Hype Cycle for I&O Digital Workplace Transformation, 2023

Published 20 July 2023 - ID G00790909 - 112 min read

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Initiatives: Digital Workplace Infrastructure and IT Operations

Digital employee experience, ESG and IT modernization have taken center stage in the digital workplace. I&O leaders can use this Hype Cycle to evaluate the enabling digital workplace technologies to accelerate digital transformation.

More on This Topic

This is part of an in-depth collection of research. See the collection:

- 2023 Hype Cycles: Deglobalization, AI at the Cusp and Operational Sustainability

Analysis

What You Need to Know

As work continues to evolve toward greater efficiency and dependence on technology, the intersection of labor constraints and emerging generative and autonomous technologies is transforming resourcing strategies. Although aversion to risk, talent shortages and economic pressures continue to challenge organizations, their landscape of tools, services and alternative operating models is wider in 2023 than it has ever been.

To address this, several new innovations have been added to the Hype Cycle for I&O Digital Workplace Transformation, 2023, driven by the need for:

- An improved digital employee experience (DEX)
- An advanced digital workplace sustainability strategy
- The shift to proactive operations

I&O leaders must explore the opportunities these innovations present and be agile enough to continuously integrate best-in-class technologies. This Hype Cycle explores the “hype” and helps organizations determine the right mix of solutions to maintain operational stability while adapting to disruptive influences.

The Hype Cycle

Human-centricity has influenced the 2023 Hype Cycle as employee experience becomes the primary focus of digital workplace investments. Organizations are consistently designing solutions, strategies and technologies to promote and enhance DEX.

DEX tools ascend the Peak of Inflated Expectations as capability improvements continue to align with the top priorities for digital workplace leaders. This innovation has multidisciplinary use cases and can catalyze a multitude of organizational goals. The goals organizations have when they implement DEX tools include but are not limited to:

- Improving employee productivity and satisfaction
- Monitoring and improving energy efficiency of digital workplace technologies
- Enabling an intelligence-driven approach to device life cycle planning
- Improving endpoint management processes like patching and automation

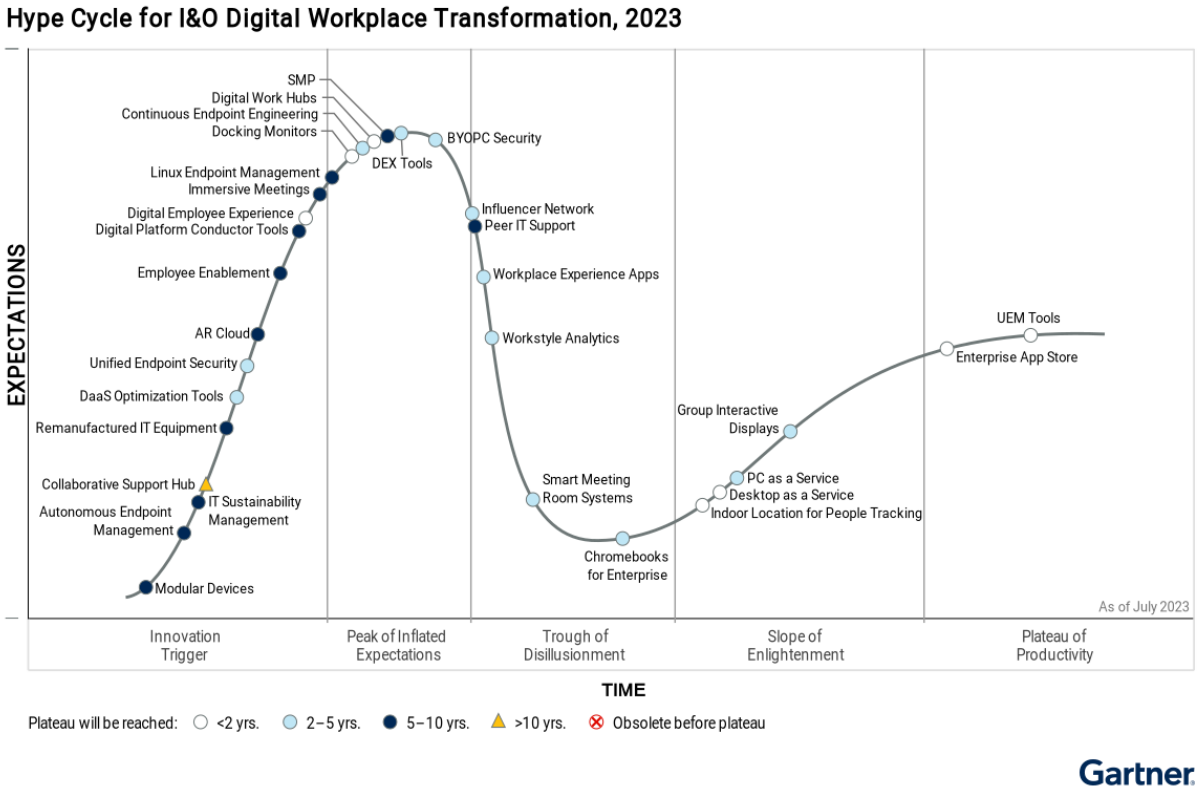
In response to a greater emphasis on environmental, social and governance (ESG) outcomes, two new innovation profiles focus on sustainability. These include a hardware innovation in modular devices and the intelligence-driven IT sustainability management tools to monitor and reduce environmental impact.

Other maturing innovations include:

- Employee enablement to empower a human-centric digital workforce
- Remanufactured IT to reduce costs and lengthen the useful life of devices
- Autonomous endpoint management (AEM) to combine the forces of DEX and unified endpoint management (UEM) tools to power the intelligence-driven and human-centric digital workplace

These innovations will continue to rise over the next few years as digital workplace I&O leaders seek to optimize operations through automation, empower employees and embrace sustainable principles.

Figure 1: Hype Cycle for I&O Digital Workplace Transformation, 2023



The Priority Matrix

The Priority Matrix maps the benefit rating for each innovation to the time required to reach mainstream adoption. This alternative perspective can help digital workplace I&O leaders determine how to prioritize their mobile and endpoint technology investments. Key technologies will have notably significant impacts across user experience, enablement of new use cases, IT operations and support capability, and organizational agility.

Table 1: Priority Matrix for I&O Digital Workplace Transformation, 2023

(Enlarged table in Appendix)

Benefit	*Years to Mainstream Adoption*			
↓	*Less Than 2 Years* ↓	*2 - 5 Years* ↓	*5 - 10 Years* ↓	*More Than 10 Years* ↓
Transformational	Digital Employee Experience	Workplace Experience Apps	AR Cloud Digital Platform Conductor Tools	
High	Desktop as a Service Digital Work Hubs Indoor Location for People Tracking UEM Tools	BYOPC Security DaaS Optimization Tools DEX Tools Influencer Network PC as a Service Unified Endpoint Security Workstyle Analytics	Autonomous Endpoint Management Immersive Meetings	
Moderate	Docking Monitors Enterprise App Store	Chromebooks for Enterprise Continuous Endpoint Engineering Group Interactive Displays Smart Meeting Room Systems	IT Sustainability Management Modular Devices Peer IT Support Remanufactured IT Equipment SMP	Collaborative Support Hub
Low			Employee Enablement Linux Endpoint Management	

Source: Gartner (July 2023)

On the Rise

Modular Devices

Analysis By: Stephen Kleynhans, Autumn Stanish, Stuart Downes

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Definition:

Modular devices refers to a design strategy for laptops that builds on the right to repair trend to enable the upgrade and repair of PCs by exchanging parts. By leveraging composable and replaceable parts, which can be exchanged as modules over time, the PC can be upgraded or repaired without needing to replace the entire machine.

Why This Is Important

Modular devices, particularly laptops, enable both repairability and upgradability to ensure that these devices have a longer, useful life. This is critical from a sustainability perspective as it substantially reduces the environmental footprint of manufacturers to ensure machines have a viable second and possibly third life.

Business Impact

As IT leaders focus more on sustainability, modular devices can support initiatives to reduce carbon emissions and increase life spans. Other impacts include:

- Reduced e-waste.
- Potentially reduced hardware acquisition costs to enterprises.
- Avoid early obsolescence as devices can be upgraded instead of replaced to support new capabilities.
- Less employee disruption from device replacement.

Drivers

Modular devices are becoming increasingly interesting to both customers and manufacturers as demands grow for the right to repair devices:

- In France, new legislation requires that at least 20% of all device acquisitions must consist of refurbished PCs.
- Right-to-repair laws are being enacted for more types of devices across multiple jurisdictions.
- There is rising interest in reducing e-waste and GHG emissions associated with the PC life cycle.
- Improvements in system design and better interconnection standards are further driving the shift to modular devices.

Obstacles

While conceptually moving to modular devices is attractive, significant technical and marketplace hurdles exist:

- Lack of standards on modules and packaging across vendors could create lock-in or orphaned devices.
- Developing a viable business model for the market (and current players) to operate at scale may complicate the vendor market strategy.
- Determining which components are suited to modularity isn't straightforward, including the level of granularity and user-serviceability. It is technically difficult to upgrade certain key components such as the processor and accompanying thermal management.
- There is the potential for substantially higher upfront costs due to PC manufacturers' desires to recover costs associated with PC redesign.
- Asset life cycle management could become more complex due to the need to track components as well as hardware.
- Devices may be less aesthetically pleasing (thicker, heavier), leading to lower employee satisfaction.

User Recommendations

- Watch the various initiatives and alternatives that are developing across the industry cautiously, and limit investment and resources until the modular device market matures.

- Watch for potential new service models from OEMs and service providers to retain a device after set time; recover and then refurbish that chassis with new modules before reselling at a lower cost than the equivalent new device.
- Prepare to improve hardware asset management processes to support the complexity of managing modules, as it is unlikely to be an activity that enterprise IT teams have the time, focus, skills or ambition to perform.
- Monitor progress in modular devices, limiting any purchasing to evaluating the technology. They are conceptual today, focusing on hobby and enthusiast markets, and are likely to be several years away from enterprise availability.

Sample Vendors

Dell Technologies; Framework Computer; HP Inc.; Lenovo

Autonomous Endpoint Management

Analysis By: Dan Wilson, Tom Cipolla

Benefit Rating: High

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Definition:

Autonomous endpoint management (AEM) represents the AI/ML-powered convergence of DEX and UEM tool capabilities. By automating endpoint and DEX management, AEM replaces traditional tools and architectures with lightweight, cloud-based, intelligence-powered capabilities. AEM supports agile approaches, reduces IT overhead and enables efforts to be redirected toward employee enablement and business-value-added work.

Why This Is Important

Increased dependence on technology and accelerated rate of change continue to overwhelm IT, undermine technology stability and degrade DEX. AEM uses cloud-powered intelligence to automate common endpoint and experience management tasks to free up IT for more value-added work. The overall goal is to improve device stability and compliance, and employee productivity and satisfaction to drive talent attraction and retention. IT will also be viewed as a business enabler rather than a hurdle or barrier.

Business Impact

I&O leaders can automate endpoint and DEX management tasks and reallocate efforts toward business value-added work. Specific impacts include:

- Reduced IT overhead through automatic resolution of issues that disrupt and impede employee productivity.
- Maintaining endpoint configuration standards based on vendor, industry or self-defined baselines.
- Reduced cyber risk by automating patch and configuration management.
- Automated software and configuration deployment based on policy, persona or similar.

Drivers

- IT staff are overwhelmed with the growing number of endpoint devices, operating systems and applications.
- Technology vendors have accelerated development and release cadence, and IT cannot keep pace.
- Increased cyberattacks demand faster patch deployment, better device configuration compliance and closer alignment with vendor life cycles to reduce vulnerabilities.
- Adoption of UEM tools and modern management has reached critical mass as clients favor location-agnostic, cloud-based tools.
- Adoption of DEX practices and tools is growing rapidly.
- Cloud-based UEM and DEX tools are starting to demonstrate how ML-powered intelligence can quickly process a significant amount of data, provide actionable insights and recommendations, and execute automations.
- Expanding automation to perform other common administrative tasks or to apply standard policies and configurations is the next step in building toward AEM.
- Convergence could include other management tools and agents installed on endpoints.
- AEM directly supports the IT leader's goal of speed and agility.
- AEM use cases are promising in addressing the management of applications and replacing human execution of IT processes.

Obstacles

- Overly complex environments with too many disparate tools that lack integration.
- Highly customized environments that require extensive testing of every update prior to deployment.
- Fragile environments with a significant amount of technical debt — including legacy operating systems or applications that depend on unsupported browsers, runtime environments or plug-ins.
- Low- to mid-maturity organizations lack the competencies, tools and roles to ensure that more basic processes and concepts are already deployed.
- Device operating system limitations or controls may prohibit experience and automation capabilities.
- AEM tools are unlikely to address niche use cases due to insufficient data to train ML and AI models to perform the automated activities.
- AEM is not possible on-premises, so cloud-averse organizations will not be supported.
- Organizations that lack experience with agile methodologies and automation skills, and operate under a legacy mindset that focuses on control and customization.

User Recommendations

A few endpoint management vendors now offer AEM capabilities, so hype has moved slightly beyond the Innovation Trigger. Time to Plateau remains 5-10 years based on the historical adoption ramp for UEM and DEX tools. When reviewing long-term strategic plans, IT leaders should:

- Avoid lock-in by ensuring that strategic endpoint and DEX management vendors have a roadmap that directly provides or includes necessary partnerships to provide AEM capabilities.
- Reduce location dependence by migrating endpoint management, security, and identity solutions to the cloud.
- Prepare your organization by annually assessing current and future skill requirements, updating existing and defining new roles, and implementing strategies for upskilling and professional development.

- Eliminate inertia by evangelizing human-centricity and an enablement mindset, and embracing modern management principles and agile approaches.

Sample Vendors

Ivanti; VMware

Gartner Recommended Reading

Market Guide for DEX Tools

Magic Quadrant for Unified Endpoint Management Tools

Collaborative Support Hub

Analysis By: Chris Matchett

Benefit Rating: Moderate

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Definition:

A collaborative support hub is a formalized system of engagement that provides support and sharing of best practices for both IT and non-IT employees, built around a central collaboration solution that is integrated with an IT service management (ITSM) platform. It enables business consumers to obtain guidance from a community of IT service desk experts, technical experts, product teams, business process experts, or peers and colleagues.

Why This Is Important

Collaborative support hubs are appearing where a traditional IT service desk “Levels 1, 2 and 3” tier format struggles to address modern trends such as peer support, swarming and product management. The formal system of engagement evolves peer IT support forums and will complement the IT service desk through ITSM platform integration.

Business Impact

Collaborative support hubs provide these benefits:

- Formalize and expand support channels to improve engagement for employees who choose not to contact the IT service desk.
- Improves IT visibility and ability to support activities that do not flow through the IT service desk.
- Expedite incident resolution using swarming, when expertise resides in both IT and business expert teams.
- Foster peer support, which encourages non-IT employees to develop and share skills and best practices.

