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State of Development Environments 2025

Coder

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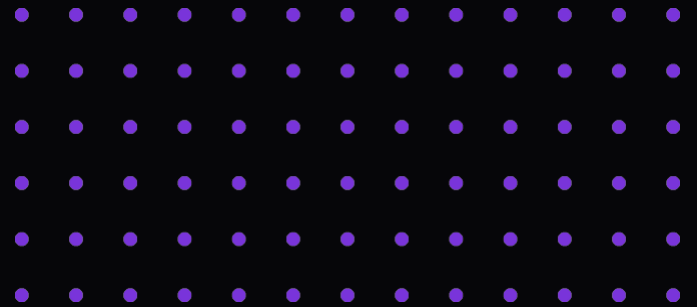
TABLE OF CONTENTS

KEY INSIGHTS

- **Rising popularity of standardization:** Standardization of development is becoming increasingly popular, **with 78% of organizations planning to do so in the next year.** →
- **Obstacles to standardization:** Approval bottlenecks, security concerns, and tool access limitations persist as obstacles. In particular, organizations with many stakeholders have challenges with approval processes. →
- **Efficiency and improvements from standardization:** Organizations with highly standardized environments have faster setup time, **45% can create environments in under 8 hours**, compared to 35% of those with moderately standardized environments. However, excessive rigidity can frustrate developers who value flexibility. →
- **Long setup times remain a challenge:** Only 7% of organizations can create environments in under an hour, while 21% take more than two days. **Despite the frustration caused by long setup times, only 14% of organizations prioritize reducing them.** →
- **Customization against risk:** Customization is important to developers, but it introduces risks like security vulnerabilities and inconsistent configurations. Only 10–19% of organizations achieve high flexibility maturity. →
- **Continued reliance on VDI:** Despite being cumbersome, expensive, and a legacy technology, Virtual Desktop Infrastructure (VDI) remains a popular solution for organizations wishing to standardize and centralize their development environments. **More than half of organizations planning to standardize look to VDI.** →
- **Preference for commercial cloud solutions:** Organizations with high concentrations of developers favor commercial cloud development environments, likely due to their scalability and support for collaboration. →
- **Confusion around cloud-hosted environments:** While 79% of respondents report using fully managed cloud-hosted environments (CDE), half demonstrate a limited understanding of their technical features, suggesting overestimation of actual CDE usage.→
- **The divide between developers and administrators:** Administrators consistently rate their environments higher than developers in areas like governance, tool access, and configurations. This points to misaligned priorities or communication/educations gaps between those provisioning environments and those using them**.** →

Introduction



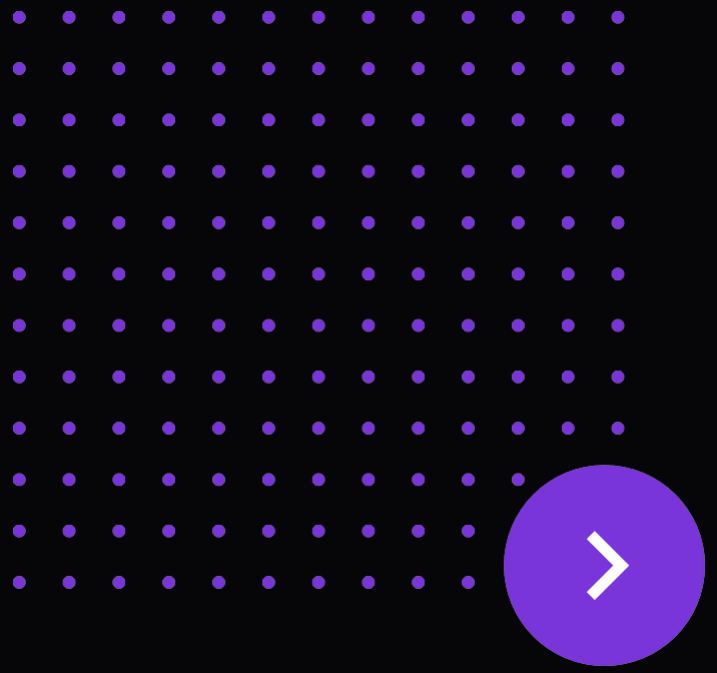
Introduction

In Q4 2023, Coder and SlashData worked together to investigate cloud development environment usage and awareness, uncovering insights and sparking new questions. Our report last year showed that platform engineers are well aware of cloud development environments' (CDE) ability to improve developer experience, increase delivery velocity, and reduce cloud spend through environment standardization. However, not all organizations are using CDE products to do this. We wanted to know how platform teams are achieving these benefits today.

In addition, 95% of respondents claimed familiarity with CDE, but how familiar were they actually? Further, while security and cost emerged as the top motivators influencing adoption of new environments, the survey left us curious about the broader context: how satisfied are users with their current setups, and how do they align with expectations?

In this edition of the State of Development Environments, we explore questions prompted by last year's research, as well as look to understand the current practices and maturity of the market. With input from more than 550 software development professionals working at large companies[1] using or provisioning development environments, we aim to provide valuable insights for developers, administrators, leadership, and those working for platform teams alike. Further, we hope to show how environment management can improve development and operational processes, provide context for the industry's movement towards standardization, and present a maturity model to identify where your organization lies in the landscape of developer efficiency optimization.

[1] Organizations with either more than 100 developers or 1000 employees



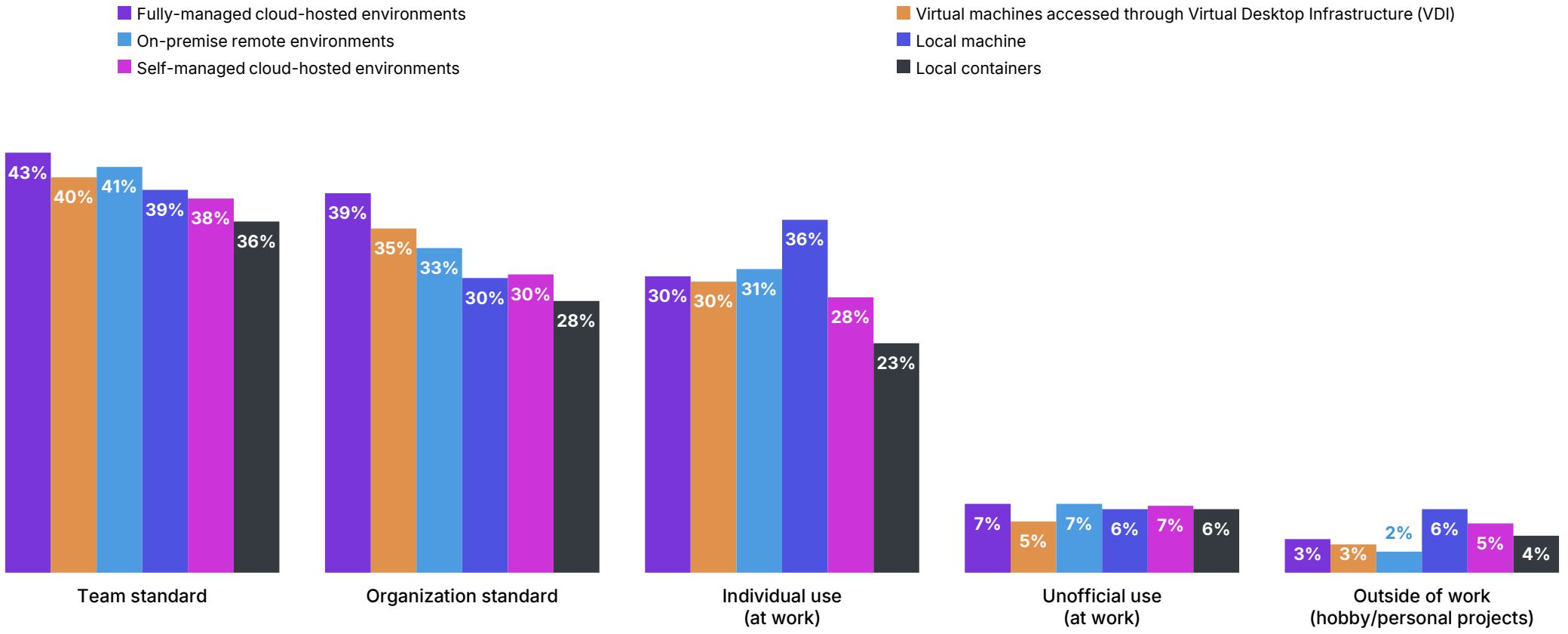
01 Current Landscape of Development Environment Configurations

Overview of Usage and Preferences

Most developers navigate multiple environment configurations when onboarding, transferring to new projects or teams, and when working in deployment pipelines. This strains developers and platform administrators, who must blend team and organizational standards with individual preferences. To remedy this friction, a variety of industry standard solutions have arisen in the market. **Fully-managed cloud-hosted environments are the preferred choice for both team and organizational standards**, used by 43% and 39% of respondents, respectively.

