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The State of Device Management 2023:

Modern Strategies for Modern Device Use Cases

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Introduction

When most IT managers think about device management, they think of “MDM” (mobile device management) — a category of software (and the use of said software) that aids in the administration of mobile devices.

MDM originated in the 1990s as companies needed to manage employee laptops and accommodate employees who wanted to use their own devices to access corporate resources like email (BYOD — bring your own device). As device counts grew and access expanded beyond corporate internet connections to home and “3rd place” internet connections, these devices introduced new security vulnerabilities. And as device types changed and diversified (e.g. smartphones and tablets), new takes on MDM arrived. EMM (Enterprise Mobility Management) developed in the mid-to-late 2000s to meet enterprise requirements around application, content, and data management. Then, as IoT, wearables, and peripheral devices (e.g. printers) increasingly became part of the corporate device portfolio, UEM (Unified Endpoint Management) was born.

But where are we now? Are companies still facing the same challenges and using software the same way? Is it time for yet another acronym?

Executive Summary

Devices have more internal stakeholders than ever before. No longer are devices just the concern of IT managers, who traditionally used MDM software to provision corporate laptops and make sure employee phones don't give malicious actors access to corporate data. Developers, product leaders, and business leaders have a stake in the performance and reliability of devices. And Sales, Marketing, and Success roles can even use device data and features like remote control to better serve customers.

- On average, **12.3 users** per company have access to the device management platform
- The industries with the highest number of users per platform are Education / Non-Profit (33.6), Hospitality (30.3), and Hospitality Tech (27.7)

Corporations are orchestrating (more like juggling, actually) more device types, OS versions, and applications and application versions. It may feel like the Wild West for companies that are trying to unify their devices and applications. Due to pandemic-driven supply chain issues, wanting the latest and greatest devices, or simply experimenting, companies are currently facing a mind-blowing combination of hardware and software.

- **26%** of corporate dedicated devices run on AOSP (Android Open Source Project) Android. While still the minority, it is a significant amount.
- **77%** of devices are running Android 9, 10, or 11. With the recent release of Android 14, many companies are due for a significant upgrade.

Devices are all about the application experience. As products are increasingly defined by the application experience, companies are using the ability to frequently update to the latest application experience to differentiate themselves. And they're using modern, proven software development practices to do so.

- Companies, on average, have nearly **24 applications or application versions** available for devices.
- Companies that use staged software delivery pipelines have, on average, **over four pipelines** to reliably automate software rollouts to precise device groups.
- **49%** of Hospitality Tech companies use device labs or test groups — the most out of any industry — followed by Health Tech (45%), Media (43%), and Hospitality (38%).

Remote capabilities are no longer a "nice to have" — they are now a "need to have." From remote deployment of software updates to remote control and touch-like interactions, companies need to be able to act on their devices without sending people into the field. The operational efficiency driven by remot capabilities—particularly remote troubleshooting—is becoming the new normal.

- **30%** of device configurations across all companies have remote debugging enabled.

In short, the demands of today's devices and device use cases aren't what they used to be five or ten years ago. The leaders of modern business know that devices are mission critical and find the tools that allow them to manage them as such.

Part 1

What do modern device fleets look like?

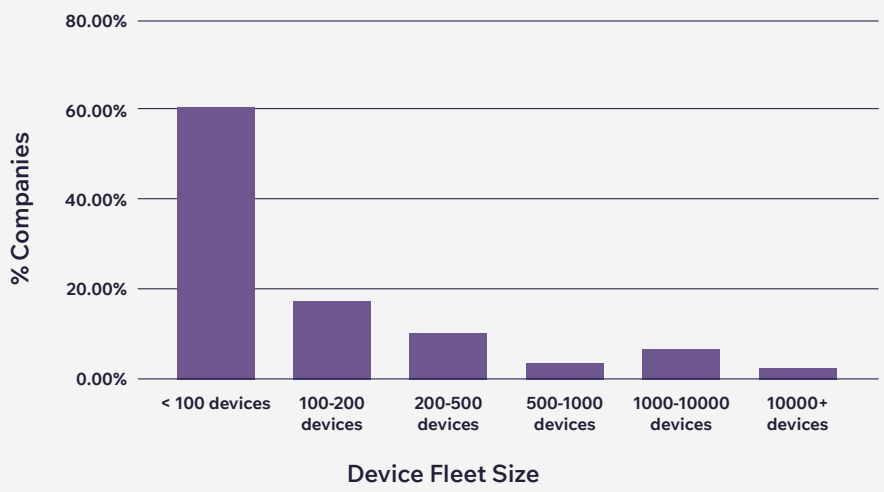
Across the companies included in this research, the average device fleet comprises 773 devices. On average, companies in the hospitality industry manage the largest fleets (2.1K devices), followed by health tech (1.3K), retail (1.1K), and then education (980). On the other hand, field services (81), retail tech (150), and logistics (374), had the smallest average fleet sizes.

When it comes to organizing and managing device fleets, we saw companies use a lot of device groups and subgroups. On average, companies use 36.5 device groups, but this is skewed by companies with large device fleets that use an outsized amount. The largest device fleets comprise thousands of groups, while the median number of groups per account is six.

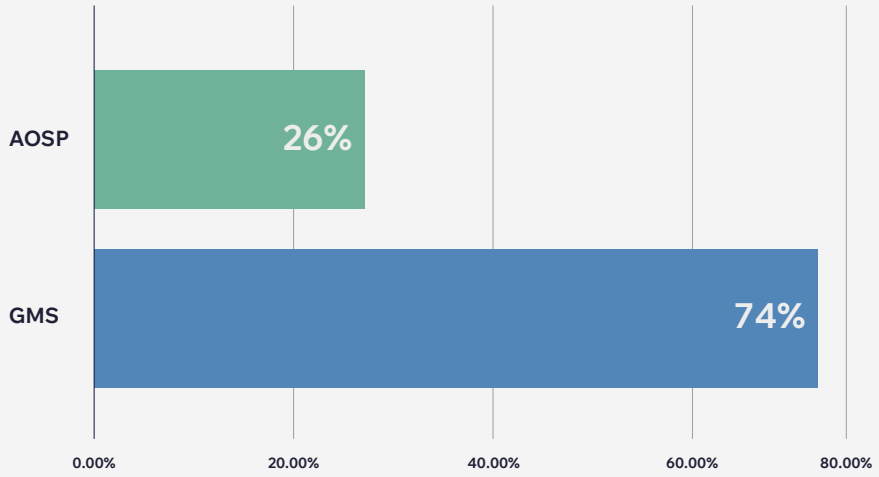
Hospitality tech companies (median of 11), retail (11), retail tech (10) and health tech (8) tended to use the most number of groups to organize their device fleets.