Drivers

- Interest in alternative support models surged with the shift to remote work and the need to ease the IT service desk workload.
- A third or more of digital workers outside of the IT department access digital channels where they can ask IT support questions and/or turn to IT subject matter experts for help on nonroutine tasks.
- Seventy-seven percent of digital workers have an IT specialist within their business unit. Business-led IT is becoming the norm as IT organizations reposition themselves to support improved business outcomes.
- Many organizations have deployed collaborative work management on tools such as Microsoft Teams, Cisco Webex Teams or Slack, enabling employees to communicate through broader and more diverse channels.
- Some ITSM platform vendors have added collaborative hub capabilities to their product roadmaps.
- Eighty-five percent of infrastructure and operations (I&O) leaders, surveyed in 2021, said their organizations had partially adopted a collaborative swarming model alongside traditional tiered support for incident resolution where the service desk was engaged.
- A third or more of digital workers outside of the IT department access digital channels to ask IT support questions and/or turn to IT subject matter experts for help on nonroutine tasks, according to the 2022 Gartner Digital Worker Survey.

Obstacles

- Remote working led to a drop in “ask a colleague for help” frequency according to our digital workplace surveys in 2020 and 2022. Many business consumers prefer to contact only traditional support channels.
- Collaborative hubs require collaboration tools to succeed. While there are many options, all have different limitations, making it difficult to standardize on one solution.
- ITSM platforms’ inability to recognize the time and effort of both IT experts and non-IT employees working on and solving issues requires management to manually log or estimate these metrics.
- Business executives may be resistant to allocating time/resources for this ad hoc or unstructured type of support.
- Roles required to support distributed models like collaborative support hubs differ from those associated with traditional tiered support, and I&O leaders struggle to find employees with experience managing and supporting communities.

User Recommendations

- Pursue collaborative support hubs proactively as a complementary model to accommodate shifts in work arrangements and changes in worker engagement preferences.
- Continue to provide an IT service desk alongside the hub, to avoid alienating employees who prefer that option.
- Start with topic groups for products where substantial knowledge capital/subject matter expertise is known to exist in both IT and business domains.
- Gain and maintain endorsement from business managers by demonstrating the value gained through the collaborative support hub via reporting usage data, impact on the number of contacts IT receives and user feedback in a business value dashboard.
- Operate the collaborative support hub efficiently by appointing a community manager and community moderators.
- Create opportunities for broader engagement and career advancement by enlisting non-IT employees where they can demonstrate and develop their digital dexterity.

Gartner Recommended Reading

Innovation Insight for Collaborative Support Hub

Transform IT Support by Developing Collaborative Support Hub Roles and Competencies

What Workers Want: Top 10 Insights From the Digital Worker Experience Survey

IT Sustainability Management

Analysis By: Autumn Stanish

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Emerging

Definition:

IT sustainability management refers to both the practice of using IT monitoring/management tools for sustainability, as well as new and emerging solutions designed specifically for the purpose of measuring the environmental footprint of IT. Specific functionality includes asset life cycle optimization, energy consumption and efficiency tracking, and optimized workload balancing.

Why This Is Important

Enterprise sustainability programs require technology solutions to accelerate and scale reporting and performance against environmental impact reduction goals. New IT monitoring tools are emerging to offer simple, clear and transparent ways to both measure and action sustainable IT objectives.

Business Impact

Stakeholders continue to demand better reporting and transparency of the environmental footprint of IT operations. IT leaders can use IT sustainability monitoring to easily track and report on IT's efforts and progress toward their organization's sustainability goals. Most include data integration capabilities feed data into ESG tools and reporting frameworks to significantly reduce overhead.

Drivers

- Sustainability has become a large societal concern globally, which is driving examination of environmental performance in all aspects of the business — especially IT.
- Internal carbon taxes are placing pressure on IT leaders to identify and reduce technology-related carbon emissions.
- The IT industry has not yet standardized sustainability metrics, making it difficult for IT leaders to create a baseline measurement and prioritize efforts.
- IT sustainability monitoring tools are emerging from various hardware and software vendors to help organizations easily collect emissions and energy consumption data to inform sustainability initiatives and investment decisions.
- In response to the dual need for reduced costs and improved environmental performance, monitoring tool vendors also include the ability to track and reduce the energy consumption of employee devices, and extend device lifespans to avoid unnecessary purchasing.
- IT leaders need more real-time analytics and data-integration to streamline reporting up to the ESG practice and reallocate their time toward delivering on their sustainable initiatives.

Obstacles

- Energy efficiency calculations are based on each country's averaged energy grid mix, therefore, there is a varying margin for error depending on the region and access to renewables.
- Most tools will only report on scope 1 and 2 emissions. Scope 3 calculations are considered in some specific use cases, however, they are absent for most devices given the inaccuracy of product carbon footprint calculations and complexity of IT equipment life cycle measurement.
- The cost and overhead of adding another tool into the environment.
- The efficacy of the tools in accurately measuring across all types of technologies.
- Many IT leaders are still challenged by availability, performance and customer experience. To prioritize sustainability, more maturity and stability is needed in I&O.

User Recommendations

- Check with any existing data center infrastructure monitoring (DCIM) and/or digital employee experience management (DEX) tool vendors to see if they have a module or add-on product that can easily begin tracking the energy, waste and emissions impact of this equipment. The two biggest contributors to IT greenhouse gas emissions are employee devices and servers.
- Question the sources of inputs. Ensure that any data averages used in the tool are tailored to the device or facility's specific make, model and region.
- Ensure the tool can integrate its data with existing ESG-tracking software in the organization to streamline reporting.
- Prioritize solutions that can provide recommendations and automation, rather than just monitoring.

Sample Vendors

1E; Dynatrace; IBM; Lakeside Software; Nexthink; SentryOne

Remanufactured IT Equipment

Analysis By: Autumn Stanish

Benefit Rating: Moderate

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Definition:

Remanufactured IT refers to a process that goes beyond traditional refurbishment to restore IT equipment (devices, switches, servers, etc.) to a state of "like new" or "better than new." This is accomplished through cosmetic restoration, upgraded components and quality testing. Once completed, equipment is either resold or redeployed for reuse. This approach looks to reuse IT hardware in a sustainable manner that improves costs, maximizes utilization, and reduces carbon footprint and e-waste.

Why This Is Important

Remanufactured IT equipment processes offer a new avenue for IT equipment to be resold and reused in a manner that has minimal impact on the environment, while providing financially attractive and more-frequently available sources of material. The drawbacks to traditional refurbished IT, in terms of reliability, are remediated out of this process. Most providers of remanufactured equipment offer warranty coverage for as long as three years.

Business Impact

Remanufactured IT equipment offers IT organizations the opportunity to improve their financial and environmental performance by procuring certified carbon-neutral equipment that can save as much as 40% on overall hardware spending. In addition, having a remanufacturer relationship enables the organization to take advantage of availability in a less-competitive resource stream, when supply is constrained.

Drivers

Demand for remanufactured IT equipment has been driven by a variety of factors:

- Environmental sustainability is changing the way IT products and services are produced, purchased and consumed. The shift to a carbon-cutting “climate economy” is driving demand for secondary markets and new business models designed to reharvest value from e-waste.
- In France, IT hardware procurement deals must consist of at least 20% recycled or refurbished products. Legislation is being considered in other countries throughout Europe.
- Equipment manufacturers have begun prioritizing modularity in their product designs as the “right to repair” movement strengthens, with codifications in New York and potentially more states throughout the U.S., making remanufacturing a more-viable process.
- Carbon emissions from equipment manufacturing make up nearly half of IT’s carbon footprint in most organizations, causing those with IT sustainability strategies to leverage remanufactured equipment as a way to contribute to the circular economy and avoid emissions.

- Budgets have grown increasingly constrained as the cost of IT equipment remains elevated. Remanufactured IT equipment offers a financially advantageous alternative to organizations looking to reduce costs, while providing a desirable IT experience for employees.
- The affordability of premium device types, such as Apple Macs, has become an appealing way to provision more-expensive, preowned equipment at a fraction of the cost.

Obstacles

Embracing remanufactured IT equipment can be challenged in several ways:

- The stigma against refurbished IT equipment as unreliable and low-quality
- Windows 11 hardware requirements, which limit the pool of eligible commercial devices
- Limited configuration options resulting from inconsistent availability of equipment models
- A growing focus on the digital employee experience and the desire to offer the newest and greatest devices with sleeker design for employee retention
- Trade-offs between efficiency improvements of new technology and the design constraints of older equipment
- Availability of support — hardware parts for warranty, as well as OS support and bug/security fixes for drivers and firmware
- The trade-off between energy consumption and manufacturing emissions, which complicates servers' sustainability benefits — a newer server could do more with less energy during its life cycle, which is more efficient than an older server (depending on the energy source)

User Recommendations

- Ensure that providers offer specific quality certifications, such as BSI Kitemark, Renewd and ISO9001.
- Select a core group of users, such as administrative workers or call center agents, who require only simple configurations, to pilot and test the performance of remanufactured devices in the organization's environment.
- Discuss take-back and recycling strategies with the vendor at the forefront of the deal to ensure full circularity after its second life.
- Require the original vendor to provide updates that fix security issues for the expected life of the solution.

Sample Vendors

Circular Computing; Recommerce

Gartner Recommended Reading

The Complete Guide to a Sustainable Device Life Cycle Using the IT Circular Economy

Unlock the Business Benefits of Sustainable IT Infrastructure

Positioning I&O for Environmental Sustainability

Climate Economy: A Clean, Digital and Circular Revolution

DaaS Optimization Tools

Analysis By: Stuart Downes, Craig Fisler, Sunil Kumar

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

DaaS optimization tools (DOTs) integrate with desktop as a service (DaaS) services through APIs and provide cost-efficiencies, automation and enhanced capabilities. Storage management, application management and user profile management are included in some DOTs. The main purpose of DOTs is to optimize DaaS spending and reduce the complexity of deploying and operating DaaS environments.

Why This Is Important

The use of desktop as a service (DaaS) is now commonplace as DaaS vendors take ownership of the infrastructure and operations for virtual desktops and applications. The challenge is that many self-assembled DaaS solutions still require design decisions and operational effort, which adds complexity and requires skilled IT staff. DOTs use APIs to integrate with DaaS offerings, provide the ability to reduce costs, automate tasks and add additional features.

Business Impact

DOTs allow infrastructure and operations (I&O) leaders in all industries to:

- Optimize spending on DaaS through automatic rightsizing and autoscaling, and powering off VMs when not in use.
- Automate deployment and add additional capabilities that don't exist in the native DaaS offering, for example, automating operational functions like deploying a new image.
- Provide improved information and analytics related to DaaS usage.
- Pay for DOTs primarily using cost savings delivered by DOTs.

Drivers

- Many customers find self-assembled DaaS solutions to be more complex and expensive than expected. Spending for DaaS solutions with consumption-based pricing is not predictable and can be difficult to control without continual manual effort.
- Organizations may not have the skills required to design and operate self-assembled DaaS. Microsoft PowerShell scripting knowledge is often required for advanced tasks. DOTs allow reduced skill levels.
- Power management is not automatically or optimally performed by some DaaS tools, resulting in higher costs.
- Customers with mature on-premises virtual desktop infrastructure (VDI) platforms that migrate or expand to the cloud may find DaaS is not as “feature rich” as their existing toolset and will require DOTs to fill in some of the gaps.

Obstacles

- DOTs have been primarily designed for Microsoft Azure Virtual Desktop, resulting in limited applicability to other DaaS platforms.
- Many organizations have a public cloud cost-optimization tool such as IBM Turbonomic, Apptio or Densify, which reduces the benefit of a DOT.
- DaaS vendors including Microsoft and Amazon are building capabilities into their products to provide the base capability that DOTs offer.
- DOTs are most applicable to self-assembled DaaS solutions with consumption-based billing. Organizations are increasingly adopting vendor-assembled DaaS solutions with predictable pricing, which reduces the benefit of deploying an optimization tool.
- By their very nature, DOTs reduce unnecessary spending, which is invisible to finance teams or other stakeholders who would agree to their purchase.

User Recommendations

- Adopt DOTs when adopting compatible user-assembled DaaS solutions. DOTs will move quickly through the Hype Cycle reaching the plateau within two to five years as the DaaS vendors are incorporating base DOT capabilities in their core offerings. DOTs are applicable primarily for Microsoft Azure Virtual Desktop.
- Focus on key cost drivers and time-consuming tasks like powering off VMs when not in use, dynamically managing storage and automating common operational tasks when deciding whether to use DOT or to only use the DaaS console and features.
- Maintain information on the savings that a DOT is achieving in order to justify future purchasing renewals.
- Research the features of your DaaS tool, and pay close attention to emerging features to ensure that you understand new features that may reduce the value of DOT spending.

Sample Vendors

Anunta; Cycloud; Nerdio

Gartner Recommended Reading

How to Avoid Surprise Costs With Desktop as a Service

Video: PCs, Virtual Desktops or DaaS: What's the Best Fit for Midsize Enterprises

How to Choose a Desktop Delivery Model for the Digital Workplace

Unified Endpoint Security

Analysis By: Chris Silva, Franz Hinner

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Emerging

Definition:

Unified endpoint security (UES) is a strategic architecture that integrates endpoint operations and endpoint security workflows and tools, which helps to create a complete risk identification, analysis and remediation cycle. UES results from the integration of selected capabilities from unified endpoint management (UEM) tools and endpoint protection (EPP) including endpoint detection (EDR) and mobile threat defense (MTD) tools.

Why This Is Important

Endpoint protection tools can thwart exploits before the device vulnerability is even remediated, but many cannot resolve the underlying misconfiguration, missing patch or update.

UES architecture is the lining of unified endpoint management and EPP tools and workflows, incorporating live, contextual threat intelligence to prioritize patches and remediations for managed endpoints. EPP protects vulnerable systems and informs UEM, which repairs the underlying issues via scheduled maintenance.

Business Impact

Integration of EPP threat intelligence into the endpoint operations process improves:

- Risk-based patching by the UEM and configuration prioritization.
- Consistency of endpoint configuration and patch compliance, though the integration of endpoint protection and unified endpoint management tools.
- Proactive, accurate risk calculation through integrating UEM and EPP tools to continually vet endpoint configuration.

Drivers

The 2022 Gartner Security Vendor Consolidation XDR and SASE Trends Survey, found that 75% of organizations are actively pursuing a security vendor consolidation strategy, an integration that helps create:

- Norms for when and whether things like automatic risk remediation — in the form of a patch or update — should be undertaken.

- Automated, risk-aware endpoint posture protection that follows the user, in contrast to network-based controls and restrictions, often moot for workers accessing SaaS applications off-network.

- Defensible patch metrics centered on risk, not completeness, to actively reduce endpoint attack surface.

Obstacles

- A multivendor environment that requires manual integration of tools. These integrations increase maintenance and support complexities.

- Choosing a consolidated set of tools from a single vendor will raise dependence on this vendor and may lengthen the process of seeking replacements if pricing or other engagement details change.

- Gartner estimates it will take two or three years before this technology crests the peak of the Hype Cycle, with ownership of the operations and security domains separated in many organizations, making unified planning difficult.

User Recommendations

- Assess the potential for integration between EPP and UEM and seek to achieve a one-way integration between the two to improve prioritization of patching.

- Investigate organizational capabilities to implement near-real-time endpoint patch or configuration change remediations are possible; if not, modernizing endpoint management is the first step to take.

- Consider the use of UES architecture to drive other dynamic security outcomes such as integration of UES risk data to be used in dynamic SSE/ZTNA access decisions.

Sample Vendors

BlackBerry; IBM; Ivanti; Microsoft; Sophos; Syxsense; Tanium; VMware

Gartner Recommended Reading

Magic Quadrant for Endpoint Protection Platforms

Guide to Endpoint Security Concepts

AR Cloud

Analysis By: Tuong Nguyen

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Definition:

AR Cloud enables the unification of physical and digital worlds by delivering persistent, collaborative and contextual digital content overlaid on people, objects and locations to provide information and services tied to physical surroundings.