While organizations increasingly adopt standardized environments, the reality reflects a nuanced balance between organizational requirements and team and individual preferences. This challenge underscores **the importance of aligning standardization efforts with usability and productivity.**

Current usage of development environment configurations and the situations in which they are used



Question wording: In which capacities do you use the following development environment(s)?
% of respondents (n=556)

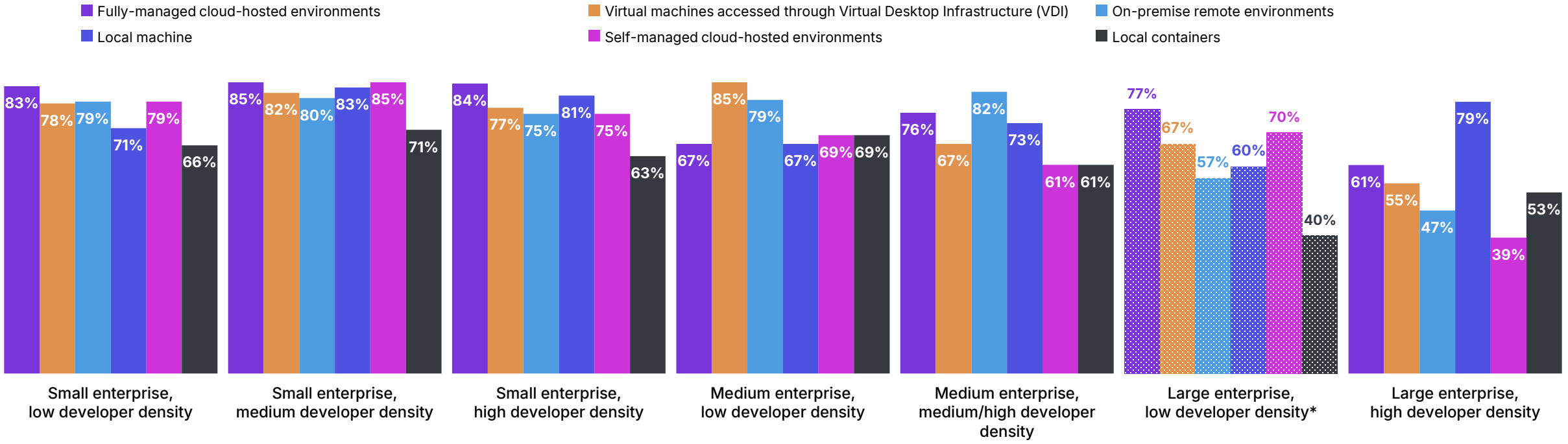
Environment Choices by Organization Size and Developer Density

Small enterprises favor fully-managed cloud-hosted environments, likely due to their simplicity and standardization benefits. Medium enterprises, however, show divergent patterns:

- **Lower developer density:** Virtual Desktop Infrastructure (VDI) is preferred, likely for security benefits, and its use among non-technical staff.
- **Higher developer density**: There is a greater reliance on remote environments (fully managed cloud-hosted or on-premise) and local machines, reflecting a need for flexibility and customization.

Large enterprises with the highest level of developer density demonstrate a strong preference for local machine configurations, likely reflecting prioritization of developer autonomy and flexibility. This trend may also be influenced by varying interpretations of environment configurations across organizations.

Usage of development environment configurations by organization size and developer density



Question wording: Which of the following types of development environments are you aware of or currently using | What is the size of the organization that you work for? | How many people in your organization are involved in software development (incl. designers & product managers)?
% of respondents at each organization type (n=467)

*This group is below the sample count for statistical reliability
† Small enterprise: 1,001 - 5,000 employees, Medium enterprise: 5,001 - 10,000 employees, Large enterprise: More than 10,000 employees
‡ For developer density: Low density refers to approximately less than 50% of staff are involved in software development, for medium density approximately 50% of staff are involved in software development, and for high density more than 50% of staff are involved in software development.

Environment Usage and CDE Awareness

The most commonly selected development environment configuration was fully-managed cloud-hosted environments, used by 79% of respondents. This figure **rose to 89% among those who stated their organization had standardized development environments.** Respondents with standardized environments also reported higher usage of shared environments (45% vs. 36%) and automated configurations (45% vs. 32%).

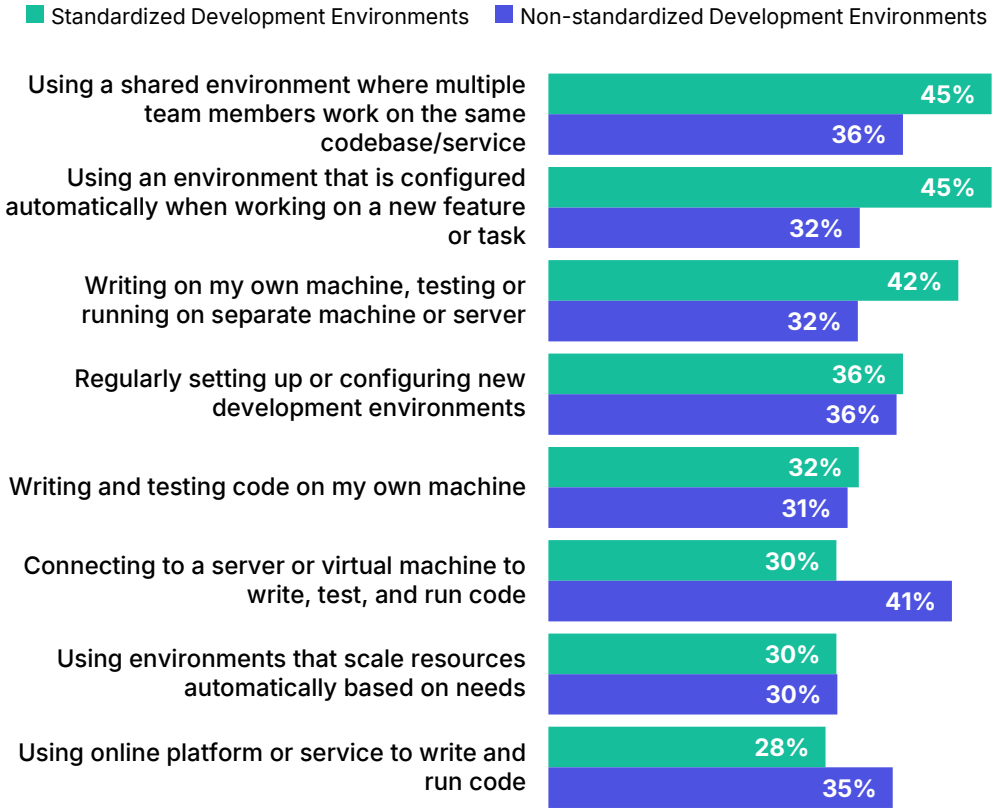
However, ambiguity remains about what constitutes a cloud-hosted development environment (CDE). Developers were asked about the technical features they consider integral to a CDE, and administrators were asked to also consider the features required in managing CDEs. Based on the accuracy and comprehensiveness of responses they were categorized into high, medium, low, or poor awareness.

- Around half of the respondents showed low or poor awareness.
- Further, awareness was only slightly better among those using fully-managed cloud-hosted environments compared to those who weren't. Among developers, 59% of users demonstrated high or medium awareness compared to 56% of non-users. For administrators, 53% of users showed high or medium awareness, versus 40% of non-users.
- Developers had greater awareness of the end-user features of a CDE than administrators did of both end-user and management features. However, a higher proportion of administrators achieved a highest level of awareness of all features than developers.