The vast majority of these device groups are organized geographically, whether that's retail or restaurant locations, warehouses or distribution centers. Another common grouping strategy is by device function — point of sale devices versus kitchen display system devices, or shop floor devices versus

% Companies vs. Device Fleet Size



GMS vs. AOSP

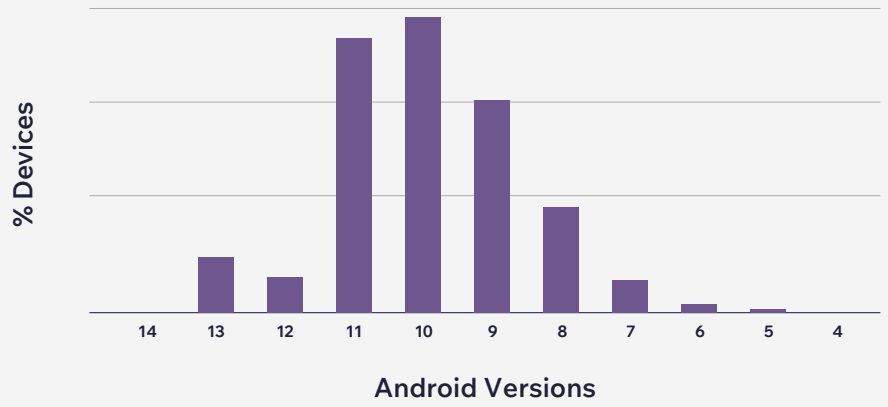


scanning devices, for example. Finally, another reason we see companies use device groups is to separate test or demo devices and production devices.

Overall, 74% of Android dedicated devices are GMS (Google Mobile Services) and 26% are AOSP (Android Open Source Project). Of the GMS devices, the vast plurality are made by Samsung (38%) and Lenovo (31%). Top AOSP device manufacturers are LG (27%) and Lenovo (18%).

Android version adoption for corporate devices seems to run several years behind the latest release. Most companies are still operating on Android versions 9, 10, and 11. Nearly 15% of companies are still maintaining devices running meaningfully old Android versions (4.x-8.x), which not only limits new innovation, but leaves them open to more security vulnerabilities.

Android Version Distibution

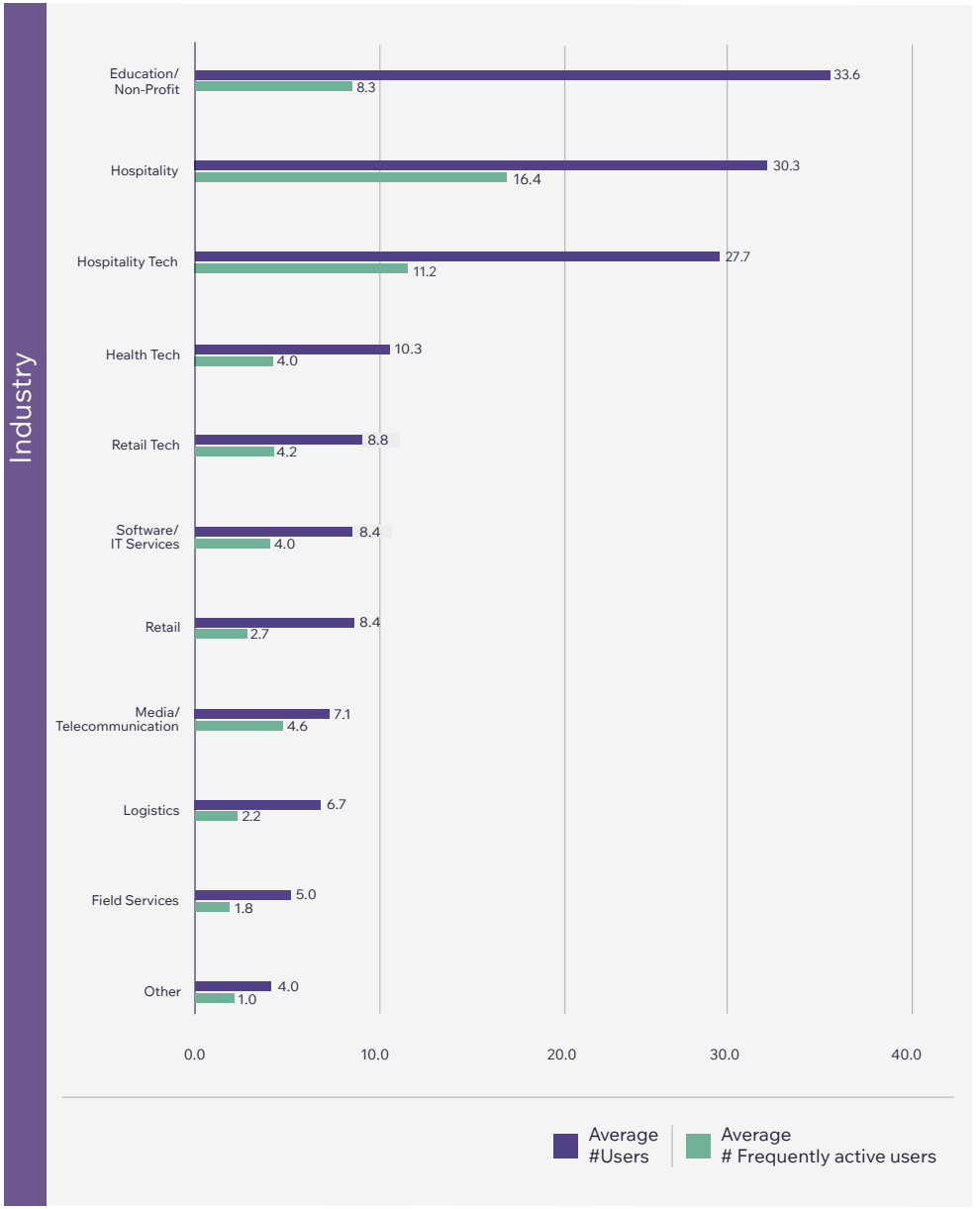


Who is involved in managing devices (and updating device applications)?