Why This Is Important

The AR Cloud will change how enterprises exploit and combine physical and digital assets — by creating a seamless merging of physical and virtual objects and services, and creating new business opportunities (along with associated risks).

The AR Cloud is the content layer that will make spatial computing possible on a large scale. It forms a multilayer digital representation (including the associated ontology and graphs) of people, objects and locations in the physical world.

Business Impact

AR Cloud is the content layer that will make spatial computing and web possible. AR Cloud will:

- Facilitate spatial computing — a key element for the transformation of the metaverse.
- Enable ubiquitous augmented reality experiences.
- Inspire digital innovation leaders to monetize the physical world via new interaction paradigms by anchoring digital content to people, places and things.
- Enhance physical interactions in industries, such as logistics, manufacturing and retail.

Drivers

- Metaverse hype has reignited AR Cloud interest because it is a key element of spatial computing, which in turn is an important aspect of metaverse interactions.
- For marketers, retailers and property owners, it opens up new opportunities for hyper-realistic experiences that can help engage with customers in new ways, improve customer experience and differentiate the brand.
- For enterprises, AR Cloud (via spatial computing) can be used to deliver contextual relevant content to facilitate collaboration and improve productivity, safety and efficiency.

Obstacles

- Early implementations of the AR Cloud are fragmented and minimally interoperable.
- Adjacent technologies (such as computer vision, Internet of Things, graph technologies) need to evolve to fulfill the aspirations of the AR Cloud.
- New technologies and techniques are needed. For example, spatial registries and semantic graphs to address and monitor digital-physical processes.
- A common interface is needed for widespread adoption.
- AR Cloud content and digital legends anchored to people, objects and places in the physical world.
- The underlying infrastructure (the system layer, or spatial web) will need to be created.
- Standards and protocols are needed to perform tasks such as collecting and publishing data for AR Cloud experiences.
- Best practices need to be developed to address potential safety, security and privacy concerns that will arise from these highly contextualized, and personalized experiences.
- Vendors will compete to establish dominating, potentially proprietary standards.

User Recommendations

- Explore new business possibilities and use cases collaboratively between IT and business by evaluating potential areas of impact. For example, in city management, collaborative, dynamic and contextualized maps of cities will highlight details, such as public restrooms, transit locations, traffic issues and wayfinding, as well as utility maintenance records, log fix-it requests and government office locations.
- Identify potential obstacles, opportunities or risks caused by content that is localized (edge-based), persistent, collaborative and shared across users.
- Define privacy parameters, for example, what should be captured by sensors (image, mapping, location) and how will that data be stored.
- Create guidelines to manage content (like segregating data into public and private realms).
- Establish hierarchies for data capture and protection.
- Evaluate the impact of massive physical data collection vis-a-vis compliance for privacy regulations and policy like General Data Protection Regulation.

Sample Vendors

Apple; Meta; Google; Inpixon; Microsoft; Niantic Labs; Snap AR; VERSES

Gartner Recommended Reading

Emerging Tech Impact Radar — The Metaverse

Emerging Technologies: Tech Innovators in Augmented Reality — AR Cloud

Emerging Technologies: The Future of the Metaverse

Emerging Technologies: Tech Innovators in Augmented Reality — Spatial Web

Employee Enablement

Analysis By: Tom Cipolla, Dan Wilson

Benefit Rating: Low

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Definition:

Employee enablement is an IT strategy focused on empowering employees with the tools, support and skills required to increase digital dexterity and self-sufficiency. This reduces dependence on the availability of IT support staff to address basic issues and reduces digital friction and increases productivity.

Why This Is Important

Hybrid work and the increasing rate of technology change are overwhelming IT teams, making it hard to keep pace with demand. Enabling employees to become more digitally dexterous and self-sufficient is key for organizations to scale their internal services without additional headcount.

Business Impact

It is critical to break the culture of IT dependency to increase capacity and transform from a reactive control-based organization into an enabling organization. Specific impacts include:

- Expanded employee self-sufficiency and digital dexterity.
- Improved experience and reduced operational workload due to automated resolution of repetitive and often unreported issues.
- Increased employee IT satisfaction and retention by removing barriers that cause digital friction.

Drivers

- The increased cadence of technology updates and application deployment volume has overwhelmed IT's ability to keep pace with demand.
- Digital employee experience (DEX) is now a critical component of and primary determinant of overall employee experience.
- Employees' view of their proficiency with technology is increasing. Over 74% of digital workers considered themselves either proficient or experts within the 2022 Gartner Digital Worker Survey.
- Traditional training methods and materials are significantly less effective than enablement practices that use proven organizational change leadership principles.

Obstacles

- Legacy, control-based IT cultures that prefer that “users” only do what they are told.
- IT leaders that lack empathy for employees are less likely to accept responsibility for employee enablement and their role in improving DEX.
- Employee experience improvements are not prioritized by the organization or IT.
- IT leaders measure value based on employee dependence on their teams for basic needs and the volume of activities they perform rather than on their teams’ overall business impact.
- Organizations with legacy or siloed operational models will struggle to enact the IT-wide holistic improvements needed to better enable employees.
- ROI of employee enablement is difficult to measure since the benefits of employee self-sufficiency are mainly subjective.
- Underestimation of employees’ capacity to support themselves or a lack of trust that they will be successful.
- Failure to incorporate employee feedback into the change planning cycle or viewing feedback through an IT-centric mindset.

User Recommendations

Employee enablement is in the Hype Cycle for the second year and is currently positioned on the rise. Slow, but steady movement through the Hype Cycle is expected. To successfully enable employees, leaders should:

- Strengthen organizational support by championing the importance and value of employee enablement and gaining buy-in from executive leadership.
- Develop a comprehensive strategy by establishing an enablement team co-chaired by digital workplace and HR leaders, supported by global learning, corporate communications, facilities, operations, finance and legal.
- Improve employee experience and reduce digital friction by making DEX a core tenant/pillar of your enablement strategy.
- Strengthen technology communications and feedback loops by building an influencers network.

- Uncover hidden insights in harsh or critical feedback by taking an empathetic view of the employee experience.

Gartner Recommended Reading

Employee Enablement Is Key to Digital Workplace Services Leaders' Survival

How to Build and Manage a Digital Workplace Influencers Network

What Workers Want: Top 10 Insights From the Digital Worker Experience Survey

Digital Employee Experience

Analysis By: Lane Severson, Tori Paulman

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Emerging

Definition:

Digital employee experience (DEX) is a discipline that focuses on how technology affects the overall employee experience (EX). With work becoming increasingly dependent on digital technologies, organizations must embrace experience-focused methods, such as personas, journey mapping, measurement and listening, to deliver an experience that boosts digital dexterity and personal growth, builds team unity, and helps employees achieve organizational goals.

Why This Is Important

Employees spend more of their time working digitally than ever before; the digital experience affects the overall employee experience. Digital experiences make up most employee experiences, but 66% of employees experience moderate to high digital friction when using technology. On an average, employees must use 11 applications to do their work, with 36% using 11 to 25, and 5% using more than 26.

Business Impact

A holistic, coordinated approach to DEX across IT and with non-IT partners can minimize digital friction and maximize workforce digital dexterity and well-being. IT teams delivering great DEX improve their organization's talent retention, team effectiveness and process efficiencies, and adopt new ways of working. DEX significantly impacts a workers's intent to stay, with 82%, who believe they work with modern technology and engaged IT staff, intending to stay and/or grow within their organizations, compared to only 58% who do not.

Drivers

- Companies look for every advantage to attract and retain talent. Organizations must go beyond providing modern technology and services to deliver digital experiences that meet a diverse set of employees where they are in their digital workplace maturity and alignment with digital workplace ambitions.
- As foundational digital workplace technology is standardized across organizations, IT leaders are looking to provide differentiation by the way they facilitate the customization of tools to roles and processes in the organization.
- Persona, journey mapping, user experience (UX) design and design thinking are being used to ensure technology investments have a positive impact on both DEX and EX.
- Business leaders are increasingly looking for guidance on how technology can help address key strategic concerns around employee productivity, engagement experience, well-being and skills development, as well as organizational alignment.
- IT leaders are increasingly investing in DEX tools that collect and combine qualitative measurement (employee feedback) with quantitative measurement (performance, stability and use) of technology, and leverage automation and employee engagement to improve DEX.

Obstacles

- Building a business case for DEX is difficult. Common measures are subjective and benefits can't be directly attributed to DEX initiatives.
- Cost to acquire, implement and integrate technologies to improve DEX.
- DEX requires shifting from activity- and service-based to new experience- and value-based measures of success.
- The human-centric nature of DEX may not be appreciated by technology-centric IT leadership and staff.
- Low-maturity organizations may not be ready for DEX, because their focus remains on basic IT operations concepts (for example, IT service management [ITSM], endpoint management and technical debt reduction).
- Clients often cite lack of IT leader and staff skills to pivot focus toward experience development. Most organizations still do not see this as a part of their remit.
- Because DEX and EX are directly linked, if IT and HR (who owns EX) are not collaborating, success in improving either will be impaired.
- Organizations facing staffing reductions may not have the resources to invest in DEX leadership, staffing or technology.

User Recommendations

- Make the digital workplace the central point of coordination for all DEX activities.
- Align key partners in EX, HR and facilities, along with business leaders, by expanding the employee value proposition (EVP) to include DEX.
- Focus DEX initiatives by creating employee personas and prioritizing high-impact roles first. These may include revenue generating roles, customer service or product development.
- Identify key moments in an employee journey such as “the first day at work” or “return to the office” to improve, as opposed to attempting to change, the entire onboarding process.
- Combine personas and journey mapping to catalyze identification and reduction of digital friction points.
- Combine objective data from DEX, or other monitoring and management tools, with subjective data from employee listening and voice of the employee programs to guide DEX initiatives.

Gartner Recommended Reading

Deliver Peak Digital Employee Experience Excellence in 4 Steps

Tool: Digital Employee Experience Journey Maps

Innovation Insight for the Digital Employee Experience

Digital Platform Conductor Tools

Analysis By: Roger Williams, Dennis Smith

Benefit Rating: Transformational

Market Penetration: Less than 1% of target audience

Maturity: Embryonic

Definition:

Digital platform conductor (DPC) tools coordinate the various infrastructure tools used to plan, implement, operate and monitor underpinning technology and services for applications and digital products. They enable digital business, regardless of the environments used or who owns them. DPC tools provide a unified view of underpinning technologies and their connection to applications. This augments strategic decision making and improves the value obtained from technology investments.

Why This Is Important

Traditional, cloud and hybrid infrastructure management tools do not inherently provide an integrated view of infrastructure across all environments. Moreover, as infrastructure and operations (I&O) leaders struggle to manage their portfolio of investments to enable composable business, optimize costs and reduce risks, they need help with filling the gaps in visibility, assurance and coordination. DPC tools promise to help close these capability gaps and are improving in their ability to do so.

Business Impact

DPC tools deliver the following benefits not inherent in more focused infrastructure management toolsets:

- Visualizing digital platform performance across all life cycle stages — planning, implementing, operating and monitoring.
- Enabling continual optimal performance and placement of workloads in all environments — on-premises, in the cloud or at the edge.
- Ensuring tangible business value from improvement efforts across all technology architectures — compute, storage, middleware and network layers.

Drivers

- Difficulty in maintaining a coherent view of all technology infrastructure resources and their dependencies that are aligned with changes to services, applications and components, as well as the configuration of their promised performance levels.
- Lack of transparency into spending on hybrid digital infrastructure and how resource capacity aligns with actual application workload demand.
- Need to guide where workloads are processed (data center, public cloud, colocation facility, etc.) based on requirements, including capacity, cost and dependency dynamics.
- Challenges with estimating the value, efficiency, quality and compliance delivered by hybrid digital infrastructure based on aggregated data from performance analysis tools and other hybrid digital infrastructure management (HDIM) toolset data feeds.
- Desire for a single point of entry and reporting for digital platform resource requests, and routing them to appropriate HDIM tooling for fulfillment.
- Desire to reduce the level of skills and effort required within initiatives to improve operations and digital employee experiences.
- Gaps, duplication and conflicts in data to support application workload migration and business continuity goals, as well as protection of data from accidental deletion or malicious activities.
- Inability to confirm compliance of application workloads and digital platforms to identity requirements and security baselines as part of the organization's cybersecurity mesh approach.
- Poor credibility of business cases for digital platform improvements, including: assessing business impact; measuring gaps between current and desired performance; providing oversight of improvement efforts; and validating benefits delivered.

Obstacles

- Lack of interoperability: Tool sprawl and difficulties in integration inhibit DPC tool adoption. The technology landscape is littered with failed approaches that were intended to support data sharing between vendors.
- Lack of data credibility: The desire for a complete, accurate view of all technology as a precondition for decision making has been around for decades, yet is no closer to being realized. Customers that demand perfect data before they act, and vendors that require complete and accurate data for their tools to function properly, will continue to co-create expectations that will not be met.
- Lack of budget: DPC tools may be viewed as “overhead” that does not have a compelling business case. No one likes paying for something that does not appear to address specific pain points felt today.
- Lack of vendor commitment: Many vendors will be tempted to “DPC wash” their existing offerings and claim that these capabilities are already addressed or can be added for very little cost.

User Recommendations

- Build a DPC tooling strategy that supports digital business ambitions by defining the management elements, environments and technology layers required to meet the organization’s infrastructure needs now and in the future.
- Address measurement and coordination gaps by working with key stakeholders to identify infrastructure value and risk and cost objectives, and by making targeted investments in integration, dependency mapping and continuous improvement capabilities.
- Plan for DPC tooling investments by determining which DPC capability aspects are needed in the short, medium and long term. Compare these capabilities to current and future vendor offerings for infrastructure management tooling that can provide initial DPC tool functionality.
- Ensure that DPC tooling investments can deliver sustained value by requiring that DPC tool marketers show how the tool will address current organizational pain points and how it will adapt to future needs as organizational requirements evolve.

Sample Vendors

Cloudsoft; Flexera; HCLTech; IBM (Turbonomic); Oomnitza; OpsRamp; ReadyWorks; Snow Software; Virtana

Gartner Recommended Reading

Market Guide for Digital Platform Conductor Tools

3 Steps to Improve the Reliability of Large, Complex and Distributed IT Systems by Leveraging SRE Principles

Immersive Meetings

Analysis By: Christopher Trueman

Benefit Rating: High

Market Penetration: Less than 1% of target audience

Maturity: Emerging

Definition:

Immersive meetings involve the use of immersive technology (VR, AR, MR, metaverse) to host meetings and gatherings. Attendees — represented by avatars or holograms of real people — are able to see, move and interact with shared virtual elements and other people in a manner similar to an in-person meeting or social gathering.

Why This Is Important

Immersive meetings provide a more natural meeting experience by providing presence, body language or gestures with virtual representations of people and/or a shared, 3D frame of reference — including physical objects for local participants and digital objects for remote participants. Traditional videoconferencing and meeting solutions do not provide the same level of immersion. Hosting an immersive meeting results in a more casual and human experience, and could ease meeting fatigue.