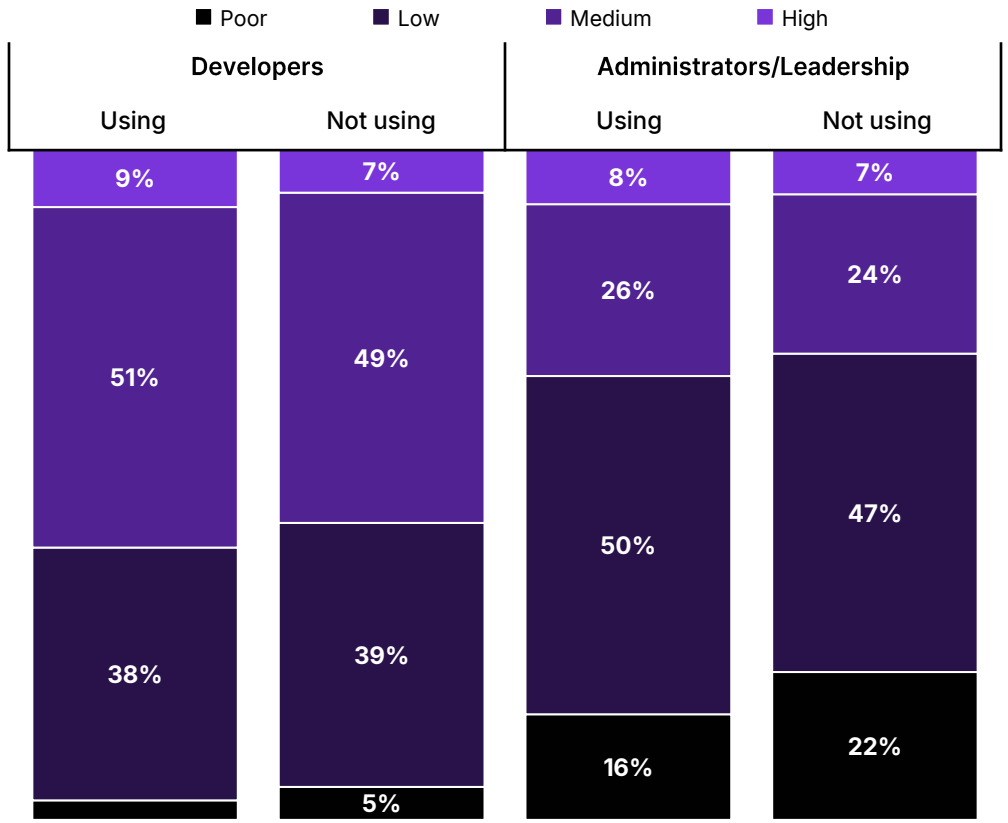
Overall, there is a **significant proportion of the software development community without clear understanding of CDEs.** Further, the high reported rates of CDE adoption may be a result of mischaracterization or confusion about the actual development environment configurations in use.

1. Current Landscape of Development Environment Configurations

Development environment activities and practices



Awareness of CDE technical features by current usage of fully-managed cloud hosted environments



Question wording: What are the main activities you perform with development environments for work purposes? | Which of the following statements best describes your organization's approach to standardizing development environments? | What do you consider the minimum technology features necessary for defining a cloud-based development environment (CDE)?
% of respondents in each standardization group (n=566) | % of respondents in each role and fully-managed cloud-hosted development environment usage group (n=566)

02 Maturity in Development Environments

Understanding the Maturity Scale

As the industry moves towards standardization, it is important to contextualize how mature the ecosystem is, as well as how different industries compare to each other. Measuring *maturity* involves evaluating environments across a wide range of factors. The maturity of each respondent's organization is determined in one of two ways.

For the aspect ratings, 1-star ratings for each aspect of their development are associated with lower maturity, and 5-star ratings are associated with higher maturity. These are then averaged for each group, providing a series of overall maturity ratings: low, medium, and high maturity. High maturity is equivalent to an average rating of 4-stars or more, low maturity is equivalent to an average rating of 2-stars or below, and medium rating is an average of more than 2-stars and less than 4-stars.

Separate to the aspect ratings, we derive three other maturity scores: environment creation time and process, user configuration flexibility of development environments, and operational standardization. For each of these, responses to relevant questions are graded on a maturity scale and combined to create an overall maturity measure for a respondent.

Ratings Aspects of Development Environments

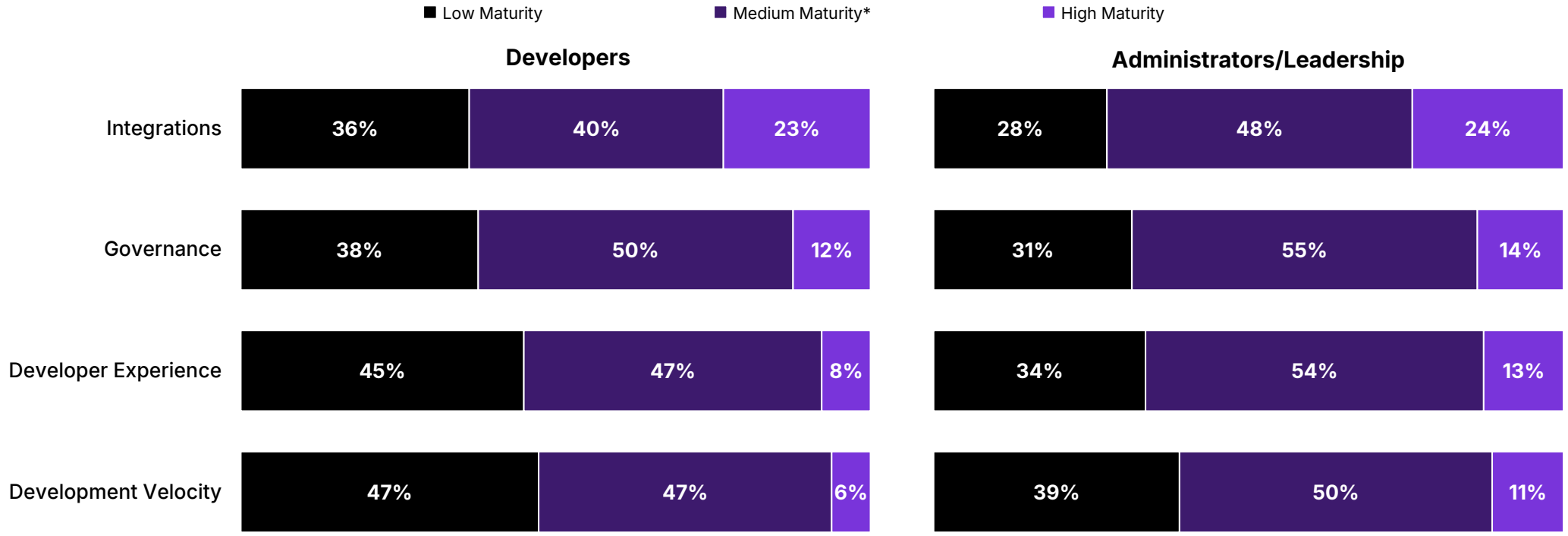
Respondents rated their development environments across 13 aspects, grouped into 4 categories: integrations, governance, developer experience, and development velocity.

- **Where developers, leadership, and administrators see eye to eye:** Accessibility to compute resources was the only aspect where ratings were equally high across both groups.
- **Where views are polarized across groups:** Administrators and leadership consistently rated aspects of their environments higher than developers, likely due to their control over configuration and better understanding of available features. Notably, respondents not planning future standardization rollouts provided different assessments: some are content with current setups, providing especially high ratings for governance (30% provided 5-star ratings compared to 14% among those planning changes). **Others expressed significant dissatisfaction, indicating they feel stuck in inadequate environments without plans for improvement.**

These findings suggest **a divide between those shaping development environments and those primarily using them**, as well as a potential gap in how well environments meet the needs of all users. Organizations with no plans for improvement may need to reassess whether existing setups adequately support their teams' productivity.

Maturity rating for grouped aspects

Ratings of aspects (Grouped)



Question wording: How would you rate your organization on the following aspects of provisioning development environments? | Which of the following best describe(s) your role?
% of respondents in each role group (n=564)

*Medium maturity equates to an average rating of more than 2-stars and less than 4-stars.

Development Environment Creation Velocity

The speed at which development environments are created varies significantly across organizations:

- **Only 7% of respondents can create environments in under an hour**, typically in highly standardized setups such as fully-managed cloud-hosted environments.
- A substantial **21% report creation time exceeding two days**, representing a substantial productivity challenge.

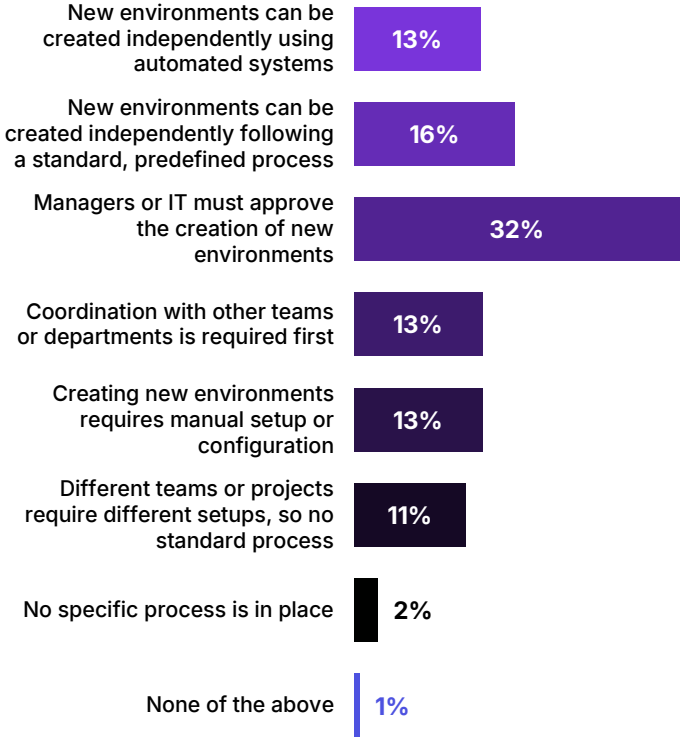
Organizations with highly standardized development environments are more likely to create new environments in under 8 hours (45%) compared to those with only moderate standardization (35%). However, **only a small subset of respondents (14%) are prioritizing improving setup times in their future development environment plans**, indicating a potential underestimation of its impact on productivity.