In traditional MDM (mobile device management) use cases, where IT Ops managers are responsible for provisioning and managing employee devices like laptops and mobile phones, the number of IT managers required to manage the device fleet was simply a function of the number of devices. But as use cases grow and more actions are taken through the device management infrastructure (e.g. more frequent testing and rolling out application updates, deploying code-driven changes to device settings), more users have a stake in device management software.

Industries with the most number of device management users include Education / Non-Profit (33.6), Hospitality (30.3), and Hospitality Tech (27.7). At the other end, industries like Logistics (6.7) and Field Services (5.0) have the fewest number of users. Often, in these industries, the device management use cases are much more traditional.

On average across all industries, about 40% of users are “frequently active”. This could suggest roles that have day-to-day or week-to-week device management tasks, versus others who may only be involved in new device deployments or software releases.



Part 3

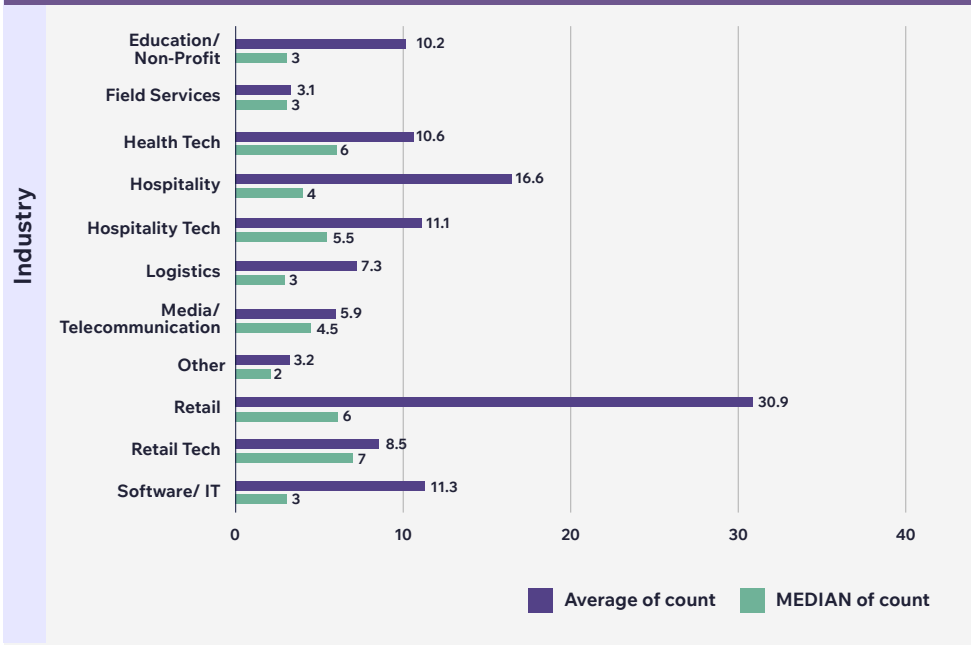
How are device policies and configurations created?

Device configuration templates enable companies to configure and provision devices at scale. Companies typically create templates based on functionality, such as all EV charging devices should be set to the same app, in kiosk mode, and with the same screen brightness and volume. We found that, on average, companies have about 10 different templates (median is 4). Industries that tend to use more templates include Retail (31), Hospitality (17), and Hospitality Tech (11). Industries that have more uniform device fleet functionality (i.e. have fewer unique templates) include Field Services (3), Media (6), and Logistics (7).

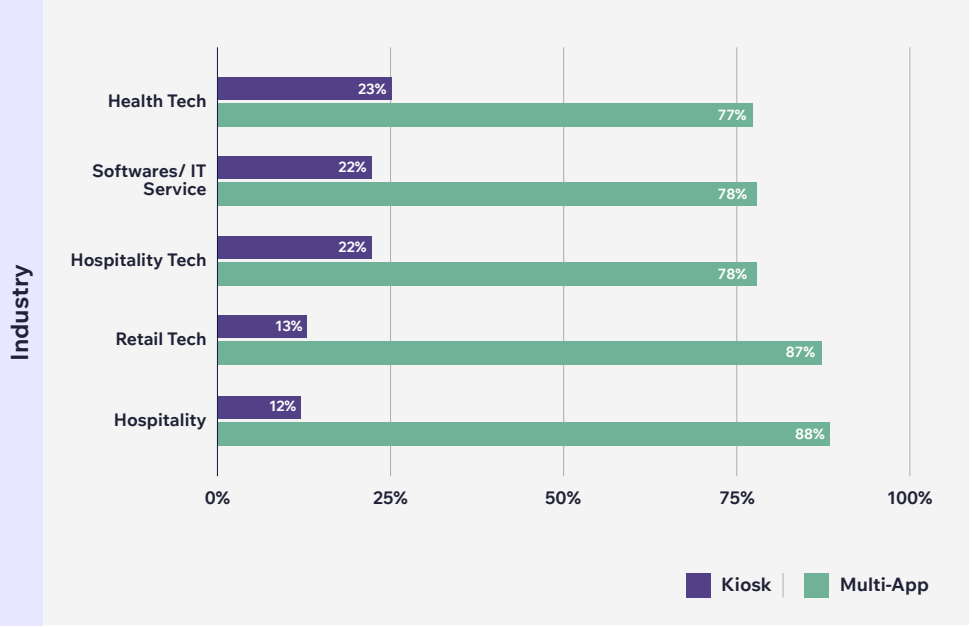
84% of configuration templates are set to multi-app mode, meaning corporations allow devices (and device users) to access more than one application. This is often what is considered a “fully managed” device use case. The other 16% of configuration templates are set to kiosk mode, which means the device and device user can only use a single application, and typically cannot access device or application settings.

Kiosk mode is most frequently used in HealthTech (23%), Hospitality Tech (22%), and IT Services (22%) use cases. It is least frequently used in Education / Non-Profit (6%), Retail (7%), and Logistics (10%) use cases.