Business Impact

Immersive meetings range from a few to hundreds of attendees (often spread across multiple instances). Remote collaboration scenarios see the greatest benefits due to their impact on participant engagement. Several added values provided by these technologies over existing videoconferencing and meeting solutions include:

- Greater participant engagement
- Reduced distractions/multitasking (in VR specifically)
- Natural gestures and body language
- Replacement of additional physical meetings in the long term

Drivers

- Employee preferences have shifted in favor of remote and hybrid working, a trend that Gartner expects to continue. Organizations are reevaluating their strategies and processes as a result of this shift, making them open to disruptive new technologies such as immersive meeting tools.
- Immersive meetings provide new capabilities that allow certain meeting use cases to be more effectively digitized, such as training in hazardous environments or design review meetings for physical products. As such, these meetings are more likely to remain virtual, reducing the need to travel and generating potential cost savings.
- Companies seeking to actively reduce travel to meet corporate sustainability goals can tie immersive meeting technology to these key initiatives.
- Proven success stories from organizations pioneering immersive meeting tools will drive more companies to pilot and adopt these solutions.
- The move from in-person meetings to videoconferencing platforms was successful for most meeting types, but informal, social and highly interactive meetings struggled to reach the same level of engagement. There is a growing interest in using immersive technologies to build more engaging virtual meeting experiences going forward.
- Creating a virtual space, or overlaying virtual elements on a real world location, allows meeting organizers, planning teams, advertisers and vendors to leverage their existing skills. Banner advertisements, booths, stages, showrooms, information desks, gathering spaces, signage and other aspects of physical spaces can be recreated virtually.
- Head-mounted display (HMD) technologies will see significant improvements and price reductions in the coming years, reducing the cost of entry, especially for interactions using hands-free or wearable devices.
- Eye-tracking and pupillometry sensors in HMDs can provide unique data and analytics opportunities.

Obstacles

- For multiple reasons, immersive meetings cannot currently replace traditional videoconferencing.
- HMDs are expensive today, and a lack of standardization in display technologies, controllers and input devices means that selected devices can limit or enhance the user experience and make setup difficult.
- Creating custom environments and experiences require specialized skills that most organizations lack. Extensive professional service engagements or commissioned work can inflate costs.
- VR can cause users to experience motion sickness, eye strain, headaches and other physical symptoms. This can make immersive meetings challenging for many users. Some users may see symptoms lessen with increased exposure to the technology, but some never do. Improvements to hardware, devices and VR collaboration software to mitigate these adverse reactions are still in an early, experimental stage, with options varying by platform.
- The long-term value of immersive meetings is as yet unproven.

User Recommendations

- Start any virtual or augmented reality implementation by carefully considering the use cases for immersive meetings within your organization.
- Create a successful initial pilot by targeting an area where there is a clear benefit for immersive meetings over a traditional videoconferencing approach.
- Link immersive meetings to key business initiatives, such as organizational digital transformation, by coordinating your actions with key stakeholders.
- Supplement any lack of skills or experience with immersive meetings within IT by leveraging professional services, training and other resources available from your service providers, partners or third parties.

Sample Vendors

Arthur; ENGAGE; Glue; Kazendi; meetingRoom; MeetinVR; Meta; Remio; Spatial

Gartner Recommended Reading

Quick Answer: What Is a Metaverse?

Quick Answer: How Will the Metaverse Shape the Digital Employee Experience?

Quick Answer: What Emerging Metaverse Capabilities Should Be Prioritized for More Effective Meetings?

Emerging Tech: Impact of Metaverse on Edge Devices and Infrastructure

At the Peak

Linux Endpoint Management

Analysis By: Dan Wilson

Benefit Rating: Low

Market Penetration: 1% to 5% of target audience

Maturity: Adolescent

Definition:

Linux endpoint management is gaining interest from IT leaders amid growing demand for alternatives to Windows for common use cases. These include IT and software development, thin clients, workplace IoT, commercial drones and operational technology (OT). Vendors that offer Linux endpoint management are part of several markets, including UEM, CMT and remote monitoring and management (RMM). The breadth and depth of management capabilities vary between tools and Linux distributions.

Why This Is Important

Broader adoption of Linux endpoints, even for niche use cases, still requires formal controls and compliance with company technology and security policies. Linux endpoints traditionally have been supported by server administrators using specialized tools, but most responsibility should be assigned to endpoint management. Although unified endpoint management (UEM) tools are expanding Linux management capabilities, most Gartner clients report limited support for specific distributions or features.

Business Impact

IT leaders can benefit from using Linux endpoint management tools to:

- Add Linux to a comprehensive endpoint management and security strategy.
- Transfer management responsibility from infrastructure to the engineering teams that manage all other endpoints.
- Reduce cyber risk through improved patch management and configuration compliance.
- Ensure Linux-based endpoints follow security, compliance and digital employee experience (DEX) standards.

Linux endpoint management is back for a second year, with hype nearing the Peak of Inflated Expectations. Slow movement through the Hype Cycle is expected due to low enterprise adoption.

Drivers

- Linux continues to grow in popularity for specific endpoint use cases, including software development, commercial drones, robots, Internet of Things (IoT) and OT.
- Server administrators want to transition support for Linux endpoints to the digital workplace or endpoint management teams.
- A growing number of UEM and client management tools (CMTs) include support for Linux distributions.
- Cyberattacks are targeting Linux endpoints with ransomware and cryptojacking.
- Broader use of Linux requires formal controls to ensure compliance with company and security policies.
- Clients are looking primarily for these Linux endpoint management capabilities: device enrollment and provisioning; OS settings, policy configuration, updates and patching; application deployment and patching; execution of scripts; hardware and software inventory; log collection; geolocation; remote device wipe; endpoint analytics; and remote control for support.
- Broader distribution support is also driving hype. The most commonly supported Linux distributions include CentOS Linux, Red Hat Enterprise Linux, Debian, SUSE and Ubuntu.
- IT is also looking for deeper integration with identity management, remote access VPN and endpoint security tools to ensure consistency with other operating systems.

Obstacles

- Many UEM tools do have limited support for Linux distributions or features, so several tools may be required to cover various distributions.
- Endpoint management teams rarely have Linux management experience, while employees who use Linux tend to be highly technical.
- There are over 600 unique Linux distributions and at least seven different GUI options.

- A common API standard or framework does not exist across distributions.
- Unlike Windows and macOS, Linux deployments generally require unique technical expertise.
- Patch timing and availability vary heavily (no Patch Tuesday), and patch techniques are script-focused.
- Compatibility varies with endpoint security, remote-access VPN, remote control and standard productivity apps.
- Linux-based IoT devices are often unattended and lack constant network or internet connectivity.

User Recommendations

To ensure appropriate management and compliance of Linux endpoints, IT leaders should:

- Discover unmanaged Linux endpoints using an asset discovery or vulnerability management tool.
- Minimize the risk of Linux endpoints that cannot be fully managed by applying network segmentation and zero-trust principles.
- Close vulnerabilities continuously by automating OS and application patching wherever possible.
- Standardize one or a limited number of Linux endpoint distributions to prevent sprawl.
- Select the right Linux endpoint management tool by prioritizing support for required Linux distributions first, then specific capabilities for each distribution.

Sample Vendors

Bacon Unlimited; HCLSoftware; Ivanti; ManageEngine; Matrix42; Microsoft; NinjaOne; Syxsense; Tanium; VMware

Docking Monitors

Analysis By: Stephen Kleynhans

Benefit Rating: Moderate

Market Penetration: 20% to 50% of target audience

Maturity: Mature mainstream

Definition:

With USB Type-C now the standard for both power and display connections, many monitors have embedded docking capabilities, eliminating the need for separate docking stations. This simplifies setup and potentially reduces costs with only moderate trade-offs in capability.

Why This Is Important

With the shift to notebooks driven by hybrid working, docking stations have become an essential component to connect external monitors and enable a richer desktop-style end-user experience for focus activities. Embedding the dock within the monitor enables a single cable to both power a notebook and connect it with large external monitors, peripherals and wired networks which can dramatically simplify setup for users.

Business Impact

Using docking monitors instead of external docking stations reduces the number of connections, cabling and upfront purchase costs. With the increasing need to support both home and office-based hotelling environments, the simplified setup, seamless connections, and improved reliability of docking monitors also reduces support costs associated with hybrid workstyles.

Drivers

- Simplifies setup and conserves desk space by using a single cable to connect a notebook computer for both power and the monitor, and other potential peripherals (keyboard, mouse, headset, camera, wired Ethernet). This improves reliability and the overall user experience.
- Many docking monitors now include conferencing peripherals such as webcams, speakers, and noise-canceling microphones further simplifying setup.
- Reduces the cost of a docking setup. The added cost to the monitor is typically about half the cost of a stand-alone docking station.
- While supply issues with docking stations are mostly resolved, docking monitors broaden the set of options available for outfitting work environments of different types.
- The requirement to maintain firmware and specialized drivers for dedicated docking stations add to the operational workload and can introduce technical debt, hence making docking monitors a better solution to opt for.

Obstacles

- Connecting dual monitors requires leveraging daisy-chaining of monitors, which is not supported by many older monitors.
- Easily supporting more than two displays is not possible.
- Potentially fewer additional USB ports for connecting peripherals which are also less accessible in the back compared to dedicated docking stations.
- Typically lower power output for powering the notebook (typically under 100 W) results in slower charging when compared to a traditional dock.
- Many docking stations have a power switch that can control the notebook, but this isn't usually available with docking monitors.
- Limits monitor selection to a smaller selection of displays, eliminating some less common resolution and price options that aren't offered with built-in docking capability.

User Recommendations

- Examine docking monitors as an alternative to docking stations to reduce the number of components on the desk, should be done by organizations looking to outfit large hot-desk hoteling setups.
- Test with your current devices, and ensure drivers are up-to-date for smooth operations.
- Beware of potential capacity limitations for powering more power-hungry workstation-class laptops.
- Ensure selected vendors have tools to update the firmware in docking monitors.

Sample Vendors

Dell Technologies; HP Inc.; Lenovo; Samsung Electronics

Gartner Recommended Reading

Recommended Configurations for Notebooks and Desktop PCs, 2H22

Market Guide for Enterprise Desktops and Laptops

Continuous Endpoint Engineering

Analysis By: Sunil Kumar, Dan Wilson

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Definition:

Continuous endpoint engineering (CEE) is an agile approach for the digital workplace that helps organizations keep pace with accelerated technology updates. The cycle begins when a vendor signals an upcoming change or as IT initiatives change. Additional phases include determining applicability, pilot testing, engaging stakeholders, deployment/enabling and measuring impact.

Why This Is Important

Increased dependence on technology and accelerated rate of change are overwhelming IT, undermining system stability and degrading the digital employee experience (DEX). CEE speeds up the process and execution of changes by replacing traditional operating models that were designed for multiyear operating systems and application update life cycles. It reduces the frequency of poorly communicated feature releases, the difficulty of upgrades and the lack of vendor support when issues arise.

Business Impact

CEE enables IT leaders to streamline operations and shift focus from technology management to generating business value. Specific impacts include:

- Less complex technology, as customization is deemphasized.
- Reduced IT overhead as more automation is used.
- Improved collaboration and productivity from increased technology adoption.
- Reduced staff disruptions from standardizing change procedures.
- An improved DEX from a more proactive and human-centric IT.

Drivers

- Organizations' adoption of SaaS and "as-a-service" operating systems continues to increase, rendering traditional operating models obsolete.
- Technology vendors have accelerated development and release cadence to remain competitive and continuously provide increased value, challenging IT organizations to keep pace.
- Vendors have established an update cadence to simplify support and ensure more consistency across customer environments, limiting IT's control over the timing and configurability of features and updates.
- Vendors are reducing support life cycles — OS support has dropped from up to a decade to less than three years, incentivizing CEE adoption.
- The continued threat of cyberattacks is driving accelerated patch deployment and tighter alignment with vendor life cycles to reduce vulnerabilities.
- An increased amount of regulatory requirements demand transparency and compliance.
- IT leaders continue to value speed and agility, accelerating the shift to agile approaches.
- Organizations have adopted a growing number of new applications to enable the digital workplace, amplifying the challenge of keeping them updated.
- Depending on extensive testing and monolithic rollout processes have failed to uncover sufficient issues to warrant the effort required to complete them. And IT leaders are looking for more efficient ways to scale and accelerate work.
- A small number of innovative vendors now have novel offerings that provide automated user-less acceptance ("smoke") testing of applications.

Obstacles

- Overly complex environments with too many disparate tools that lack integration.
- Highly customized environments that require extensive testing of every update prior to deployment.
- Fragile environments with a significant amount of technical debt, including legacy operating systems or applications that depend on unsupported browsers, runtime environments or plug-ins.
- Traditional siloed organizations are inflexible, sluggish and lack collaboration.
- Staff who lack automation skills and experience with agile methodologies and operate under a legacy mindset that focuses on control and customization.
- IT leaders understand the need for agile operations but don't know how to make that transition.

User Recommendations

Hype is slowly progressing but remains pre-Peak of Inflated Expectations. Market penetration and maturity have stayed the same. IT leaders are looking to increase the adoption of CEE. However, most still struggle to implement it without wholesale organizational changes. IT leaders should:

- Keep pace with technology life cycles by implementing the complete CEE cycle.
- Avoid common barriers by reviewing policies and procedures and eliminating dependence on legacy technologies and methodologies.
- Avoid methodology mismatches by adopting CEE as a complement to other agile approaches that are less compatible with the digital workplace.
- Align CEE-related organizational changes to updated operating models, agile methodologies and shift toward product management.
- Reinforce behaviors that establish stronger partnerships by defining the new engagement model with colleagues, stakeholders and technology vendors.
- Reduce the requirement for resource-intensive UAT by automating testing with new technologies.

Gartner Recommended Reading

How to Implement Continuous Endpoint Engineering: An Agile Approach for the Digital Workplace

DEX Tools

Analysis By: Dan Wilson, Autumn Stanish, Stuart Downes, Tom Cipolla

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Digital employee experience (DEX) tools help IT leaders measure and continuously improve the performance and employee sentiment toward company-provided technology. Near-real-time processing of aggregated data from endpoints, applications, employee sentiment and organizational context surfaces actionable insights and drives self-healing automation, optimized support and employee engagement. Insights and self-healing can also enhance IT support.

Why This Is Important

Accelerated digital workplace investment has highlighted gaps in objective measurement and continuous improvement of DEX. Client interest in DEX has steadily increased since the start of 2021. Primary use cases focus on tactical and technology issues however mature digital workplaces are expanding to include more strategic use cases. Their cross-functional DEX strategy directly targets reduced IT overhead and improved DEX as a way to retain and attract top talent.

Business Impact

DEX tools shift focus from technology management to more business value-added work. Specific impacts include:

- Fewer IT issues that disrupt and impede employee productivity.
- Reduced IT overhead through automation.
- Improved endpoint configuration and patch compliance.

- Better balance of objective and subjective success measures, including technology adoption, performance and employee sentiment.
- IT becoming more proactive and human-centric.
- Increased ability to retain talent.