There are two groups for whom improving the speed of development set-up time rises to a more significant priority. Those who can spin-up new development environments almost instantaneously (10 minutes to an hour), and those who have a very long set-up time (between a week and a month). A quarter of these developers (24% and 25%, respectively) list improved set-up speed as a reason for pursuing new development environment configurations.

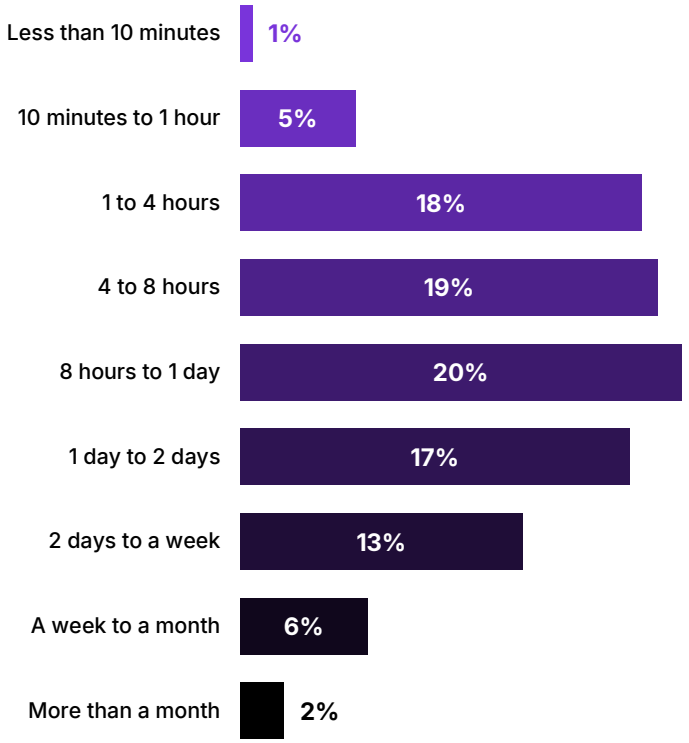
This disconnect for the rest of respondents suggests that while improving setup time could address critical inefficiencies, organizations may be underestimating its impact on developer productivity and overall operational effectiveness. Further, **respondents may not be fully aware of the substantial improvements that could be made with different configurations.**

Maturity rating for grouped aspects

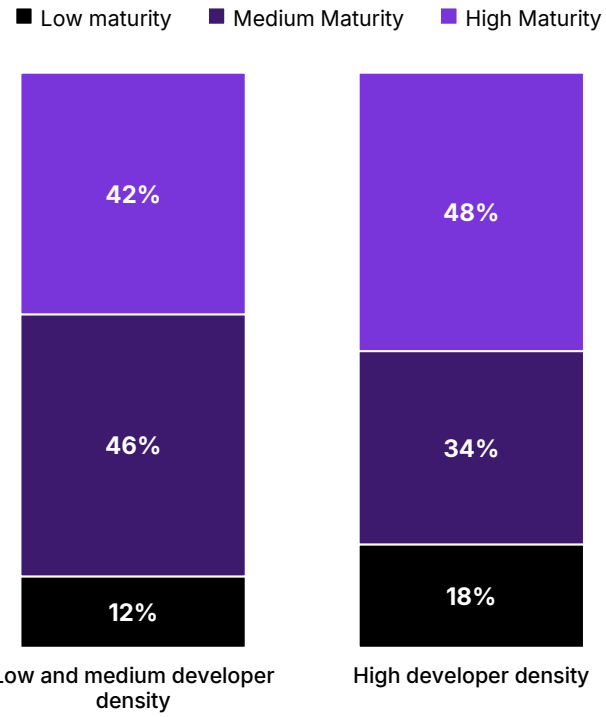
Development environment creation processes



Time to create a new development environment



Maturity rating for development environment process creation



Question wording: Do you face any challenges when creating new development environments? If so, what are the main ones? | At your organization, how long does it take, on average, to go from wanting to create a new development environment to having one fully set up and ready to use?
% of respondents (n=566)

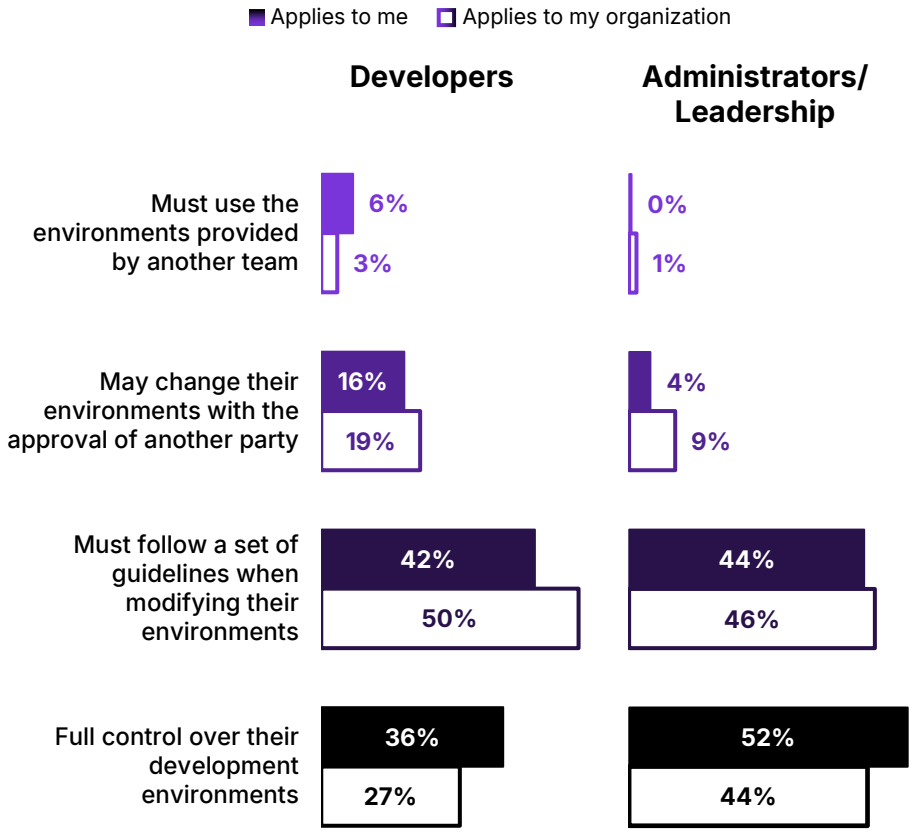
Development Environment Flexibility

Customization is valued by developers but introduces risks such as security vulnerabilities and compatibility issues. Striking a balance between customization and standardization is crucial to ensuring both flexibility and operational stability:

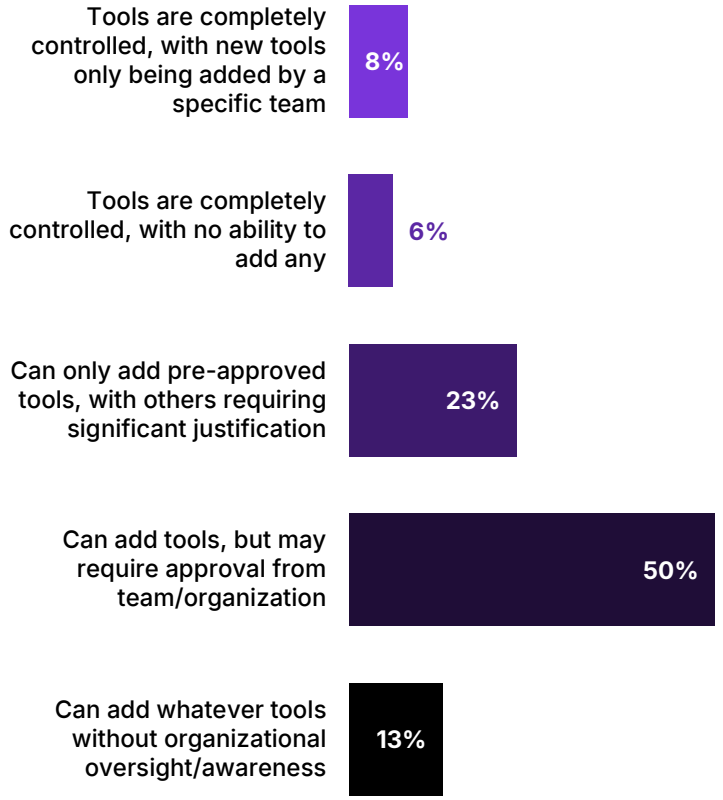
- Administrators report significantly greater flexibility (52% vs. 36% for developers). This discrepancy may reflect a leniency in organizational rules for administrators and their teams, while end-user developers experience stricter enforcement and more limited options.
- Administrators are likely to be the ones determining the rules for the organization, and as such may be separate from them. Further, some may have minimal role responsibilities that require them to use development environments, rather than provisioning, meaning that they exist outside of the typical rules for development configurations.
- Interestingly, **both groups acknowledge that organizational rules are theoretically stricter than what they experience in practice**, suggesting frequent exceptions that, if left unchecked, risk undermining organizational consistency.

