Key Recommendations

The move to cloud-based management is well underway, with many leading companies making the move over the next year. In fact, 58% of companies plan to use the same management console to manage PCs and mobile devices over the next year. Cloud-based APIs are rapidly expanding and maturing, so now is the time to make the transition to cloud-based PC management. As you make your journey, be sure to:



Pay close attention to the level of automation from OEMs. Not every vendor can deliver full PC deployment automation from the factory. Typical gaps include BIOS customization via the cloud, Win32 app loading prior to deployment, and support for a variety of hardware options. Be specific when you partner with an OEM, and inquire about all the aspects of PC deployments, not just settings and third-party apps.



Don't overkill on GPO migration. Remember the goal of cloud-based management is to *reduce* management overhead. While it can be tempting to replicate every GPO in your CMT tool in the UEM console, resist it. Only choose the GPOs that are absolutely necessary and remember that cloud-based management reduces attack surfaces in other areas that might make some GPOs less useful.



Use virtual desktop infrastructure (VDI) to speed your journey when necessary. One of the most time-consuming parts of moving to cloud-based management is the app rationalization process, specifically the process of refactoring apps to run in a modern browser. If you don't have the team and skills do that coding, consider virtualizing the applications through a cloud-VDI provider. This will enable you to reap the benefits of modern management without having to sink time and energy into the app rationalization.

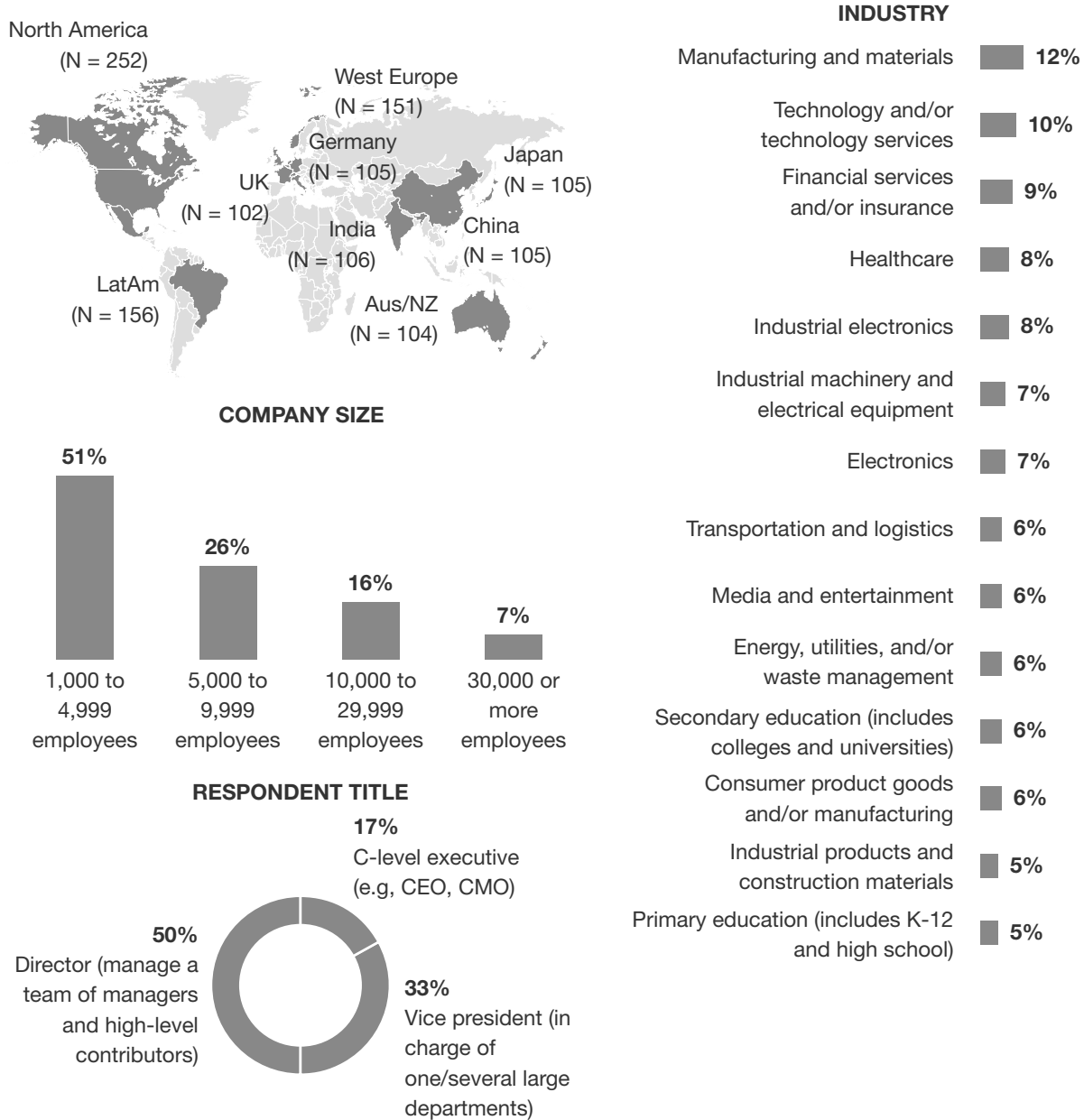


Leverage cloud-based management to open up new choices for employees. Because of cloud-based management's emphasis on self-service, mobile device management (MDM) enrollment, and digital workspaces, employees can bring their own devices to the workplace much more easily than they could before. Use this new flexibility as leverage to sell cloud-based management to a large audience. Remember that it benefits not just PCs, but other devices, operating systems, and form factors as well.

Appendix A: Methodology

In this study, Forrester conducted an online survey of 1,186 organizations across the globe to evaluate current PC lifecycle management deployment models and how they plan to see it evolve over the next 12 to 24 months. Survey participants included decision makers from the director level, VPs, and C-level executives. Questions provided to the participants asked about their technology strategy initiatives, current PC deployment models, and their PC lifecycle management priorities. The study began in February 2019 and was completed in August 2019.

Appendix B: Demographics/Data



Base: 1,186 director or above IT and operations leaders with knowledge of the desktop infrastructure environment, the provisioning of laptops and computers and other devices, and PC-as-a-service

Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of Dell, August 2019

Appendix C: Endnotes

¹ Source: “Embrace Modern Management To Improve Employee Experience,” Forrester Research, Inc., September 9, 2019.

² <https://www.cbronline.com/whitepapers/the-total-economic-impact-of-dells-pc-lifecycle-services/>