Drivers

- DEX is a major influencer of the overall employee experience.
- Organizations are increasingly dependent on technology to perform their work.
- Employees are suffering in silence by living with or working around issues rather than reporting issues to IT.
- IT leaders seek broader measurement and management capabilities as internally focused activity KPIs have proven incomplete.
- IT administrators are looking for better visibility into how hybrid workers' devices are performing.
- Employee sentiment toward technology cannot be measured effectively with periodic or transactional surveys alone. Feedback must also include how employees feel about and engage with specific devices or apps, and how technology changes impact their work.
- Service desk and other IT support analysts require faster access to device configuration and performance data to offset an increase in support interaction volumes and wait times.
- Increasing threat of cyberattacks demands faster identification and remediation of configuration issues and missing patches.
- Increased focus on sustainable IT is promoting consumption- and performance-based device life cycles in place of refreshing devices on a schedule.
- AI and machine learning have significantly increased the value and capability of SaaS-based DEX tools.

Obstacles

- Legacy culture that does not trust the tool's insights or sees automation as a threat.
- SaaS- or cloud-averse organizations will be limited to less capable on-premises offerings.
- Low-maturity IT support or end-user computing (EUC) organizations may not be ready for DEX tools.
- An "ignorance is bliss" mindset fearing that a sudden unveiling of the massive volume issues will make IT leadership look bad.
- The cost to acquire, implement and integrate new tools.
- Insufficient staffing levels or skills required to operate a DEX tool.
- Failure to adjust IT staff rewards and recognition to promote new behaviors and DEX tool adoption.
- The need to account for legislative, regulatory, industry or labor union limits on data collection and use.
- The lack of maturity and feature parity among representative and similar tools including common APIs for integration.
- Smaller organizations have limited options given that many DEX tools target larger enterprises.

User Recommendations

In its third year on the Hype Cycle, DEX tools have reached the Peak of Inflated Expectations. Market penetration and maturity have also advanced. Organizations that have not invested in DEX tools should:

- Build a broader team by collaborating with business and IT peers to define IT and non-IT use cases.
- Ensure the business case focuses on objective and measurable impacts by minimizing reliance on vendor-provided ROI templates.
- Choose a DEX tool that best fits your needs and budget by using the Market Guide for DEX Tools.

- Assign dedicated ownership and allocate dedicated resources to deploy and drive DEX tool adoption and ROI. Resources can be reallocated from IT support roles as proactive automation reduces support volumes.
- Incentivize new behaviors by adapting IT performance measures to focus more on outcomes than activities.
- Avoid diminishing returns by adding features and use cases as the team and DEX tool matures.

Sample Vendors

1E; ControlUp Technologies; HP Inc.; Ivanti; Lakeside Software; Nanoheal; Nexthink; Riverbed Technology; Tanium; VMware

Gartner Recommended Reading

How to Successfully Deploy a DEX Tool

Market Guide for DEX Tools

Employee Enablement Is Key to Digital Workplace Services Leaders' Survival

Digital Work Hubs

Analysis By: Joe Mariano, Gavin Tay

Benefit Rating: High

Market Penetration: More than 50% of target audience

Maturity: Mature mainstream

Definition:

Digital work hubs are an assembly of ever changing team productivity and collaboration applications created for employees with diverse needs. It can be augmented with services for development, automation, artificial intelligence (AI) and analytics.

Why This Is Important

Foundational work hub services (e.g., Microsoft 365, Google Workspace, etc.) have peaked in usage. However, gaps in these services continue demand for purpose-built work hub services (visual collaboration, collaborative work management, workstream collaboration, meeting services and content services platforms, etc.). In many cases these services are not deployed enterprisewide. Instead they are implemented at the domain or situational level to meet line of business strategic needs.

Business Impact

The impact of effective work hub usage starts with productivity, but ends with opportunities to reduce cycle time and improve business results arising from more effective collaboration. This coordination via the hub can be especially helpful to citizen developers and business technologists working in fusion teams leveraging work hubs to meet organizational goals.

Drivers

- Foundational work hub services, such as Google Workspace and Microsoft 365, have become the focal point of work hub application portfolios. However, IT leaders, business technologists and fusion teams are beginning to realize that they can't do everything for domain and situational needs. The impact on domain and situational work hub services means updating digital workplace charter to better align with strategic line of business needs.
- Executive leadership wants to exploit the value of work hub services long term, not just for the ROI, but to drive and enable employees' digital skills to help build digital side hustles and develop employees into business technologists.
- 2022 Gartner's Digital Worker Survey found participants on average use 11 different applications to get work done and more than 70% of the digital workers use between 6-25 applications at work. Also almost half of respondents struggled to find the information or data needed to do their job. IT leaders will need to better assess employees' needs and take greater care in creating digital employees and experience that streamline the use of multiple work hubs.

Obstacles

- IT leaders think that a foundational work hub services will meet all their collaborative needs. In fact, best-of-breed services will be needed to meet the contextualized use cases of groups such as frontline workers, marketing and sales.
- The rate of additional functions added to work hub services has accelerated to the point that IT resource and business employees cannot keep up, which is limiting the overall value of tools.

User Recommendations

- Assume that a single work hub vendor will not meet all your needs. In order to meet your digital employee experiences (DEX) goals it will take a combination of both foundational and domain or situational services.
- IT leaders must take on more of a collaborative role, working with business functions to understand the employee needs, especially with business technologists who can help drive new use cases and popularize digital workplace technology rather than IT working with one another.
- Use Gartner's ACME framework to govern usage efforts by focusing on domain and situational needs.
- Assess the technical fitness of your work hub applications to determine fit for purpose. If applications with similar functionality can be merged, better resource allocation can be reached. Deem the work hub to be a source of continuous innovation in a form that is relatively easy to adopt. Tie augmentation services (e.g., everyday AI, cross-tool integration and citizen development tools) to further growth in the value of the services.

Sample Vendors

Alibaba; Google Workspace; Microsoft 365; Monday.com; Salesforce; Slack; Zoho

Gartner Recommended Reading

Video: Use Gartner's ACME Framework to Rationalize Your Digital Workplace Application Portfolio

Tool: Digital Employee Experience Journey Maps

Innovation Insight for Collaborative Workflow Automation

SMP

Analysis By: Dan Wilson, Jaswant Kalay, Tom Cipolla, Sid Nag

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

SaaS management platforms (SMP) help IT discover, manage, automate, operate, optimize and govern organizationwide SaaS use from a centralized console. SMPs also enhance protection of identities and data while using SaaS and SMP's enable SaaS operations — which include the capabilities supporting IT operations, PlatformOps, SecOps and site reliability engineering (SRE). Though SMP vendors focus on operational management or optimization of SaaS, a few have emerged to address both.

Why This Is Important

As SaaS adoption accelerates and managing spend becomes difficult, IT leaders are challenged with discovering and supporting SaaS in accordance with company, market or geographic policy and regulations. The increase in cyberattacks focuses attention on protecting identity and data in SaaS. These trends continue to attract new SMP market entrants, investment and M&A. The SMP market remains fragmented and difficult to navigate, and hyperscale cloud providers approaches differ substantially.

Business Impact

IT leaders can leverage SMP to:

- Improve Saas visibility and manageability
- Reduce or optimize costs
- Improve management of SaaS contracts and renewals, and optimize costs
- Reduce business-acquired SaaS by offering app-store experiences for employees
- Streamline new SaaS onboarding
- Reduce IT overhead with automation
- Improve employee on/offboarding workflows

- Promote collaboration between teams in the SaaS life cycle

Low Gartner client interest keeps hype parked at the peak. Plateau time has been extended, and market penetration and maturity are unchanged from 2022.

Drivers

- SaaS spend continues to grow by 15-20% annually, as organizations maintain an average of over 125 different SaaS applications totaling $1,040 per employee annually.
- IT typically is aware of only a third of those due to decentralized ownership and sourcing.
- SMPs also report that less than half of provisioned subscription-based licenses are regularly used by employees.
- IT teams responsible for discovering, managing, automating, optimizing, protecting and governing SaaS struggle to effectively do this through native SaaS administrator consoles.
- Harmonizing SaaS configurations and employee on/offboarding are also common pain points.
- SMP adoption is higher in small to midsize organizations, as centralized responsibility for SaaS is more common.
- Clients are also struggling to choose between SMP, SaaS security and SAM tools. All three offer SaaS discovery, protection and some optimization capabilities — however, SMPs can do more.
- A lack of common APIs or controls means that SMPs have varying levels of integration and capability to manage and automate SaaS applications.
- Utility continues to improve as new entrants to the SMP and adjacent markets promote unique new capabilities.
- I&O leaders don't have the available tools and capabilities for observability, application monitoring, cost, license or configuration management, and security visibility for this new world of applications. There is no integrated platform approach to these functionalities and tools.
- Broader SaaS operations capabilities to support IT operations, PlatformOps, SecOps and SRE services, as well as continuous integration/continuous delivery (CI/CD) pipelines and other agile approaches.

Obstacles

- Decentralized or shared responsibility within organizations complicates buying decisions.
- Many organizations underestimate SaaS sprawl and do not fully understand how an SMP can help.
- Low maturity organizations generally see SMP as too advanced and have more basic priorities.
- Costs associated with assessing, selecting, implementing and staffing resources to utilize SMP are rarely allocated in budgets.
- Varying breadth and depth of SaaS coverage and integrations. SaaS-heavy organizations often find that SMPs do not cover all of their applications and licensing models.
- Capability overlaps with SAM and SaaS security tools.
- Concerns about the addition of another management tool.
- The SaaS management market is highly fragmented and characterized by wide variability and only partial overlap between tools.
- Gartner client interest remains low compared to other digital workplace tool conversations.
- DevOps, apps, digital workplace and I&O teams generally operate in silos.
- Managing configurations for dozens to hundreds of SaaS apps using their separate admin consoles is untenable.
- Confusion and the business acquiring their own applications, due to a decentralized approach with no clear owner. This results in uncontrolled cost, identity and data security exposure, missing observability and service management processes.

User Recommendations

IT leaders responsible for managing SaaS should:

- Implement an overall SaaS operations strategy and execution plan.
- Avoid overspending by focusing first on discovery.

- Build a business case to fund the SMP by utilizing optimization capability to reduce unnecessary spend on unused and underutilized licenses, and to consolidate similar apps.
- Uncover unsanctioned SaaS by using an SMP with strong discovery capabilities through desktop agents, browser extensions and deep integration with security and finance tools.
- Minimize risk by finding and addressing SaaS that is not integrated with identity and SSO solutions, and documenting discovered SaaS in enterprise architecture tools or CMDBs.
- Choose an SMP that best fits your requirements by reviewing integrations with critical apps to understand if the SMP offers read and write functionality, or is limited to pulling reports.
- Bring together disparate IT teams and processes.

Sample Vendors

Beamy; BetterCloud; LeanIX; Productiv; SailPoint; Snow Software; Torii; Trelica; Zluri; Zylo

Gartner Recommended Reading

Market Guide for SaaS Management Platforms

Market Guide for Software Asset Management Tools

Infographic: Why Are You Wasting Your SaaS Expenditure?

How to Establish Effective SaaS Governance

BYOPC Security

Analysis By: Eric Grenier

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Bring your own PC (BYOPC) programs allow personally selected/purchased client devices to access enterprise applications and company data. These initiatives typically support Apple macOS and Microsoft Windows devices, and less commonly, ChromeOS and Linux. A lack of security controls or standardization in hardware and OS can represent significant risk if not addressed with a defined BYOPC security strategy that is implemented on a use-case-by-use-case basis.

Why This Is Important

Bring your own (BYO) programs have been expanded from primarily mobile devices to include macOS and Windows PCs, but the security of these devices will involve trade-offs for security over functionality. These programs should not be applied to all users, but rather should be applied on a use-case-by-use-case basis.

Maintaining a robust security posture in environments where user-owned/unmanaged devices access corporate applications and data requires a dedicated BYOPC security initiative.

Business Impact

Organizations implementing a BYOPC program need to minimize the security risks arising from the use of user-owned devices for business purposes. Structured BYOPC programs help achieve employee enablement while protecting company data and applications.

Drivers

- Hybrid work has expanded the number of devices from which users access company apps and data, with personal PCs making up an increasing proportion of BYO devices in use.
- Increased access for more users, from more devices improves business continuity, and gives users more flexibility at nominal cost, but requires new and adaptive security controls.
- Increased rigor in authenticating users and devices is warranted as the use of harvested user credentials by bad actors increases. These attacks are increasing and more security will be needed on a personal device.
- Capabilities to establish suitable levels of control on a BYOPC — whether through the use of application controls, isolation of data, conditional access or a combination of all three — allow for flexible options to suit multiple use cases.

Obstacles

- More rigorous privacy regulations, paired with the potential risk of configuring and establishing local controls on users' personal PCs, require more nuanced solutions than standard device management.
- In attempting to eliminate data loss and isolate company systems from local malware, VDI and DaaS are often employed for BYOPC, but remain costly for IT and complex for users.
- BYO is not a fit for every user. The inability to monitor personal devices and remediate BYO systems to an acceptable level limits the use cases that can be covered by BYO.
- Shared use of devices, common for personal hardware, may violate fair and acceptable use policies or other compliance mandates, regardless of security controls.
- The complexity and time needed for proper data classification presents a hurdle that organizations will need to overcome in order to adopt BYOPC on a large scale.
- BYO programmes shift a lot of IT problems to HR problems when devices are unavailable due to security or technical incidents.

User Recommendations

- Establish isolation-based controls for BYOPC; this can pay dividends by creating support models that can adapt for contractors and temporary employees as well.
- Implement BYOPC policies on a use-case-by-use-case basis. Do not use it as a cover-all, as there will be users that are not a good fit for BYOPC. Offer detailed, documented descriptions of the models of access supported from a BYOPC device, the support entitlements and any inherent restrictions for each access model.
- Isolate local device risks and restrict data loss by combining data protection and conditional access policies for all BYO users and utilize VDI/DaaS to access sensitive apps and data.
- Consult with legal and HR teams to understand what technical controls are tenable on users' personal devices and what privacy concerns must be addressed.

Sample Vendors

Amazon Web Services; BlackBerry; Citrix; Microsoft; Okta; Venn Software; VMware

Gartner Recommended Reading

Enable BYOPC for Select Use Cases While Managing Risk

Research Connection: Tech Talk — Best Practices for Securing BYOD/BYOPC

Market Guide for Desktop as a Service

Sliding into the Trough

Influencer Network

Analysis By: Tom Cipolla

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Influencer networks (INs) are purpose-driven champion communities established to advise on topics defined by the network's sponsor. Influencer networks are a powerful change management and employee experience strategy. Influencers relate to their peers more personally, enabling them to coach and transfer knowledge on technologies and best practices. INs are used to introduce new technologies, drive employee adoption and provide vital feedback to IT. They can also be used for other initiatives.

Why This Is Important

Changing employee attitudes and behaviors is difficult. While 54% of the workforce are proficient with digital technology required for work purposes, nearly 25% of the workforce are novices or developing knowledge. Peer relationships are a more compelling mechanism to support change than internal communications and management direction. INs are powerful at championing new ways of working, driving early and/or sustained technology adoption, and overcoming objections and workforce inertia.

Business Impact

Business impact and value of INs can vary:

- Effective INs support talent needs through opportunities for personal growth, professional networking and career enhancement.
- Technology-centric INs advance digital transformation and digital dexterity goals as employees grow proficient.
- Business-centric INs can catalyze support for work progress that can benefit customers.

- Cultural-driven INs (that is, HR-sponsored employee resource groups) can improve how employees align with the organizational mission and values.