2. Maturity in Development Environments

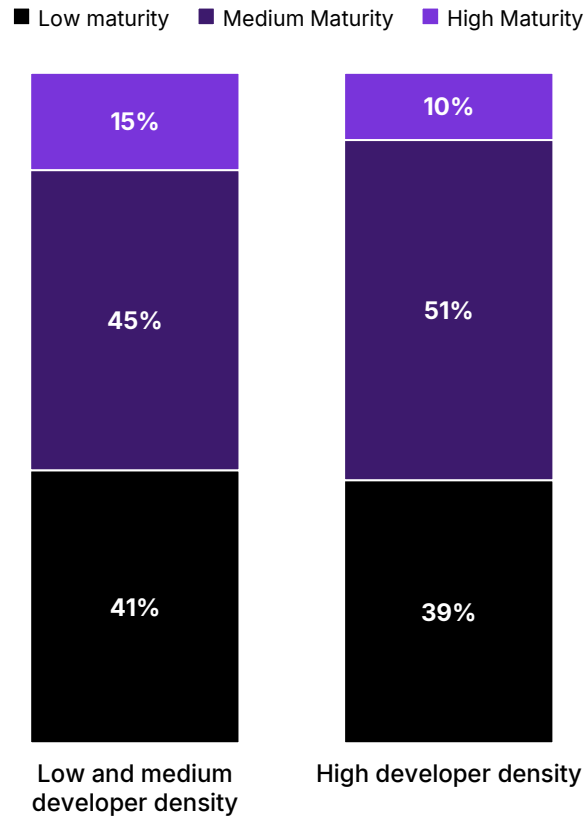
Standardization of development environments at organizations



Tool choice flexibility at organizations



Maturity for user configuring of development environments flexibility



Question wording: How much freedom do developers at your organization have to experiment with different development environments and configurations? | How much freedom do developers have at your organization to add or install tools within their development environments?
% of respondents in each role group | % of respondents (n=566)

Operational Standardization

The industry is indicating a steady move toward greater standardization, with practices like formalized platform teams (37%) and automated provisioning (34%) playing a significant role in this shift. However, **only 16% of organizations report using the same standardized tools across all teams**, showing full uniformity remains rare.

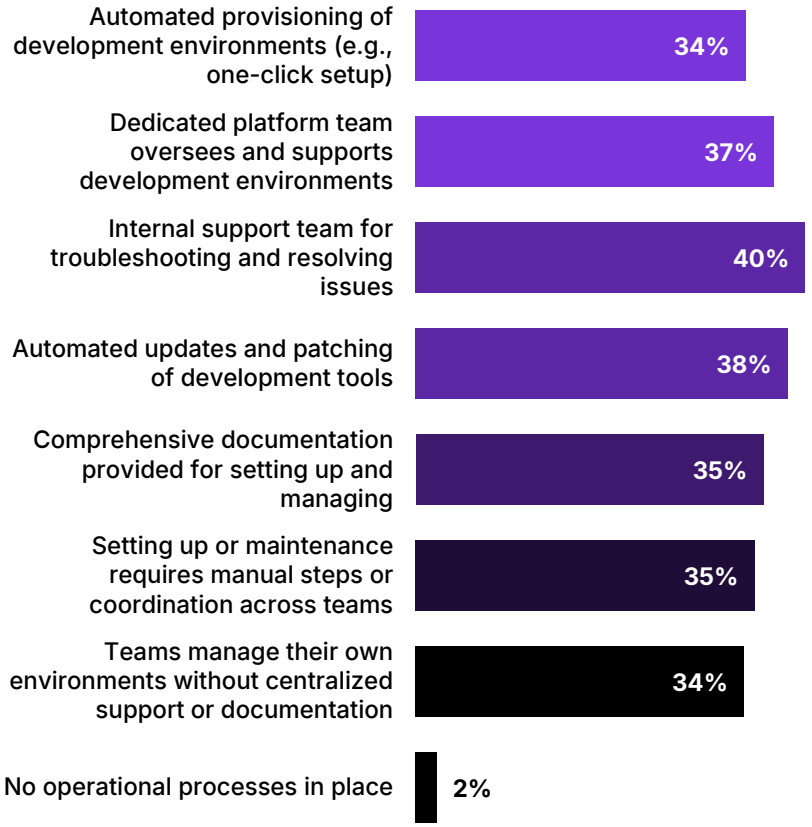
Roughly a third of respondents demonstrate practices aligned with high operational standardization maturity, with administrators (38%) rating higher than developers (36%). This disparity may reflect their closer involvement in provisioning processes and decision-making.

Notably, **operational standardization maturity appears consistent between organizations with high and low developer densities**, suggesting a universal recognition of its benefits.

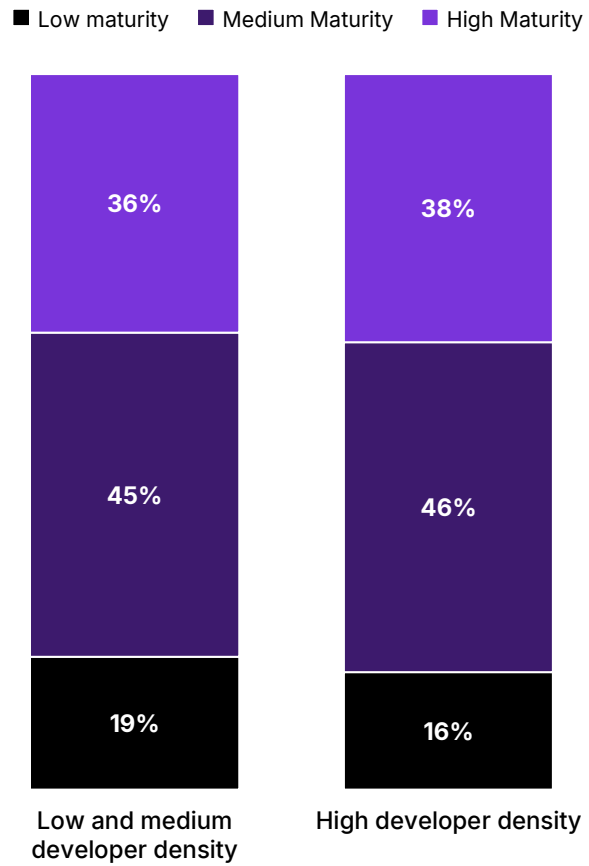
2. Maturity in Development Environments

Standardization of development environments at organizations

Operational practices of organizations



Maturity for operational standardization



Question wording: Which of the following statements best describes your organization's approach to standardizing development environments? | Which of the following statements best describe your organization's operational approaches to managing development environments?
% of respondents (n=566)

Maturities by Industry Vertical

Different industry verticals are standardizing at different rates, and this is reflected in their performance across the four maturity metrics defined.