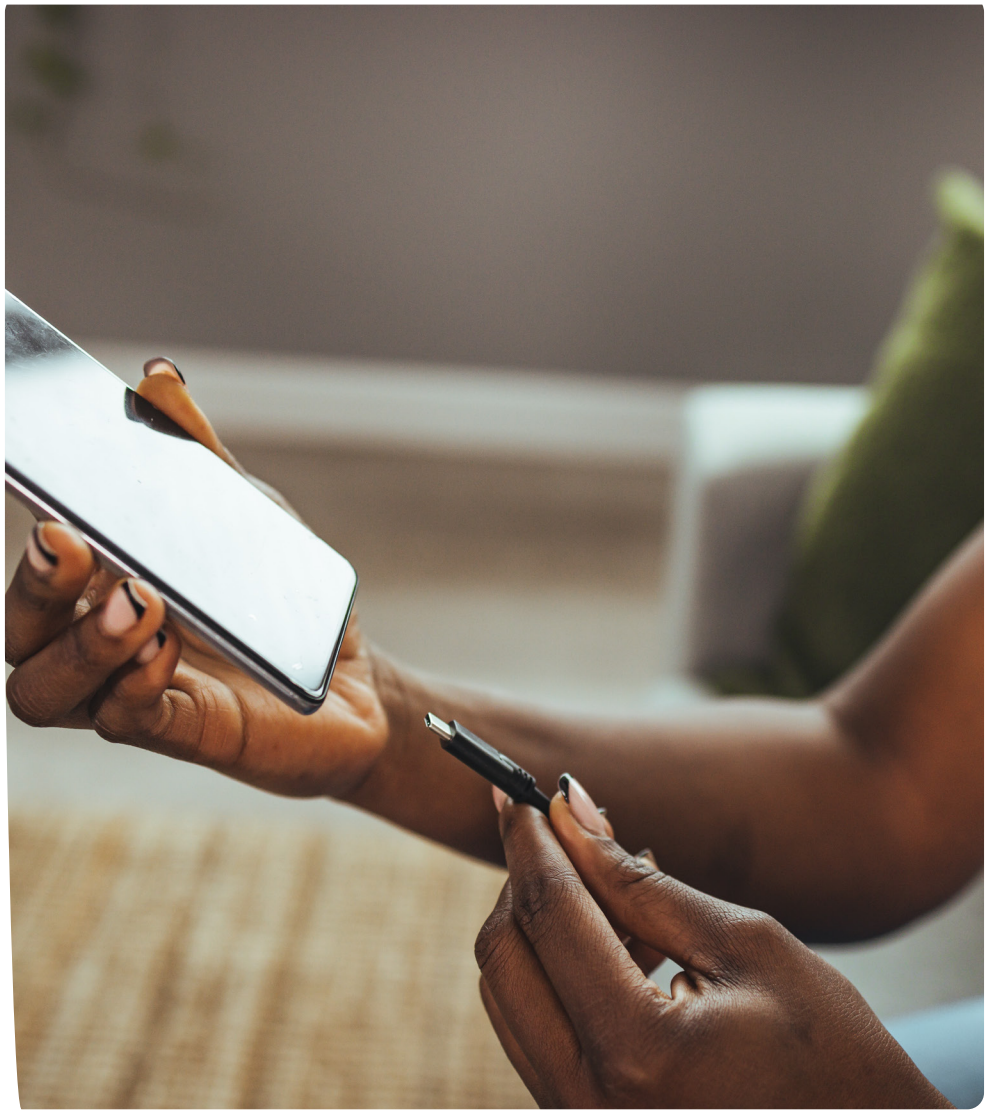
Templates per company

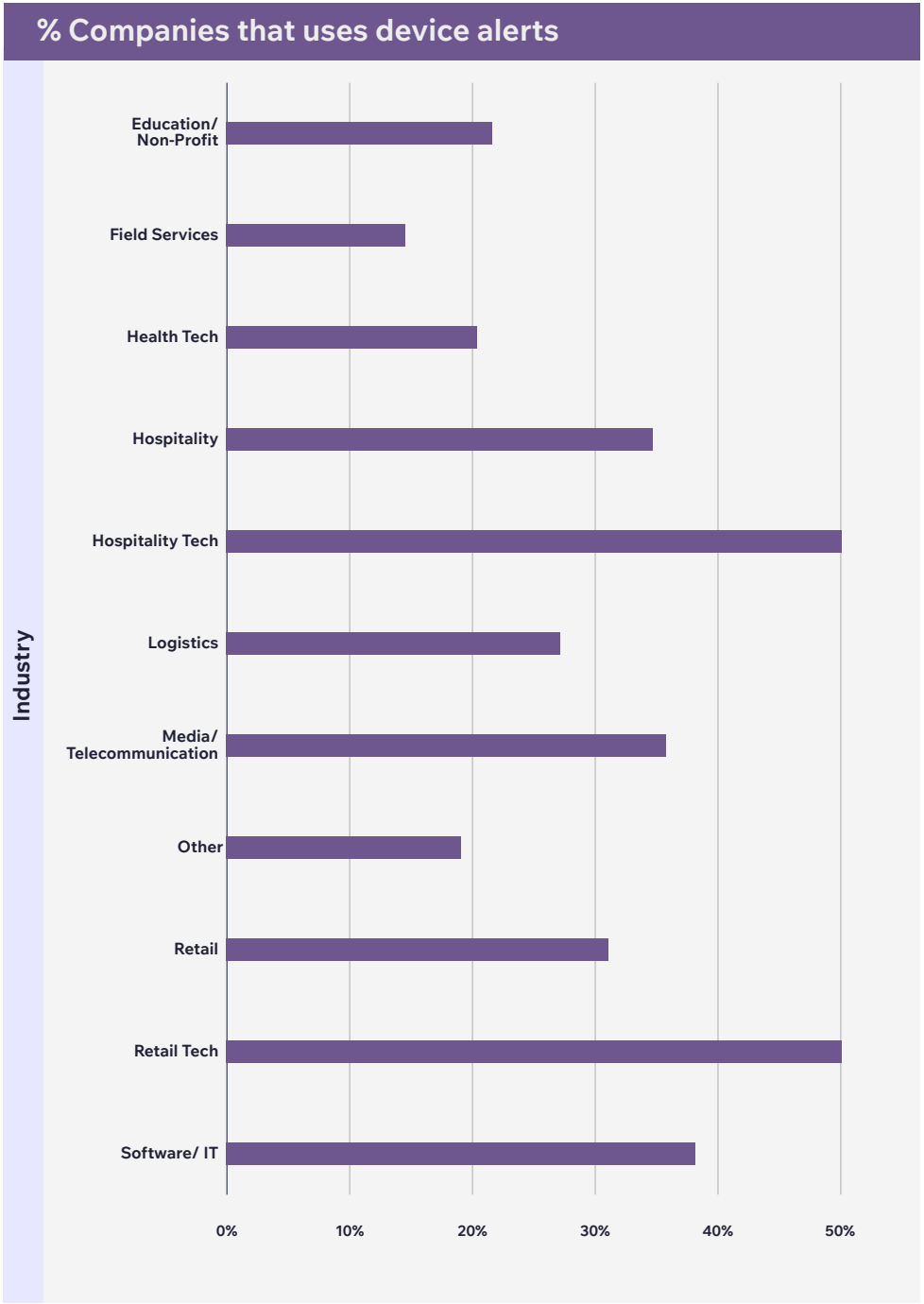


Kiosk and Multi-App Configurations - Top 5 Industries



Overall, 29% companies had at least one device alert set up. Device alerts can include email or SMS notifications if a device which should be online is offline, has low battery, or has lost bluetooth connectivity. if Hospitality Tech and Retail Tech companies were the most likely to set up alerts.