Drivers

- Most organizations recognize that change is difficult. Peer advocates and influencers that act as coaches, mentors and subject matter experts can provoke a turning point in the adoption of new tools, new ways of working or other activities.
- Participation in influencer networks can help with retaining talent, sharing expertise and community building. Senior staff who have reached a certain plateau may enjoy expanding their skills with new challenges as a network member. New hires may leap at the chance to help, learn and build their professional reputation.
- INs unify the spontaneous and unstructured conversations that workers have among themselves to help each other. INs offer formalized contacts in social roles to provide that assistance.
- INs create a dynamic, exchange-driven community between employees sharing knowledge or opportunity, which benefits the organization.
- INs offer organizations a way to seek out, highlight and reward individuals with soft skills — such as empathy and persuasion — as high performers.
- INs provide employees with an appetite for learning, the ability to connect techniques and technologies with use cases, and agility and resilience. Further, INs give employees an opportunity to differentiate themselves professionally.
- IN members provide invaluable feedback to sponsors and stakeholders. What otherwise might be considered gossip and folklore, can be represented as gaps in change effort. Such insight can lead to adjustments in whatever goal the IN has as its objective.
- INs are experiencing a revival, ignited by hybrid work and digital workplace efforts, as IT groups seek to improve digital employee experience and address digital dexterity needs.

Obstacles

- When companies need to find employees to support change management efforts, they often turn to the same talent pool: high performers and high-potential employees. However, these employees do not always have the necessary soft skills.

- Organizations unfamiliar with forms of community building and community management may be slow or reluctant to introduce the concept, since it will affect their traditional practices.
- Measuring impact is difficult in any type of community endeavor. Business units may not see obvious value from their staff's participation and may be reluctant to approve participation unless they can see a near-term outcome.
- INs require motivated, empowered and skilled members. Organizations may not be well-equipped to recruit and gain the necessary resources to make an influencer network a cultural reality.
- INs focused on personal needs — such as DE&I, well-being and mindfulness — may be met with employee resistance or apathy due to concerns over motivation and effectiveness.

User Recommendations

- Analyze purpose, scope and IN member requirements before approval and launch. INs are a type of community but the experience is fluid, focused on networking and exchange of insight or information.
- INs thrive best with a community manager who establishes roles, guidance, succession planning and practices.
- Seek informal, self-formed IN communities that are not yet recognized. They can provide evidence for a business case.
- Recruit, empower and evaluate influencers that have the ambition and ability to meet IN goals and ensure they have manager backing. Track participant efforts to assess the value to leadership.
- Start small and grow INs over time using an iterative process. Include a communications plan to ensure that INs are known and champions are easily identifiable.
- Establish a measurement framework to gauge IN effectiveness and success. Include feedback from champions into training, knowledge bases and resources.
- Social recognition and gamification tactics may help influencers succeed.

Gartner Recommended Reading

How to Build and Manage a Digital Workplace Influencers Network

Employee Enablement Is Key to Digital Workplace Services Leaders' Survival

Quick Answer: How Can I Empower Ambitious Employees to Grow Digital Skills?

Promote Learning Programs Using Employee Champions

Case Study: Change Management Influence Maps (Toyota)

Peer IT Support

Analysis By: Chris Matchett

Benefit Rating: Moderate

Market Penetration: 20% to 50% of target audience

Maturity: Adolescent

Definition:

Peer IT support occurs when business consumers get technical support and advice from other employees at Level 0 (self-service) before (or instead of) contacting a Level 1 IT service desk. This commonly takes place unofficially via forums and collaboration tools, or in person.

Why This Is Important

Peer IT support is happening in many places, but it is often organic and informally defined. This is happening in both the consumer world — on commercial product support forums and social networking sites — and also in companies, where application and product teams have already set up their own forums, and collaborative support hubs.

Business Impact

Peer IT support can have the following impacts:

- Peer support decreases the workload of Level 1 and 2 support teams, reduces costs and enables the IT service desk to concentrate on other activities.
- Incident resolution can be expedited when the expertise resides outside the IT organization.

- Peer support encourages non-IT employees to develop digital dexterity and share best practices, which supports organizational goals around building digital skills and competencies.

Drivers

- The consumerization of IT is increasing digital dexterity within the business consumer community, leading to some employees choosing and supporting IT applications directly.
- The 2022 Gartner Digital Worker Survey found that younger digital workers prefer engaging with colleagues for support questions more than contacting the IT service desk.
- Infrastructure and operations (I&O) leaders' interest in peer support increased to ease the IT service desk workload.
- Employees found it easier to support each other and engage with IT support using collaborative work management (CWM) tools (see Market Guide for Collaborative Work Management).
- Some IT service management (ITSM) platform vendors are beginning to provide features that facilitate peer IT support.

Obstacles

- I&O leaders have been slow to introduce formal channels and similar collaborative support hubs (see Transform IT Support by Developing Collaborative Support Hub Roles and Competencies).
- Older digital workers still prefer to contact IT via traditional support channels.
- Some business leaders don't want non-IT employees spending work time on IT issues.
- Hybrid work models have reduced the convenience of being able to ask a nearby peer for help.
- ITSM platform integration into tools for collaboration hubs is not yet generally available, and lack of features pushes I&O leaders to rely on the service desk for full management oversight and simplicity.

User Recommendations

- Analyze the preferences and requirements of business consumers before offering new support channels.
- Seek out unofficial peer IT support that is already occurring in your organization. These may coincide with influencers or champions networks.
- Establish collaborative support hubs to empower peer IT support for compatible audiences.
- Solicit collaboration features from your ITSM platform vendor or use existing CWM tools to facilitate and track the interactions.
- Interface with the IT knowledge management (KM) processes to discover common issues, and update the knowledge base where needed.
- Identify and reward employees that provide peer IT support.
- Utilize gamification to promote additional participation.

Gartner Recommended Reading

Don’t Abuse Business Users for Peer-to-Peer IT Support

Transform IT Support by Developing Collaborative Support Hub Roles and Competencies

Innovation Insight for Collaborative Support Hub

Tailor Your IT Service Desk Support Based on Business User Personas

How to Build and Manage a Digital Workplace Influencers Network

Workplace Experience Apps

Analysis By: Tori Paulman, Janel Everly, Sohail Majumdar

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Workplace experience (WEX) apps support positive employee office experiences by simplifying visit planning, reserving shared and personal spaces, and identifying available amenities. They are used to explore and reserve workspaces, navigate the workplace, find colleagues, and plan the best days to attend the workplace. WEX apps enrich the hybrid work experience by integrating with digitalized physical objects, and utilizing enterprise social graphs and artificial intelligence (AI).

Why This Is Important

Delivering hybrid work at scale demands a balanced approach to space planning, a shift from location-centric to human-centric culture and investment in workplace technology. Efforts to inspire or direct employees to return on-site are driving dramatic adoption of workspace usage monitoring and real estate portfolio optimization technologies. Employee experience improvement is a priority so that employees make better use of, and feel satisfied with, their face-to-face time.

Business Impact

WEX apps should be adopted to improve:

- The working relationship between IT leaders, real estate and HR.
- Earning the commute by delivering experiences that motivate employees to visit the office. Sixty-five percent of corporate real estate leaders state that employee workplace experience is their no. 1 priority.
- Meaningful and intentional use of the office by providing capabilities that help employees and managers coordinate. Seventy-seven percent of workers want to be a part of planning how hybrid work is orchestrated.

Drivers

- Ninety-six percent of HR leaders say that their organizations have adopted or will adopt hybrid work. The diversity of approaches and challenges to implement hybrid have accelerated innovation, and mergers and acquisitions (M&As) in the workplace experience app markets.
- According to Gartner's 2022 Digital Worker Survey, 77% of digital workers want to have their hybrid work schedule planned with them.
- Improving the employee workplace experience is the No. 1 priority for 67% of corporate real estate leaders, who are working with the digital workplace team to optimize the hybrid experience.
- Seventy-five percent of corporate real estate leaders expect to use an app to manage shared seating, room scheduling and desk booking. Buyers now want holistic workplace experiences via intentional visit planning, wayfinding, and automating via virtual assistants.
- Employees want a hospitable experience at the office, control over their proximity to colleagues, information about the number of people in the office, and personalization of their environment (air quality, etc.).
- Artificial intelligence (AI) and machine learning (ML) are being used to automate employee interactions, and provide actionable insights to workplace leaders for rightsizing portfolios.
- WEX apps must integrate with "things" like smart badges, customizable environmental controls (HVAC), digital signage, furniture, lockers, mobile devices and wearables to improve employee experience. They assist employees to check into desks, call an elevator or adjust temperature/lighting.
- WEX apps deliver insights into the number of employees and visitors who plan to occupy the office and integrate those insights with location sensors to monitor real-time occupancy. These capabilities provide facility leaders with critical cost avoidance and sustainability levers to adjust lighting, HVAC and shared services personnel in underutilized spaces.

Obstacles

- It's hard to acquire a one-stop-shop product for all functional needs because the needs of the hybrid workplaces across industries, regions and business units are so diverse.
- Leaders responsible for vendor assessment and capability mapping must navigate a competitive market, in which a significant number of vendor acquisitions, rapid feature evolution, and new entrants have reduced differentiation.
- Cost can be a barrier to entry due to pricing models for SaaS licenses and implementation costs for WEX apps, which vary widely and are often not budgeted for.
- Employee privacy can present a challenge to the goals of WEX apps to support an open and collaborative hybrid WEX.
- Leaders in siloed IT or real estate teams may pursue an app strategy that is redundant or duplicative.
- WEX apps offer the most value when integrated with enterprise systems (e.g., IWMS, security, network and human capital management [HCM] tech) that can significantly increase cost and labor investment.

User Recommendations

In its second year on the Hype Cycle, WEX apps have begun their descent into the Trough of Disillusionment, due to market penetration and continued challenges in supporting hybrid work.

- Navigate the WEX market by ranking the application capabilities needed to support your hybrid workplace strategy.
- Focus digital workplace strategies toward smart workspace trends by understanding vendor acquisition plans and feature roadmaps, and align those strategies with your future of work strategy.
- Gain stakeholder buy-in and reduce duplication of effort by creating a working group of IT, real estate, business and HR leaders, and employee champions to assess WEX apps.
- Avoid overprioritizing core capabilities by focusing on emerging ones, such as the ability to support employee coordination and virtual assistants.

- Organizations invested in Microsoft 365 should integrate with Microsoft by identifying their needs like open API, bidirectional calendar integration, Microsoft Teams apps and the ability to use Microsoft Graph.

Sample Vendors

Appspace; eFM; Envoy; Eptura; FlamencoTech; NFS Technology; Robin Powered; ServiceNow; Smarten Spaces; Tango

Gartner Recommended Reading

Market Guide for Workplace Experience Applications

Tool: Vendor Selection for Workplace Experience Applications

Demand to Support Hybrid Employee Experience Is Driving a Transformation of the Workplace Markets

Workstyle Analytics

Analysis By: Lane Severson, Helen Poitevin, Matt Cain, David Pidsley

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Definition:

Workstyle analytics (WSA) is a technology category that derives insights from employees' digital footprints and data. These footprints combined with this data offer insights as to how digital work gets done, and they help organizations improve personal and team effectiveness, application and device proficiencies, while processing performance within the constraints of responsible data use.

Why This Is Important

Most organizations do not collect data on or are unable to effectively measure the impact of their investments in digital workplace technology. With WSA, digital workplace leaders can justify the additional investment required to scale new technologies and improve personal and team effectiveness, often using behavioral science. Gartner predicts that, by 2026, artificial intelligence (AI)-enabled WSA will be essential to delivering a modern digital employee experience.

Business Impact

WSA capabilities include the collection, analysis and reporting of data, coupled with next-best actions. WSA provides insights into how employee workstyles, digital tools, processes and skills affect business effectiveness. This is essential to driving technology utilization and adoption, as well as identifying productivity inhibitors. WSA capabilities are provided by multiple technology solution markets, including productivity monitoring tools, digital adoption platforms and workplace analytics.

Drivers

- Continued investment in digital workplace technologies requires IT leaders to provide insights on the impact of investment and ROI.
- Digital transformation requires visibility into the technologies that employees depend on, and how well they can use technology to improve work and productivity.
- Budget and cost pressures are driving organizations to get more from their strategic technology investments. This includes reducing the use (and cost) of nonstrategic technology and driving greater adoption of strategic technologies.
- Remote work has changed managers' ability to promote collaborative behaviors and patterns, as they could in the office. The patterns themselves have also changed to be less time-bound, requiring leaders to adjust accordingly.
- Organizations are also looking for workplace experience data to improve the return to the office by helping those struggling with remote work and for insights into potential employee engagement and well-being issues.
- IT leaders are looking for data to baseline and measure the improvement of the stability, availability and performance of the devices and systems they deliver, especially as changes are made.
- Research shows that establishing hybrid work policies and norms is critical to attracting and retaining talent. WSA tools can help discover patterns of how workers interact using digital tools. This visibility is critical to have, while defining the policies and norms.

Obstacles

- WSA capabilities often span several departments in larger organizations, which complicates sourcing processes.
- There is limited data literacy in the management population. Many people leaders are unable to describe the metrics they'd want to use to identify signs of well-being or productivity.
- Unionized workers or legal/regulatory limitations on data collection due to privacy concerns can be obstacles.
- Workers often fear employers will misuse data for employee surveillance.
- The cost and complexity of aggregating data and insights across multiple WSA tools and multiple worker segments, and the difficulty in discerning the difference between correlation and causation can be obstacles.
- Paying too much attention to experience scores and benchmarking inside analytics tools can misclassify efforts, due to algorithms that lack context or sophistication.
- There can be a delta between what organizations want from WSA and what can actually be done with the data collected.

User Recommendations

WSA has passed the Peak of Inflated Expectations as more organizations use WSA to:

- Ensure policy and legal compliance by partnering with HR and legal. Make sure that assumptions and conclusions are reviewed by analytics professionals.
- Avoid tool sprawl by reviewing existing capabilities in the current portfolio of services that have elements of WSA and understand vendor direction before buying new.
- Minimize risk by training managers on appropriate use before granting access and ensure that employees understand the intent and use of WSA.
- Avoid irrelevant comparisons to other companies by using tool-provided experience scores to baseline and measure your progress.
- Ensure that WSA can drive specific business outcomes, such as promoting worker digital dexterity, and WSA can be adapted to a wide variety of personas and use cases.

Sample Vendors

ActivTrak; Humanyze; Microsoft; Prodoscore; Scalable; Temporall; WalkMe; Worklytics; WhatFix; Userlane

Gartner Recommended Reading

Innovation Insight: Workstyle Analytics

Getting Value From Measuring Employee Experience, Productivity and Well-Being

Employee Monitoring and Privacy Laws: What Organizations Can Do?

Quick Answer: How to Communicate Employee Monitoring to Your Workforce as a Tech CEO

How to Derive Value From Employee Productivity Monitoring Technologies

Market Guide for DEX Tools

Predicts 2023: Build the Digital Day of Tomorrow

Smart Meeting Room Systems

Analysis By: Lacy Lei

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Definition:

Smart meeting room systems are made up of a group of audio and video devices that ensure dedicated group collaborative experiences in various meeting spaces. The devices that compose the system provide the combination of multicapabilities, including camera, microphone, speaker, advanced audio and video processing algorithm, meeting application, IoT, wireless sharing and touch control.

Why This Is Important

The need to better support hybrid meeting experiences is driving new investments in videoconferencing and meeting spaces. Improving the meeting technology in the office can make sure both virtual and physical participants have an engaging experience. An efficient and simple meeting experience for attendees in the office also requires a seamless workflow for booking, joining, monitoring and controlling, which can be implemented on the Smart audio and video meeting appliance.