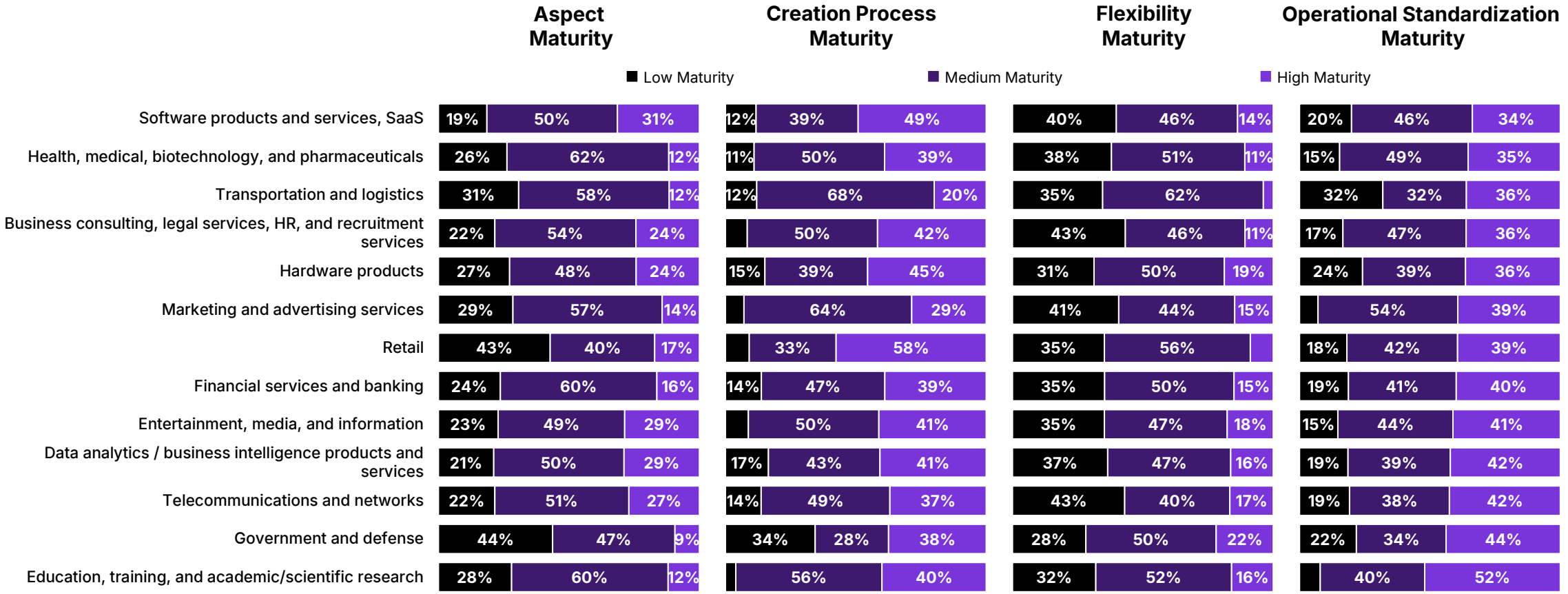
- **The highly standardized:** Respondents in education or academic/scientific research had the highest proportion of high operational standardization maturity (52%), with government and defense close behind (44%). While those in marketing and advertising services do not have the highest operational standardization maturity proportion (39%), they have the fewest low maturity respondents (7%).
- **SaaS companies:** Those at SaaS companies have the lowest operational standardization maturity, mainly due to the relationship between large companies having low operational standardization maturity, and SaaS being a large contingent of this group. On top of this, these respondents have low flexibility maturity, with very little oversight applied to any changes or tools they add to their development environments, but high creation process maturity with fast and automated setups. **All of these reflect a focus on satisfying developers**, as evidenced in their high aspect maturity, **but expose these organizations to risks.**

2. Maturity in Development Environments

- **Unsatisfactory environments:** Retail (43%) and government and defense (44%) show the greatest proportion of low aspect maturity, indicating a lack of satisfaction with the development environments in use. Government and defense perform poorly on creation process maturity (34% are low maturity), as well as having the most locked-down environments. However, respondents in retail perform well in process creation maturity (58% high maturity) and are in line with other industries, suggesting the dissatisfaction may be emerging from other factors.

The varying levels of maturity highlight that achieving operational excellence **requires strategies tailored to industry-specific challenges and needs.**

Comparison of maturity measures between industry verticals respondents' organizations are involved in



Question wording: In which of the following sectors is your company active?
% of respondents in each industry vertical (n=560)

Top Challenges

- **Approval bottlenecks:** IT or management approvals is a major challenge for both developers (21%) and administrators (24%). **This challenge persists among highly standardized organizations**, highlighting that standardization alone does not guarantee faster workflows.

- **Security and compliance:** Administrators are more likely to cite this as a top challenge (25% vs.19% for developers), reflecting their responsibility for maintaining compliance and responding to evolving security threats.

- **Tool access:** A lack of access to necessary tools is a less common problem (10% of administrators and 14% of developers), but has **the highest proportion of respondents in the high operational standardization maturity group.**

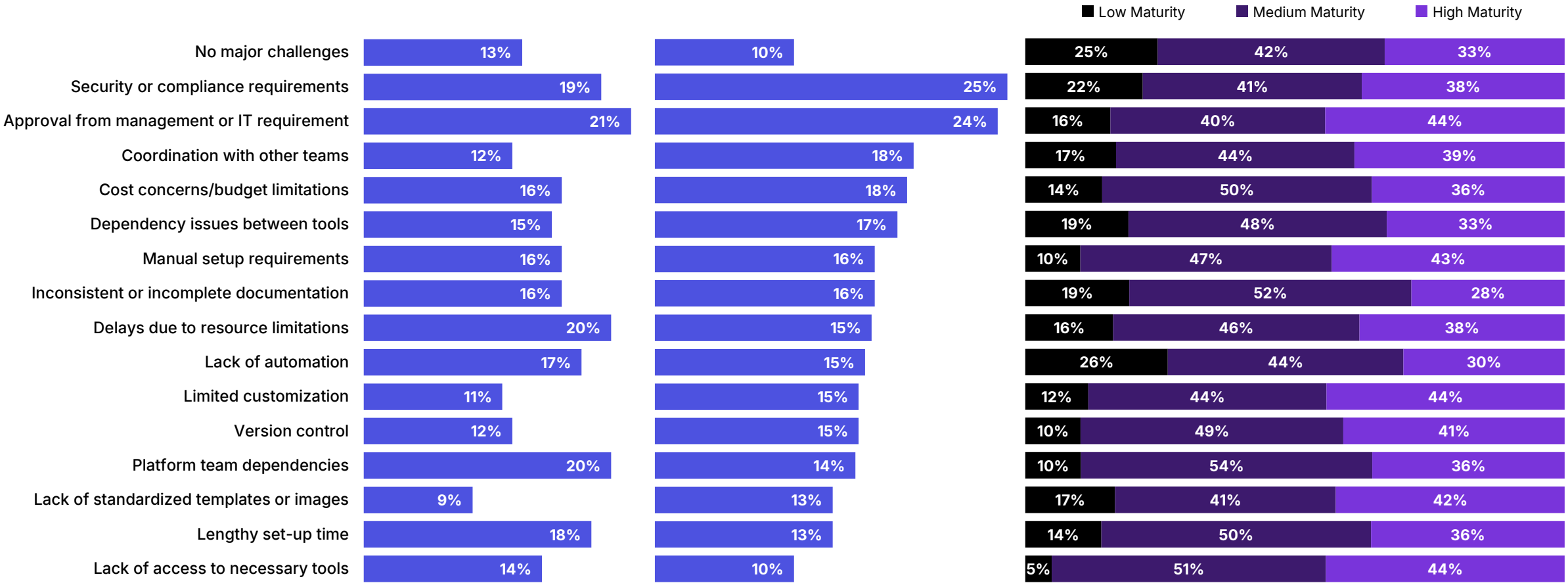
- **Developer challenges:** Conversely, **developers are more likely to cite lengthy setup times as a challenge (18% vs. 13% for administrators)**, as they typically have less control over provisioning processes, leading to more frustrations with delays.

2. Maturity in Development Environments

Major challenges faced by developers

Major challenges faced by administrators/leadership

Operational standardization maturity



Question wording: Do you face any challenges when creating new development environments? If so, what are the main ones? | Are you or your team attempting to tackle developer challenges around the creation of development environments? If so, what are the main challenges?
% of developers | % of administrators/leadership | % of those who selected each challenge (n=566)

Maturity Comparison

Looking at how respondents and their organizations perform across the four metrics shows interesting relationships:

- **Operational standardization maturity correlates strongly with aspect maturity.** 86% of those with high maturity also achieve medium or high aspect maturity, compared to 70% of those with lower standardization maturity.

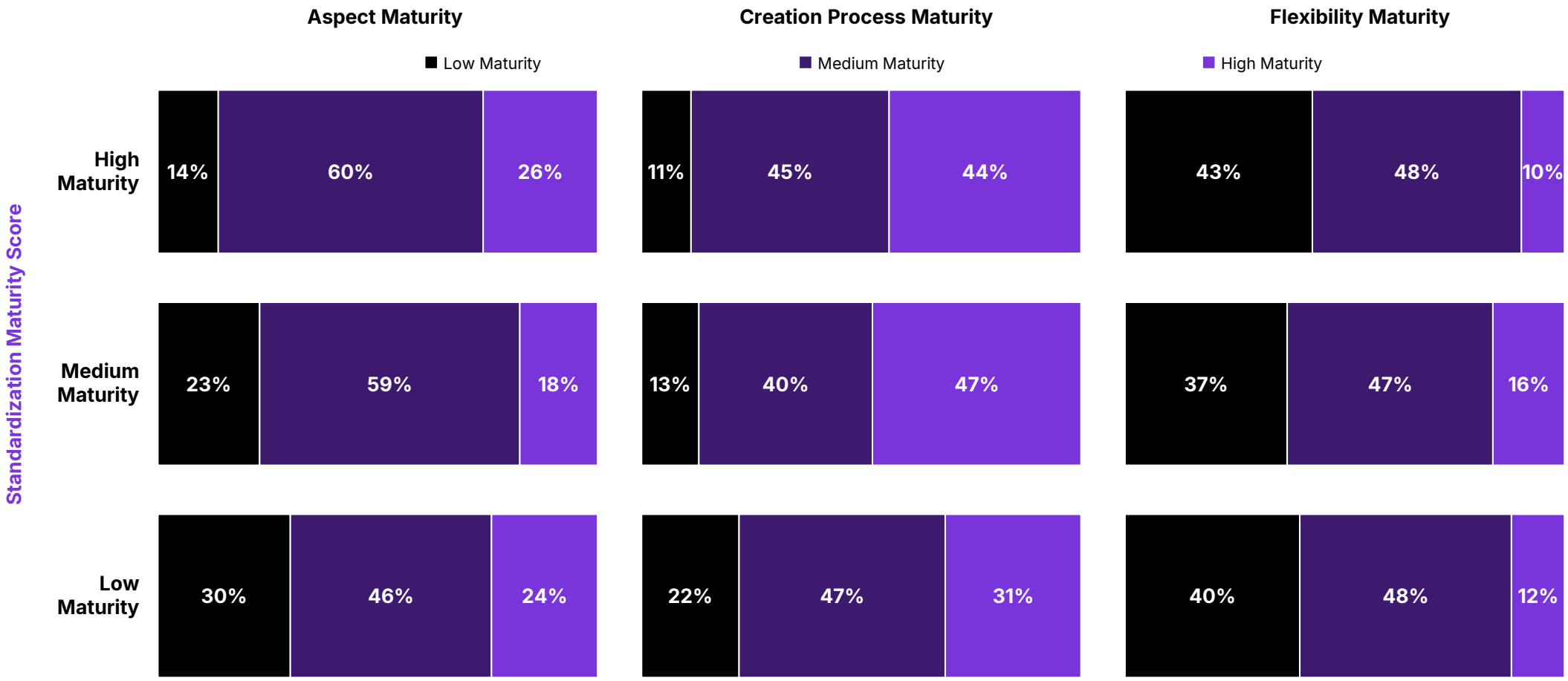
- However, **operational standardization maturity has minimal influence on flexibility maturity**, as many organizations in practice allow exceptions to exist.