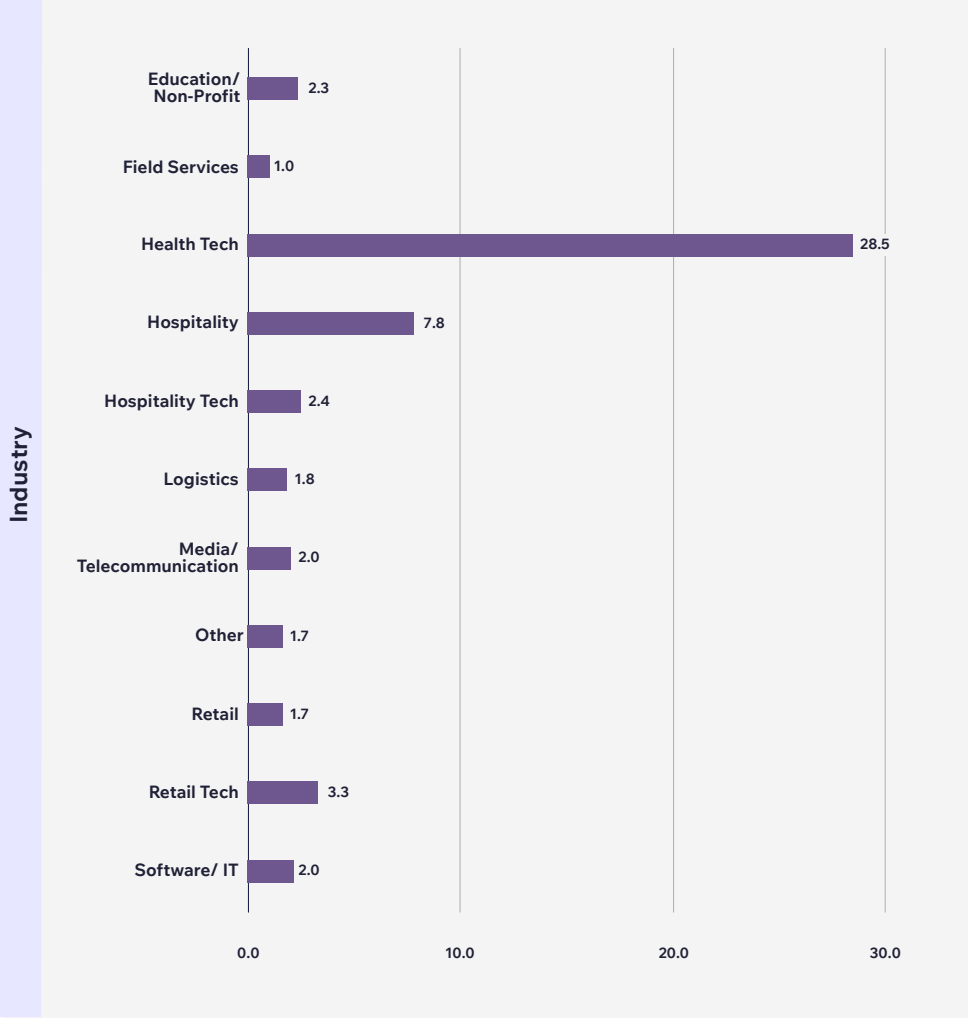




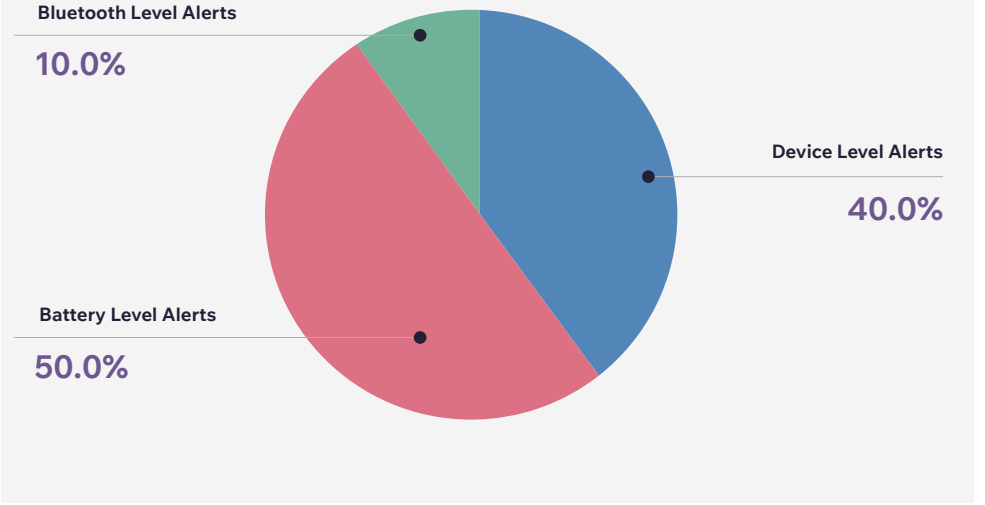
While not a large percentage of Health Tech companies are using alerts (just 20%), those that do have created a lot of different alerts.

Battery alerts are the most common type of alert. This allows companies to proactively and quickly resolve issues before the device fully loses power. The second most common alert is a device ping to ensure the device is still online.