Business Impact

Smart video meeting appliances improve group engagement and interactions in the office workspace. It supports collaboration, creativity and equality between workers in the office and elsewhere. A modern collaboration environment equipped with intelligent room technology is important for business stakeholders to drive communication success, project progress and team productivity.

Drivers

- Hybrid workers face virtual meetings and collaboration while in the office as their teammates are no longer colocated. However, they find it hard for group meetings to hear, talk and see clearly for both in-room and remote participants. Smart video meeting appliances can help close the gap with AI-powered audio and video technology.
- The need to video-enable a wide variety of nontraditional meeting spaces (e.g., huddle rooms) is driving interest in Smart video meeting appliances. Smart video meeting appliances enable these spaces with easy and inspiring interaction with technology such as whiteboard cameras, ultrawide field of view cameras and all-in-one bars.
- Meeting solution vendors, especially Microsoft Teams or Zoom, are aggressively developing their ecosystem of smart meeting room device vendors to package the meeting platform and hardware capability and develop solutions together to maximize the meeting experience.
- Participants who want to join a meeting in the office need an easy flow to book, check, join and control. Smart meeting room device vendors usually have touch control, scheduling displays offered in their portfolio, with AI features such as automatic activation, discovery via ultrasound.
- Instead of traditional AV gear, IT teams want the modern meeting device to be easy to fit into room design, simple to set up and manage. Many all-in-one Smart video meeting appliances integrate and automate the major meeting capability, which reduces the burden of the IT team that manages the rooms.
- Seamless and productive meeting experience requires functionalities that are tailored to different scenarios of meeting. AI technologies that are widely adopted to automate the space such as room environment analysis, auto wake up, speaker tracking camera and noise cancellation.
- Hardware vendors provide a series of room devices for different size and type of space, which enable the users to easily optimize the cost from various options.

Obstacles

- Many meeting rooms have legacy traditional group videoconferencing endpoints in use which have not fully depreciated yet.
- The inconsistent room system deployment and lack of user guidance make the end users and groups prefer to bring and join from their laptop in the conference rooms.
- The advanced meeting experience not only relies on the room devices themselves, but also the extra cost on the meeting room license that is provided by the meeting solution vendor.
- Management and administration of these devices remains challenging. Managing via the meeting solution vendor's admin interface allows only for basic functions such as firmware upgrade and status checking. Hardware vendors provide portals that are more powerful but generally limited to their own hardware. It is hard to commit to one vendor for all the meeting rooms due to the supply chain issues, deployment time frame and large scale of the organization.

User Recommendations

- Build new hybrid working space by evaluating the use of meeting spaces in your offices today and consider Smart video meeting appliances.
- Make the most use of AI functions in the device by enabling them during the configuration process, following the update feature from the vendors and testing new features in a few pilot rooms.
- Select the devices and solutions by testing in the correspondent meeting rooms and comparing the result in live meetings between different options.
- Prepare for long-term administration of these devices by evaluating and choosing wisely between the meeting solution's admin interface, a hardware vendor's specific portal, or a third-party option that can manage and analyze for a heterogeneous estate of devices.
- Find the match devices and solution for different meeting rooms by evaluating the room size and layout; functionality in different use cases; and major meeting solutions used in the organization.

Sample Vendors

Cisco; Crestron Electronics; EPOS; HP Inc. (Poly); Jabra; Lenovo; Logitech; Neat; Yealink

Chromebooks for Enterprise

Analysis By: Stephen Kleynhans, Katja Ruud

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Definition:

Chromebooks are notebook computers running on Google ChromeOS. While initially targeted solely at the education and consumer markets, Google has expanded into the enterprise market, adding business-focused Chromebooks with Chrome Enterprise. Features include expanded management options through the Google Admin console, better control of updates, enhanced operational modes, and integration with corporate identity and security tools.

Why This Is Important

Chromebooks are cloud-centric mobile clients suited to organizations running most workloads in the cloud, especially Google Workspace customers. Chromebooks offer an easily managed, secure option for cloud-centric workers. After strong growth in 2020 in the education market, overall adoption has fallen off, with dwindling corporate interest in 2023. Overall corporate adoption may improve in North America, the U.K. and Asia/Pacific as customers look for devices to access desktop as a service.

Business Impact

Chromebooks offer enterprises the following advantages:

- Chromebook Enterprise devices can reduce device management costs, accelerate deployment and minimize investment in on-premises infrastructure; however, gaining organizational support may be difficult.
- Google Workspace customers find the justification easier as they already operate on compatible cloud-based Google applications.
- Chromebooks provide an alternative for supporting frontline worker use cases at potentially lower cost and complexity.

Drivers

Despite falling adoption, enterprises continue to consider Chromebooks for the following reasons:

- Customers are moving to cloud-based delivery of applications and workspaces for employees. These can often be delivered entirely to a Chromium-based browser, making them good candidates for a Chromebook device.
- Chromebooks are easy to set up and manage, with minimal IT support.
- With sandboxing of webpages, limited local storage and typically no corporate data or applications stored on the device, security issues resulting from loss or theft of a device or malware/ransomware exposure are minimized.
- Enterprise IT leaders continue to look for ways to lower operational and upfront costs, particularly in light of the shift to remote and hybrid work models. Chromebook's dependence on the cloud can provide improvements in operational costs related to deployment or maintenance.

Obstacles

- Chromebooks for enterprise pricing often do not match buyer perceptions. While consumer-grade Chromebooks are available for $160 to $350, enterprise-grade devices have a premium price of $700 to $1,000, only slightly below that of similar laptops.
- PC OEM commitment to enterprise-grade devices has been inconsistent, with limited models and availability.
- While functionality is improving, issues remain with localization, peripheral support, offline capabilities and integration with security tools, requiring significant user acceptance testing before committing. Some modern applications, such as videoconferencing, can be challenged.
- A virtual desktop infrastructure (VDI) or virtual application environment is required, either on-premises or via a cloud-based desktop as a service, to deliver Windows applications and desktops. Many organizations are repurposing older laptops to act as clients for VDI, using alternative solutions including ChromeOS Flex.

User Recommendations

- Use Chromebooks in organizations that are focused on cloud-based services delivered via a modern browser like Chrome, particularly in companies that have already embraced the Google ecosystem and Google Workspace productivity tools.
- Use Chromebooks as both a cloud-centric mobile client option and secure “grab and go” mobile alternative for usually office-bound users.
- Ensure Windows applications can be delivered to Chromebooks.
- Evaluate hybrid form factors for Chromebooks as a potentially more appealing option for frontline workers versus clamshell Chromebooks, since users can use the device as both a tablet or notebook.

Sample Vendors

Acer; Dell Technologies; HP Inc.; Lenovo

Gartner Recommended Reading

Market Guide for Enterprise Desktops and Laptops

How to Implement Continuous Endpoint Engineering: An Agile Approach for the Digital Workplace

How to Choose a Desktop Delivery Model for the Digital Workplace

Climbing the Slope

Indoor Location for People Tracking

Analysis By: Tim Zimmerman, Annette Zimmermann

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Definition:

Indoor location for people tracking is an umbrella of technologies dedicated to 2D and 3D tracking the location of human beings in an indoor context. The precision of these technologies can vary from a few meters to a few centimeters.

Why This Is Important

Tracking people is important in a wide range of industrial, healthcare and personal security or safety situations. It poses different technical challenges depending on the position of the human body or the proximity of the tracking tag to the body. In addition, the energy used for communication may be absorbed or blocked, leading the application to "lose track" of a person if the right technology is not selected.

Business Impact

Over 70% of enterprises looking to track assets also wanted to track people as part of a cohesive solution. From a safety standpoint, not being able to track people in dangerous situations or environments results in not only avoidable injuries but also loss of life. In certain geographies and industries, tracking people for safety reasons can be mandated by law.

Drivers

- Safety and compliance for industrial environments including factories or plants where fumes, chemicals or temperatures create a safety risk, and construction sites for employee safety and anti-collision purposes (with equipment such as forklift trucks).
- Safety in healthcare pertaining to infants or the elderly, or hospitality workers who may not be aware when they are in a dangerous situation.

- Process optimization when employees are performing identified tasks such as tracking patients in hospital care workflows either in real time or geofenced for safety concerns. This can also apply to time and motion standards in manufacturing or other industries.

Obstacles

- The biggest issue in people tracking continues to be privacy. People don't want to be arbitrarily tracked and want visibility on how the tracking data is used. In some countries, government councils may have to approve of such a solution and again in other situations, it may be illegal.
- Organizations must choose the right technology for the desired outcome. Some technologies cannot guarantee the location of the person being tracked 100% of the time.
- Cost, which may manifest itself as the cost of the tag (ranging between a few dollar cents for an RFID wristband to an over 100-dollar badge) or the cost of the infrastructure necessary to capture the information.

User Recommendations

- Define the use case to ensure that the frequency of data collection and accuracy of the location meet the documented requirements. Vertical market solutions such as healthcare or construction may have industry-specific requirements or certifications.
- Consider additional use cases including data analytics or geofencing.
- Implement a center of excellence that reviews the limitations of differing radio frequencies, infrastructure implementation issues, form factor of tags, wristbands or lanyards that are needed to achieve the desired location, and battery life as well as competitive solutions.
- Deploy the correct technology because vendors may try to sell a solution that is applicable for assets but not for people tracking.
- Construct an ROI for any people tracking location investment since the cost of tags varies widely.
- Address pushback from workers' councils and unions by communicating a people-tracking project very openly and transparently, helping to loop in all stakeholders.

Sample Vendors

AiRISTA Flow; CenTrak; HID Global; Litum Technologies; Midmark; Quuppa; Sonitor Technologies; Zebra Technologies

Gartner Recommended Reading

Magic Quadrant for Indoor Location Services

Critical Capabilities for Indoor Location Services

Market Guide for Indoor Location Application Platforms

Competitive Landscape: Indoor Mapping

Desktop as a Service

Analysis By: Stuart Downes, Mark Margevicius, Tony Harvey, Craig Fisler, Sunil Kumar, Eri Hariu

Benefit Rating: High

Market Penetration: More than 50% of target audience

Maturity: Early mainstream

Definition:

Desktop as a service (DaaS) is the provision of virtual desktops by a public cloud or service provider. DaaS is bought by IT leaders seeking to provide desktop or application experiences from virtual machines accessed using a remote display protocol. DaaS vendors incorporate a fully managed control plane service into their offerings, which facilitates user connections and provides a management interface. DaaS can be delivered preconfigured as a service or can be delivered as a DaaS platform.

Why This Is Important

With DaaS, no data resides on the endpoint, offering a solution that can increase security, resilience and application responsiveness for remote workers. DaaS offers scalable services without adding infrastructure, allowing clients to appropriately size and consume their environments hour by hour, day by day, and month by month; however, not all DaaS solutions offer such granular billing options.

Business Impact

With DaaS, IT leaders can increase security for desktops and applications. Other benefits of DaaS, compared to traditional VDI, include:

- Flexible procurement options that allow scalable deployments.
- Simplified rollout of services to new geographic regions.
- Applicability to a broader range of industries and use cases.
- Lesser skills required for IT operations teams to deploy and operate virtual desktops and applications.
- More rapid expansion or contraction of workloads.

Drivers

DaaS will continue to mature and witness increased adoption through 2026. The technology has moved through the Trough of Disillusionment onto the Slope of Enlightenment due to the following factors:

- DaaS enables business continuity and remote work, with no data residing on the endpoint.
- The technology securely extends services to external contractors and third parties.
- Endpoint computing models allow device-independence and bring your own PC (BYOPC) endpoints.
- On-demand desktops enable a financial model that allows scaling of cloud resources and an operating expenditure (opex) model.
- DaaS can be purchased for short periods, enabling use cases such as seasonal workers or short-term contracts.
- DaaS enables rapid access to systems during mergers, acquisitions and divestitures.
- Rich graphics use cases like engineering, games development, video editing and geographic information systems (GIS) benefit from GPU-enabled workstation-class virtual desktops and applications.

- DaaS can be delivered to users in hours. The supply of a physical device, on the other hand, can take weeks, incur shipping costs and retrieval is not always guaranteed.
- The technology eliminates the need for complex and static VDI implementations.

Obstacles

- Usually, the business case turns positive only when security and user cost impacts are included.
- Organizations struggle when there is a change in financial models from capex to opex.
- GPU use cases can be extremely expensive and often need advanced protocols, which increases complexity.
- Multimedia streaming, web meetings and video call performance in DaaS are not equivalent to that of a physical endpoint.
- Performance issues may occur in DaaS because application architectures introduce network-related issues (i.e., latency and hairpinning).
- Some DaaS solutions require self-assembly, which, although simpler than VDI, can still be too complex for some clients.
- The full range of desktop management requirements may not be completely fulfilled by DaaS providers.
- Microsoft product terms that prevent the installation of Microsoft 365 applications on “Listed Providers” (see 3 Compliance Questions to Ask When Licensing Microsoft Windows and Office for VDI and DaaS).

User Recommendations

- Get familiar with the three DaaS market segments — self-assembled DaaS, vendor-assembled DaaS and vendor-managed DaaS — and select a vendor from the appropriate segment (see Market Guide for Desktop as a Service).
- Ensure your operational teams have the necessary skills if you select self-assembled DaaS solutions.
- Select a vendor-defined DaaS or vendor-managed DaaS solution if you do not have the operational skills.
- Choose a DaaS vendor whose services best align with your requirements; even within each segment, there are differences between the services vendors offer.
- Optimize multimedia streaming, web meetings and video calls.
- Select a DaaS vendor that offers the billing granularity you require.

Sample Vendors

Alibaba; Amazon; Anunta; ATSG; Citrix Systems; Microsoft; Nutanix; oneclick; VMware; Workspot

Gartner Recommended Reading

Market Guide for Desktop as a Service

How to Choose a Desktop Delivery Model for the Digital Workplace

Video: PCs, Virtual Desktops or DaaS: What's the Best Fit for Midsize Enterprises

3 Compliance Questions to Ask When Licensing Microsoft Windows and Office for VDI and DaaS

PC as a Service

Analysis By: Stephen Kleynhans, Autumn Stanish, Erin Pierre

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Early mainstream

Definition:

PC as a service (PCaaS) refers to a PC procurement model in which customers pay for a configured PC that is fully supported throughout its life cycle. It builds on a combination of leasing, management support and added services, but offers more flexibility than traditional leasing or opex models. Changes in the dynamics of PCaaS offerings have necessitated a change in naming. In future Gartner reports, the name will be managed device life cycle services (MDLS) for better alignment.

Why This Is Important

Enterprises are pressured to transform IT delivery services to support and add value to new business initiatives and improve the employee experience. This is driving them to examine alternatives to traditional PC acquisition and management practices. PCaaS is available from several providers (including manufacturers, value added resellers and outsourcers) and can relieve IT teams of tedious device management processes, provide a predictable financial model, and scale to support a remote workforce.

Business Impact

PCaaS can help IT teams with:

- Enabling customers to outfit users with a PC at a predictable monthly fee.
- Reducing the number of touchpoints and contracts needed for service delivery, potentially improving accountability.
- Aligning with modern tools, such as Windows Autopilot, to automatically enroll new devices to distributed employees, potentially providing improved user experience.