- While low operational standardization maturity is associated with low creation process maturity, the effect diminishes for medium or high operational standardization maturity.

Ultimately, **organizations must complement standardization efforts with streamlined creation processes** and a balanced approach to flexibility to achieve both control and developer satisfaction.

2. Maturity in Development Environments

Comparison of maturities against operational standardization maturity



% of respondents in each industry vertical (n=560)

03 Future Plans for Standardization

3. Future Plans for Standardization

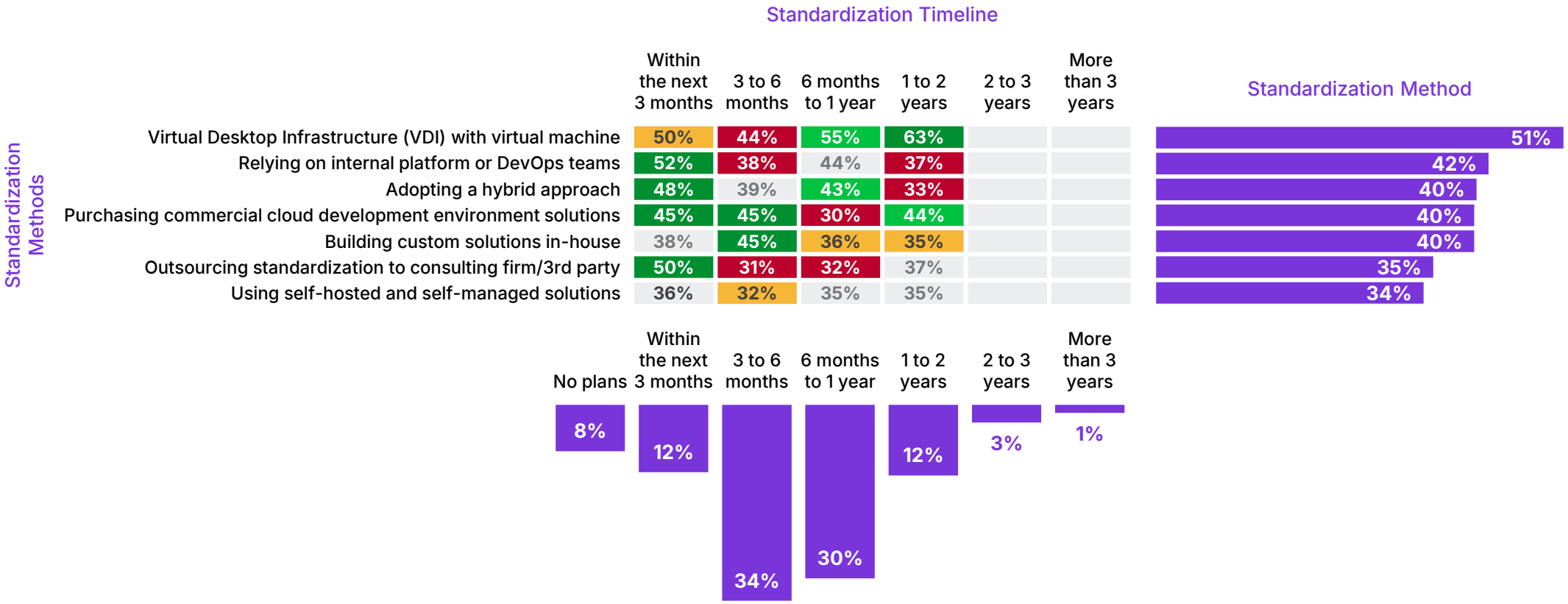
Organizations are increasingly moving toward standardized development environments, with 78% planning to do so within the next year. The most common method for future standardization is the use of Virtual Desktop Infrastructures (VDIs), selected by 51% of respondents, followed by reliance on internal platform or DevOps teams (42%). However, **VDI is more commonly chosen by those planning to standardize further in the future** (1–2 years) and less frequently by those planning within six months, suggesting that while popular, **it may lose appeal as plans become more concrete.**

Reliance on internal platform teams is most common among those standardizing imminently (52% within the next three months). This likely reflects the readiness of organizations with existing platform teams to act quickly on their standardization plans. Similarly, outsourcing to third parties is also high among this group (50%), as these organizations are likely further along in planning and implementation, leveraging external expertise to accelerate the process.

Overall, **those relying on internal teams also indicate the usage of other methods:** 44% say they will be using VDIs, 40% are building custom in-house solutions, 34% are buying an external product, and 31% indicate they intend to use self-hosted solutions.

Purchasing commercial cloud development environment solutions is most popular among organizations planning standardization within the next six months (45%) and is particularly favored by high-developer-density organizations (48%). This preference suggests that **developer-focused organizations see cloud solutions as a practical way to standardize environments while catering to their unique requirements for scalability and collaboration.**

Standardization rollout timelines and the methods for standardizing



Question wording: Which of the following approaches does your organization use to standardize development environments? | Is your organization planning to standardize your development environments? If so, what is the expected timeline for this to be rolled out?
% of respondents in each standardization timeline group (n=566)

Standardization Patterns

Stakeholder Influence

Organizations with fewer stakeholders involved in approving development environment purchases are more likely to have high standardization maturity (52%). In contrast, **as the number of stakeholders increases, the proportion of highly standardized organizations declines.** This creates a paradox where those in the greatest need of improved standardization face the most obstacles to implementing change.

Moving to the timeline for their organization's rollouts, those in the 3 to 6-month timeframe for standardization plans have lower operation standardization maturity than those with timeframes on either side of this range. In other words, **those rolling out new plans imminently (within three months) or further in the future (6 to 12 months) currently have higher operational standardization**.

These organizations intending to roll-out standardization in 3 to 6 months may reflect those that have identified the need for change and express intentions to make changes promptly but remain in early preparation phases, with timelines that are flexible and less concrete. These organizations differ from those with imminent 3-month plans, which likely already have clear strategies in motion, and from longer-term plans (6 months or more), which may involve deliberate, phased rollouts addressing foundational challenges.

Stakeholder Methods

Standardization methods also correlate with current maturity levels:

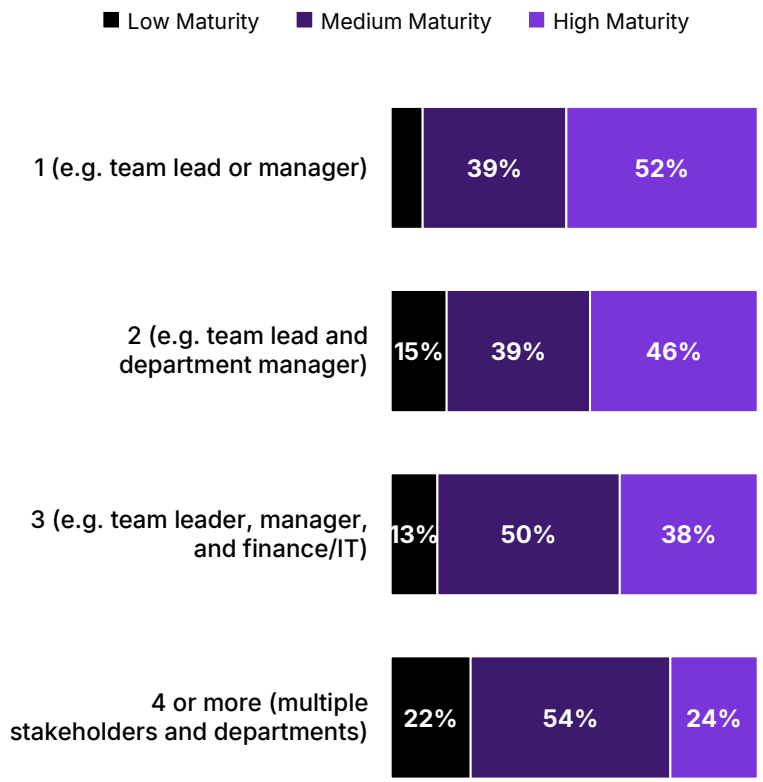
- **Outsourcing and platform teams:** These approaches are favored by organizations with higher existing operational standardization maturity levels (38% and 34% at high maturity, respectively), likely building on existing structures.