Average # alerts per company



Device Alert Types

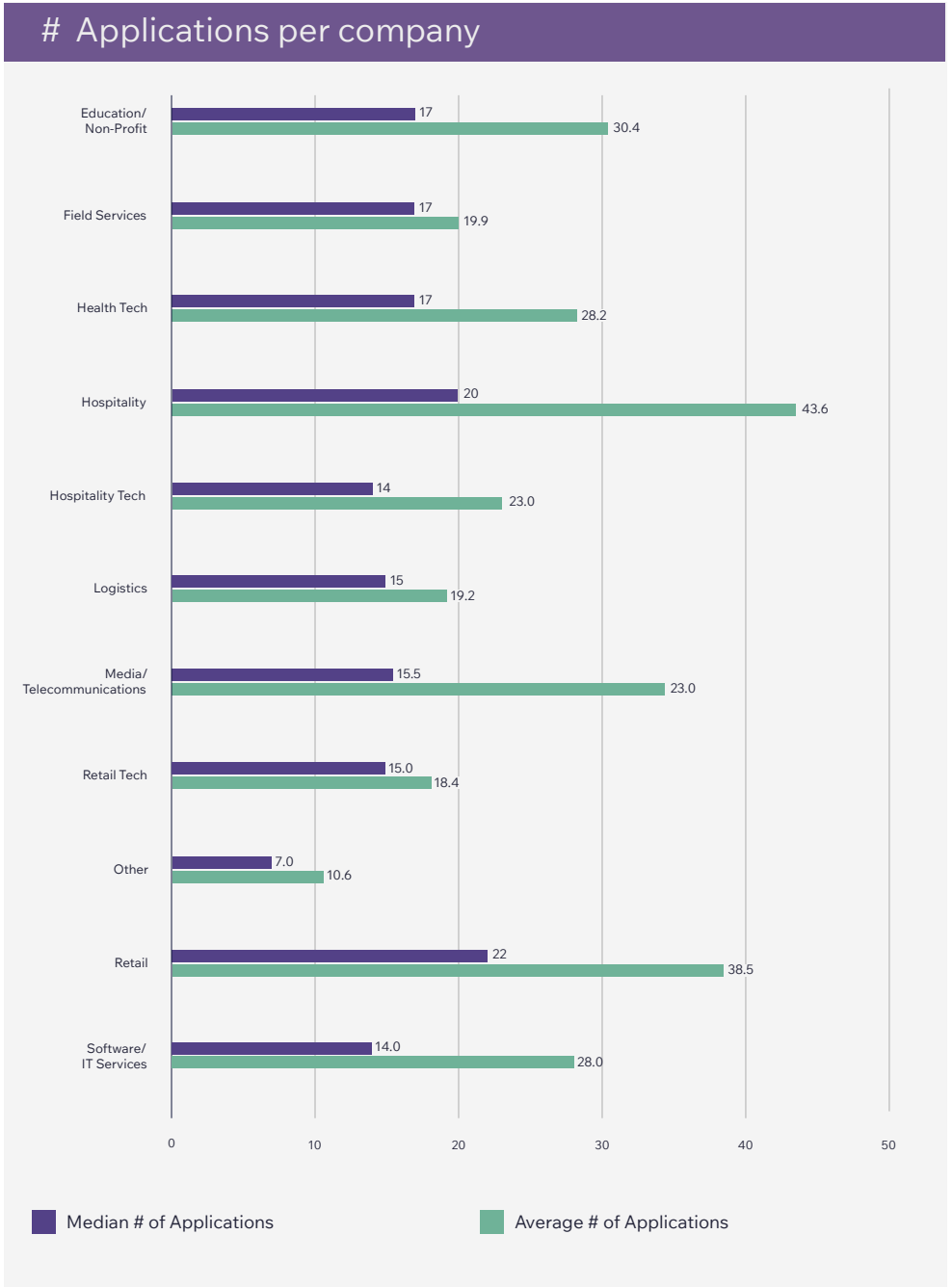


How important is device software?

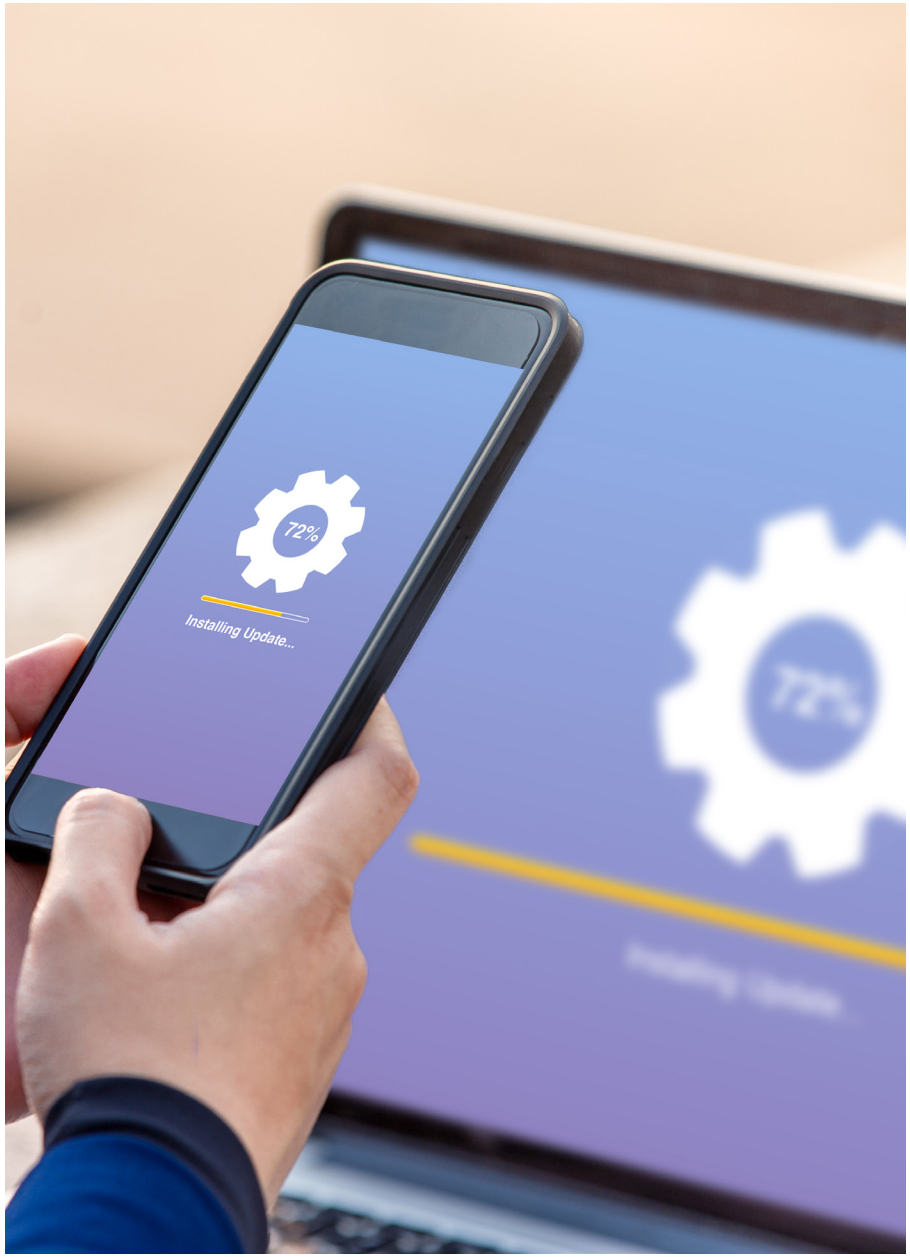
As products are increasingly defined by the application experience, companies are using the ability to frequently update to the latest application experience to differentiate themselves. Companies average 23.5 applications (unique or updated versions), but again this is skewed by the large, complex device fleets with upwards of 300-500 applications. The median is 13. Retail and Hospitality average the most number of applications with 22 and 20, respectively.