- **Virtual Desktop Infrastructure (VDI):** Organizations adopting VDI tend to have lower maturity (with only 28% at high maturity), **suggesting it appeals to organizations earlier in their standardization journey.**

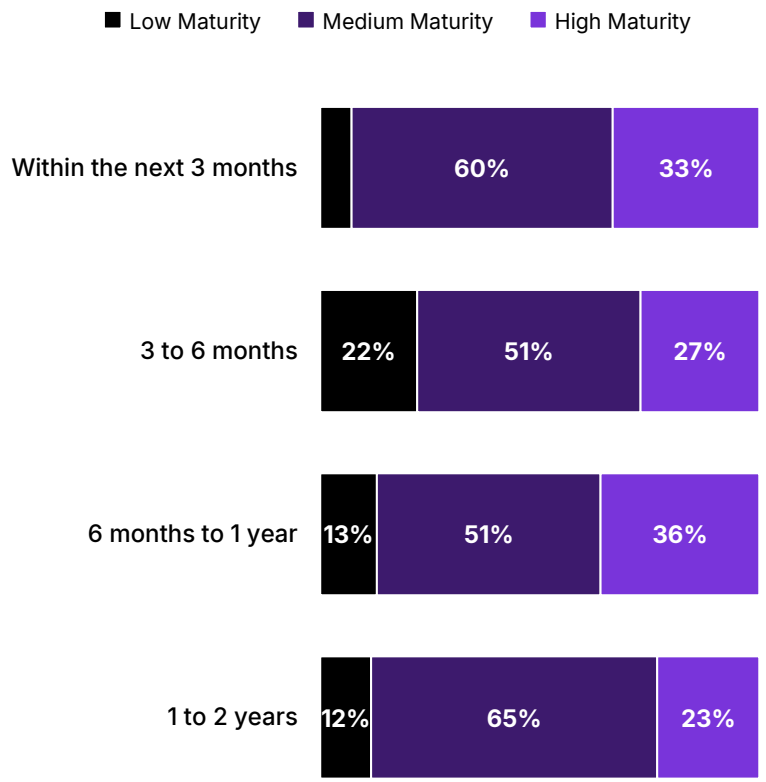
- **Commercial cloud development environment solutions:** Organizations using this method are most likely to have medium operational standardization maturity (52%), indicating these tools are popular among those aiming to streamline operations and progress toward higher standardization.

3. Future Plans for Standardization

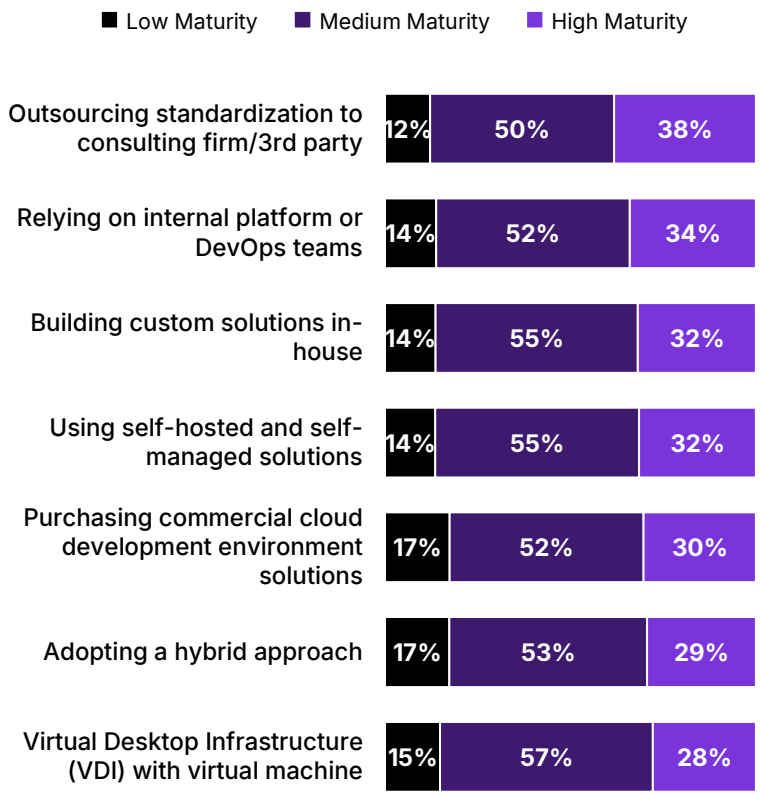
Number of stakeholders required for purchases compared to operational standardization maturity



Estimated timeline for organizations' standardization plans compared to operational standardization maturity

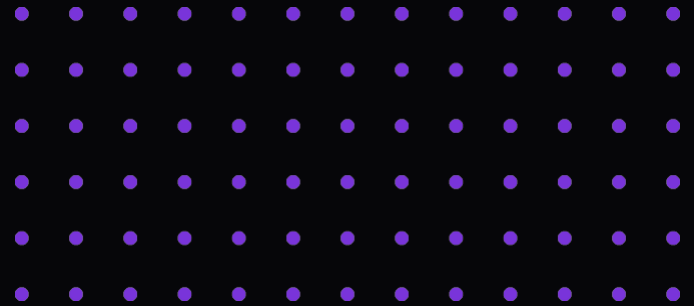


Organization's method for standardization compared to operational standardization maturity



Question wording: How many people, teams, or stakeholders at your organization need to sign off before a new development tool can be purchased or rolled out? | Which of the following approaches does your organization use to standardize development environments? | Is your organization planning to standardize your development environments? If so, what is the expected timeline for this to be rolled out?
% of respondents in each standardization timeline group (n=566)

Summary



Summary

The industry is rapidly moving toward standardized development environments, with **78% of organizations planning to make further efforts towards standardization within the next year.** Key drivers include **improved efficiency, enhanced security**, and **better collaboration across teams**. Methods such as reliance on internal platform teams, outsourcing, and purchasing commercial solutions are common, with maturity levels varying significantly. High maturity is often linked to organizations leveraging platform teams or outsourcing, while tools like VDIs are more prevalent in less mature organizations, reflecting different stages of the standardization journey.

Despite this momentum, challenges remain. **Approval processes are a leading obstacle for both developers and administrators**, particularly in organizations with many stakeholders involved in decision-making. Higher maturity organizations often streamline these processes, while others experience delays that hinder progress. **Security requirements** are another common challenge, especially for administrators, while developers frequently cite **restrictive tool access** and **lengthy setup times** as barriers. These issues highlight the need for standardization efforts to include process improvements that balance control with flexibility and speed.

Leadership and platform teams should assess their current maturity levels across key areas such as operational practices, creation processes, and flexibility. Streamlined decision-making and alignment between administrators and developers can accelerate progress while ensuring tools and environments meet user needs. To remain competitive, **organizations should carefully select standardization methods that align with their goals and readiness**, whether by leveraging internal teams, outsourcing, or adopting commercial solutions. These efforts will position them to meet industry benchmarks while addressing inefficiencies in their development workflows.

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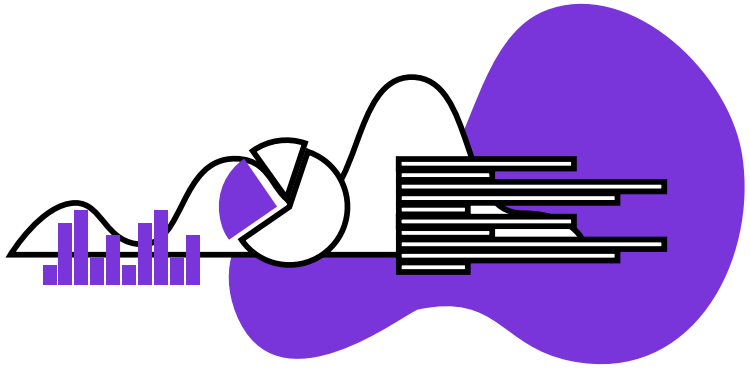
Developer population sizing
Developer segmentation

What they buy

Why developers are adopting competitor products – and how you can fix that

Where they are going

Emerging platforms – augmented & virtual reality, machine learning



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