Companies are also increasingly using modern tools like software pipelines to deliver application updates in a tested and reliable but also automated and efficient manner. Companies on average created 4.4 pipelines to deliver software to their devices. While companies in Hospitality Tech and Health Tech were more likely to use pipelines, companies in Retail Tech and Software / IT services created the most, averaging 18 and 13 pipelines, respectively.

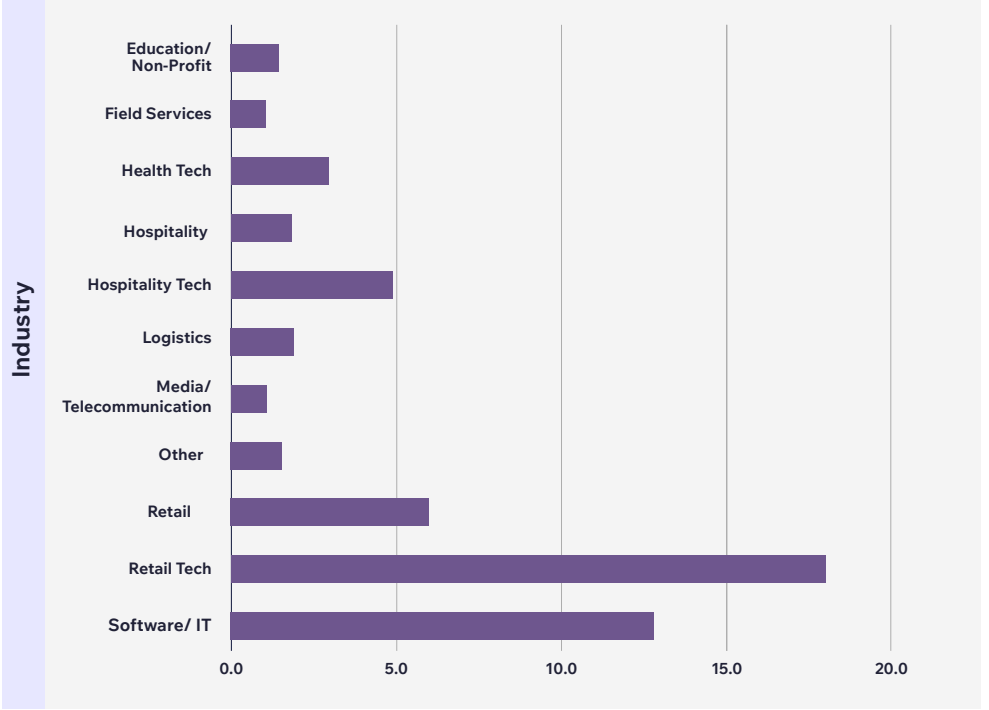
Just over 1 out of 5 of companies (21%) included in our research use test or lab device groups to test application updates before rolling out broadly to production devices. Nearly 50% of Hospitality Tech companies use test groups, the most out of any industry, followed by Health Tech (45%), Media (43%), and Hospitality (38%). Companies in



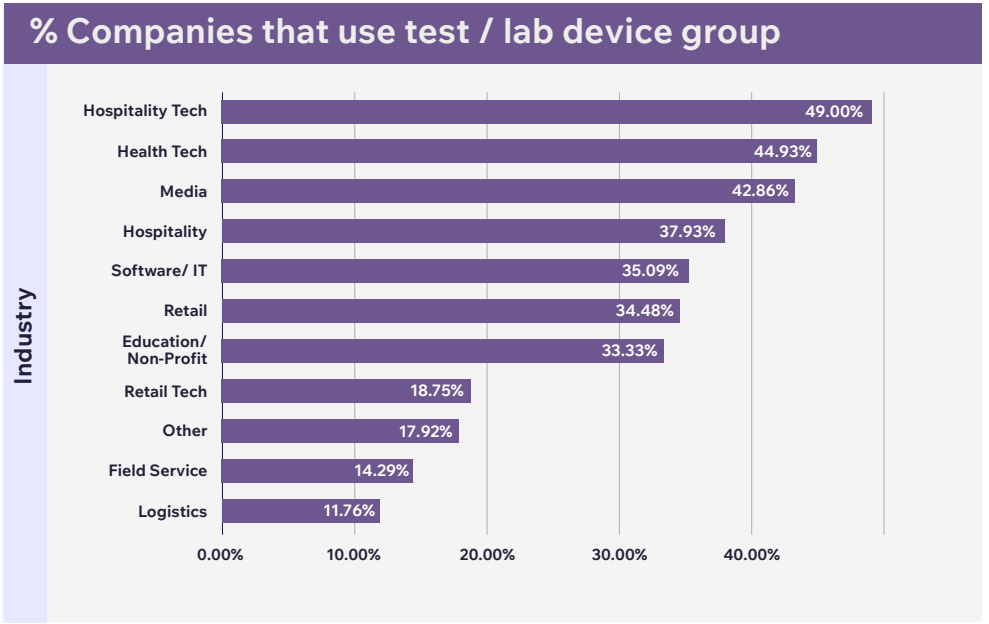
Logistics (12%) and Field Services (14%) were the least likely to use test groups. Across all industries, companies average about five test groups.



Pipelines per company



% Companies that use test / lab device group



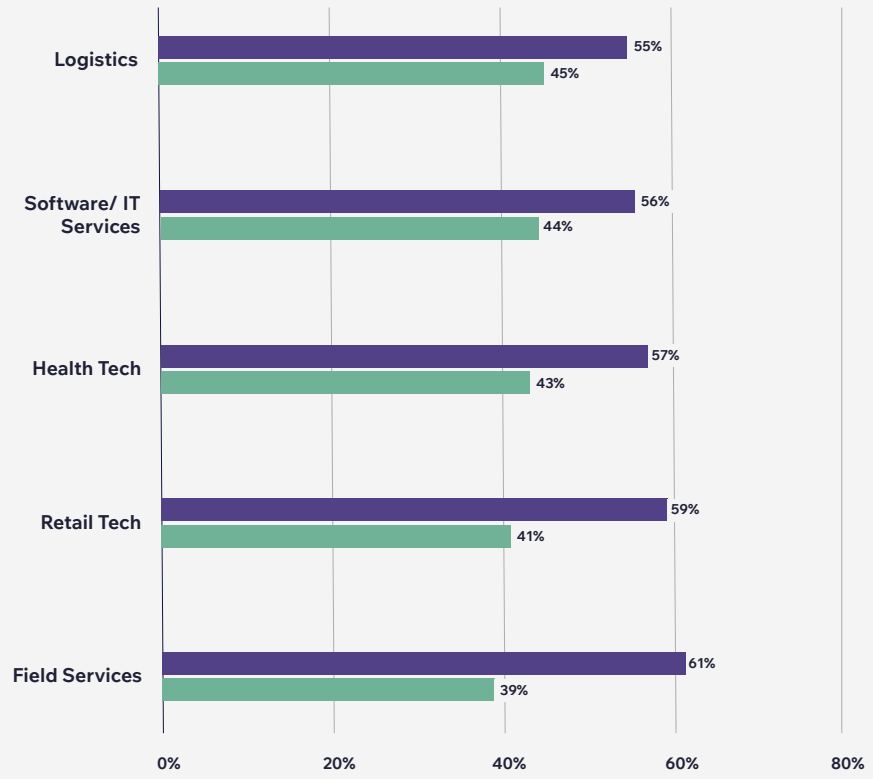
Part 5

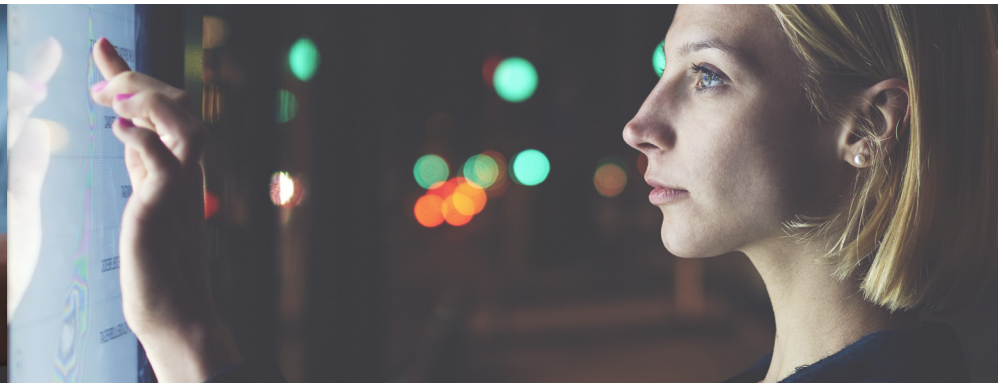
What does advanced remote device management look like?

While the ability to remotely view devices has become table stakes, the research found that companies are looking to control and troubleshoot device issues from a centralized location, reducing expensive in-field IT support.

30% of device configurations across all companies have remote debugging enabled. Remote debugging capabilities are most frequently found in Logistics (45%), IT Services (44%), and Health Tech (43%) use cases. Often, in these use cases, these devices are decentralized, such as transportation logging devices or clinical trial devices, which need to be managed and supported from a centralized location. This significantly reduces the cost of field IT support and the cost of swapping out devices while issues are being looked into.

Remote Device Debugging Configurations - Top 5 Industries





Conclusion

Across all industries, device use cases are rapidly growing and transforming— therefore, the strategies companies use to manage those devices are also changing. Being able to manage multiple configurations, including operating system versions, kiosk (single-app) versus multi-application modes, and different application versions simultaneously, to meet the multiple device and device user needs is increasingly tricky and increasingly important.

Some industries seem to be progressing down this road faster with more diverse device use cases and complex needs. Hospitality and Hospitality Technology companies, as well as Health Tech companies top the charts in most factors. Logistics and Field Services, on the other hand, tend to have the most homogenous device fleets. But despite their homogeneity, remote capabilities are even more important because of their highly mobile and distributed nature.

Ultimately, to effectively manage modern devices and ensure they're reliably delivering high-quality experiences, the companies at the cutting edge are managing their device software operations more and more like how they manage containerized cloud infrastructure. Concepts and tooling like automated delivery pipelines, test environments, and automated alerting, which are borrowed from development in the cloud, are gaining meaningful momentum in device management.

Device management in 2023 looks a lot different than 2013. Don't let the strategies and tools you're using to manage your devices hold you in the past.

Methodology

This report uses anonymized and aggregated first-party data through August 2023. Industries included in this research:

- **Hospitality:** Restaurants, hotels, entertainment venues that own and manage their own devices
- **Hospitality Tech:** Product solutions sold (by subscription or outright) to operators in the hospitality industry
- **Retail:** Retail companies that own and manage their own devices
- **Health Tech:** Product solutions used in the Healthcare industry, including wellness and fitness
- **Logistics / Transportation:** Devices used in transportation, supply chain, or fulfillment
- **Field Services:** Devices used to provide field services, such as plumbing, mechanics, and other residential or commercial services
- **Education / Nonprofits:** Universities, NGOs, governmental entities
- **Software / IT Services:** Companies that provide software and other IT services
- **Media / Telecommunications:** Companies that provide digital signage or telecommunications solutions
- **Others**