Drivers

- Economic challenges have driven organizations to seek solutions that will help them cut costs through process efficiencies. Outsourcing internally inefficient device support operations can offset the added costs of PCaaS in some organizations. However, this is not generally true for most.
- New forms of PCaaS offerings are emerging to appeal to organizations that prioritize sustainability, such as the option to refurbish and remarket/redeploy to keep devices in use longer.
- Widespread remote work and now the shift to hybrid work, has made device management more challenging for many organizations, making PCaaS an increasingly attractive alternative to traditional PC procurement options.
- Offerings have matured and expanded with varied terms and conditions and service options. While there are still a number of custom deals, overall there is less confusion for customers about what PCaaS offers.
- Vendors continue to grapple with building attractive, profitable and affordable solutions by expanding their services while ensuring their internal capabilities are mature enough to deliver these offerings effectively. Initially, it will appeal to many of the same organizations that are looking at PC leasing today, or those looking to offload basic logistical activities associated with PC hardware deployment and maintenance.

Obstacles

- Understanding what services and financial models are available can be confusing, as “PC as a service” is a blanket term for many variations of PC leasing and/or services. In some cases, the services are offered on an “as-a-service” model independent of the actual device purchase.
- Providers occasionally overpromise on their services to make deals more attractive. This leaves customers with unmet delivery expectations as providers attempt to balance growing their service offerings with maturing their own internal capabilities.
- Elevated costs for basic services can be hidden within bundled overall pricing if it is not clearly broken out in proposals.
- Vendor lock-in causes customers to lose their autonomy over the endpoint management tools and processes.

User Recommendations

- Investigate PCaaS offerings as an alternative to standard leasing by weighing the benefits of reduced IT burden and a potential opex model with the additional cost of services.
- Ensure that the bundled services and/or tools are not duplicative of existing contracts or internal capabilities by selecting the offerings most valuable to unique IT team needs.
- Challenge suppliers to prove their ability to provide the services offered by establishing appropriate SLAs and a monitoring process.
- Prioritize vendors that have a broader range of modern software-enabled services, rather than those that still rely on manual processes.
- Prepare for potential volatility in the price of the services as vendors evaluate the true cost of providing these capabilities, by ensuring pricing or price caps are established for the entirety of the agreement.

Sample Vendors

CDW; CompuCom; Computacenter; Dell Technologies; HP Inc.; Insight; Lenovo; SHI

Gartner Recommended Reading

Customization and Automation Redefine the PCaaS Landscape

Critical Capabilities for Outsourced Digital Workplace Services

When to Purchase, Lease or Use PC as a Service

Group Interactive Displays

Analysis By: Stephen Kleynhans

Benefit Rating: Moderate

Market Penetration: 20% to 50% of target audience

Maturity: Mature mainstream

Definition:

Group interactive displays (GIDs) are large-format (typically, 50-inch to 86-inch) touch displays that include the ability to project content from various devices and enable markup, using touch or special pens. These peripheral devices are usually connected to a PC, but many higher-end units include stand-alone capability.

Why This Is Important

As companies plan for hybrid work with the return to the office, expanding and improving meeting spaces is a priority. Group interactive displays (GIDs) improve the interactive nature of virtual meetings for both local and remote attendees by enabling rich visual collaboration at a range of price points. While typically aligned with either Microsoft Teams or Zoom Video Communications, most can work across multiple collaboration vendors or presentation tools with varying levels of flexibility.

Business Impact

Meeting room technologies have a long life (up to 10 years) and companies must therefore take into account their long-term enterprise needs and future growth. GIDs can enable new approaches for meeting interactions and can play a role in changing how future digital workplaces are designed. By enabling digital whiteboards, GIDs play an important role in facilitating collaboration equity for all meeting participants, whether local or remote.

Drivers

- Hybrid meetings with both local and remote participants require new approaches to interactivity within meetings.
- Decreasing hardware costs for large, full-HD and 4K displays enable more organizations to replace projectors and consider interactive displays.
- Increased use of visual collaboration with digital whiteboard tools can improve the exchange of information, and improve brainstorming, but require a large interactive display to operate in group settings. Often, a GID is paired with a large nontouch display for use in videoconferencing setups.
- GIDs have evolved to include more stand-alone capabilities beyond being just a display. Many GIDs now include basic digital whiteboard software or a conferencing client, but can also still be used with any tool through an attached PC or tablet.

Obstacles

- Large interactive digital whiteboards have been available in the market for more than a decade, but have seen limited traction due to high cost, poor performance and uneven support. This has created a high level of skepticism in the user community about such technology's actual value.
- The experience provided is usually limited to the applications that users are able to run on their devices and is not specifically tuned for a particular meeting or collaborative tool, often resulting in a less-than-optimal user experience. Higher-end units which include embedded software designed for a specific meeting platform, ease some of the challenges but only for the primary tool. Often third-party visual collaboration tools are poorly supported.
- Starting a meeting is often still a multistep process, and this complexity has limited the success of many GID deployments. Recent improvements in meeting room tools are mitigating this challenge to some extent.

User Recommendations

- Investigate GIDs for all meeting rooms requiring digital whiteboard capability.
- Pair GIDs with a third-party whiteboard application and the videoconferencing tool running on a dedicated companion PC or a local meeting attendee's PC to get the full benefit. As an alternative, many GIDs are certified to integrate with specific conference room systems, such as Microsoft Teams Rooms.
- Provide user training, information cards and encouragement to engage with the devices to ensure a successful deployment project; provide simple tools to connect and display from multiple devices.
- Evaluate these large interactive displays for large private offices and, potentially, classrooms or executive briefing facilities — they are not just for meeting rooms. GIDs cost only marginally more than basic large displays but provide significantly more functionality.

Sample Vendors

Cisco Systems; Dell Technologies; DTEN; HP Inc.; Microsoft; Neat; Ricoh; Samsung Electronics; Sharp

Gartner Recommended Reading

Build Better Meeting Rooms to Support Hybrid Work

Video-Enable Meeting Rooms for Collaboration Equity in Hybrid Workplaces

Market Guide for Visual Collaboration Applications

Entering the Plateau

Enterprise App Store

Analysis By: Dan Wilson, Sunil Kumar, Tom Cipolla

Benefit Rating: Moderate

Market Penetration: More than 50% of target audience

Maturity: Mature mainstream

Definition:

An enterprise app store delivers a curated set of approved applications for employees to install and use on mobile devices and computers. It is commonly delivered as a stand-alone offering or as part of an endpoint management tool. Unlike public app stores, where publishers and independent software vendors (ISVs) list apps for consumers, an enterprise app store focuses on approved and custom-developed apps for a discrete audience.

Why This Is Important

IT leaders want to centralize and streamline how employees find and install public and custom-developed applications. The enterprise store commonly includes both PC and mobile apps, but also may include virtual and SaaS apps in the catalog. Usually hosted within the unified endpoint management (UEM) tool, this private store presents a curated set of apps for installation and can reinforce application security configurations.

Business Impact

An enterprise app store is commonplace in enterprise organizations as a way to distribute and/or allow self-service installation of mobile and PC apps. Although there are still a few third-party options, the use of an enterprise app store within a UEM is the most common. Overall value is achieved by offering employees a single, central place to find and install all approved and preconfigured applications for any device.

Drivers

- Consolidation of disparate endpoint management tools, teams and processes is enabling the use of a single app store hosted in the UEM rather than having a separate store per tool.

- Improved cyber hygiene requires reducing admin rights and increasingly delivering consistently configured apps from a central location.
- Employees want self-service apps instead of time-consuming request-and-queue processes.
- Organizations generally do not want custom apps in public app stores, but the diminished ability to sideload apps is requiring them to do so or attempt to use an enterprise app store.
- Google and Apple are being more stringent while reviewing applications to distribute custom apps with their app stores.
- Existing UEM tools that already manage apps on both employee- and organization-owned devices provide the best enterprise app store experience for internal use cases.
- OEM-specific purchasing programs are difficult to manage without an enterprise app store.
- Privacy concerns are causing employees to think twice about or completely reject any requirements to enroll a personal device in a UEM. This restricts the ability to deploy apps directly to the device, so hosting them in an enterprise app store is the only option.
- Enterprise app stores ensure that employees are downloading the correct version of protected applications (for example, mobile app management [MAM] wrapped apps).

Obstacles

- Limited interest in stand-alone app management or MAM has led to many third-party, stand-alone vendors pivoting to new markets or being acquired.
- Organizations that are unable or unwilling to consolidate disparate endpoint management tools into a single UEM will be dependent on and have to maintain a separate app store for each platform.
- Cloud-averse organizations leveraging a traditional client management tool instead of a UEM will find limited capabilities within the CMT enterprise app store.

- The preference for lighter-weight management for personal devices (BYOD) is limited just to apps with company data and limits the ability to push apps to devices that require enrollment.
- Most enterprise app stores do not offer business case and cost approval workflows, PC and SaaS-based license procurement and assignment, or turnkey integration with IT service catalogs. This may limit adoption to just prelicensed applications or require a notification to separately execute the disparate processes.

User Recommendations

The use of an enterprise app store is very common and is based on reliable, proven technology. Hype is approaching the Plateau of Productivity and may exit the Hype Cycle next year. IT leaders should:

- Use a UEM-based enterprise app store to host and deploy preapproved public and custom-developed apps and manage associated licenses for internal use cases.
- Use stand-alone app store or MAM functionality for use cases in which internal policy, privacy legislation and/or employee demands prohibit the use of UEM-native capability.
- Automate application delivery by defining required apps by use case or persona and defining these in UEM or app management tool policies.
- Reduce the impact of removing administrative rights by promoting the use of the enterprise app store for self-service.

Sample Vendors

Appaloosa Store; Applivery; Digital.ai; HCLTech; IBM; Ivanti; Jamf; Microsoft; VMware

Gartner Recommended Reading

Accelerate Windows and Third-Party Application Patching

How to Maximize the Benefits of Windows Modern Management

Quick Answer: Securing Company Data on Unmanaged Endpoints

Quick Answer: Are UEM Tools Good Enough for macOS Management?

UEM Tools

Analysis By: Tom Cipolla, Dan Wilson, Craig Fisler, Sunil Kumar

Benefit Rating: High

Market Penetration: More than 50% of target audience

Maturity: Mature mainstream

Definition:

Unified endpoint management (UEM) tools provide agent-based and agentless management of endpoint devices running Windows, Google Android, Chrome OS, Linux, Apple macOS, iPadOS and iOS. UEM tools apply data protection, device configuration and usage policies using telemetry from identities, apps, connectivity and devices. They also integrate with identity, security and remote access tools to support zero trust.

Why This Is Important

UEM simplifies endpoint management by consolidating disparate tools and streamlining processes across devices and operating systems. UEM has expanded beyond management to offer deeper integration with identity, security and remote access VPN tooling to support a zero-trust security model. Leading UEM tools also use intelligence to drive automation, reduce IT overhead and improve the digital employee experience (DEX) through rich data collection and insights.

Business Impact

UEM tools can streamline and improve endpoint management. Specific impacts include:

- Location-agnostic endpoint management and patching.
- Reduced total cost of ownership (TCO) by simplifying device management and support processes.
- Better security hygiene through consistent application of configuration and data security across all platforms.
- User-centric management across their corporate-managed and bring-your-own-device (BYOD) endpoints.

Drivers

- Supporting hybrid workers requires tools that extend beyond a single platform or requires devices to be on a specific network to function.
- IT looks to simplify and streamline endpoint deployment, management and patching to enable provisioning of new devices for remote employees and reduce security risk through consistent controls and configuration management.
- Increasing emphasis on improving DEX requires greater visibility into endpoint performance, reliability and consistency. Advanced UEM tools offer this through broader use of analytics and automation.
- Consolidation of disparate endpoint support teams, tools, processes and definitions of success into a centralized endpoint management framework supports efficiency efforts and the transition to higher business-valued work.
- Increased cyberattacks demand faster patch deployment and improved configuration management control and compliance.

Obstacles

- Legacy organization models where the responsibility for mobile and PC management, remote access, and security is distributed across several IT teams.
- Insufficient skills or resources to adopt new tools or practices.
- Heavy reliance on antiquated and ineffective high-touch practices of the past, such as monolithic imaging.
- Cost concerns for the small number of organizations that do not have an endpoint management tool.
- Organizations with many Active Directory Group Policy Objects (GPOs) that have little awareness of what each does will struggle to rationalize and migrate to configuration service provider (CSP) profiles.
- Highly complex environments with multiple Active Directory forests or domains, and/or autonomous subsidiaries or business units may struggle with the centralized nature of UEM tools.
- Fragile environments with a significant amount of technical debt, including legacy operating systems or applications that depend on unsupported browsers, runtime environments or plug-ins.

User Recommendations

UEM has advanced toward the Plateau of Productivity as the tools mature and adoption has become mainstream. Most organizations have successfully adapted processes and refocused IT staff on simplifying and modernizing endpoint management. I&O leaders should:

- Improve endpoint posture and security, and ease operations by consolidating PC, macOS and mobile management into a single UEM.
- Review IT policies and procedures to identify and eliminate unnecessary references to or dependence on mobile device management (MDM), client management tools (CMT) or location-specific technologies. This will help avoid common inertia, limitations and excuses related to something being against policy.
- Upskill or replace IT engineers and support staff to increase the use of UEM, modern management and automation capabilities.

Gartner Recommended Reading

How to Maximize the Benefits of Windows Modern Management

Accelerate Windows and Third-Party Application Patching

How to Implement Continuous Endpoint Engineering: An Agile Approach for the Digital Workplace

Consolidate Endpoint Management Teams, Tools and Strategies to Reduce Cost and Optimize Operations

Appendixes

See the previous Hype Cycle: Hype Cycle for Digital Workplace Infrastructure and Operations, 2022

Hype Cycle Phases, Benefit Ratings and Maturity Levels

Table 2: Hype Cycle Phases

(Enlarged table in Appendix)

Phase	Definition
Innovation Trigger	A breakthrough, public demonstration, product launch or other event generates significant media and industry interest.
Peak of Inflated Expectations	During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the innovation is pushed to its limits. The only enterprises making money are conference organizers and content publishers.
Trough of Disillusionment	Because the innovation does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.
Slope of Enlightenment	Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the innovation's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.
Plateau of Productivity	The real-world benefits of the innovation are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk; the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.
Years to Mainstream Adoption	The time required for the innovation to reach the Plateau of Productivity.

Source: Gartner (July 2023)

Table 3: Benefit Ratings

Benefit Rating ↓	*Definition* ↓
Transformational	Enables new ways of doing business across industries that will result in major shifts in industry dynamics
High	Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
Moderate	Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
Low	Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings

Source: Gartner (July 2023)

Table 4: Maturity Levels

(Enlarged table in Appendix)

Maturity Levels	Status	Products/Vendors
Embryonic	In labs	None
Emerging	Commercialization by vendors Pilots and deployments by industry leaders	First generation High price Much customization
Adolescent	Maturing technology capabilities and process understanding Uptake beyond early adopters	Second generation Less customization
Early mainstream	Proven technology Vendors, technology and adoption rapidly evolving	Third generation More out-of-box methodologies
Mature mainstream	Robust technology Not much evolution in vendors or technology	Several dominant vendors
Legacy	Not appropriate for new developments Cost of migration constrains replacement	Maintenance revenue focus
Obsolete	Rarely used	Used/resale market only

Source: Gartner (July 2023)

Document Revision History

Hype Cycle for Digital Workplace Infrastructure and Operations, 2022 - 21 July 2022

Hype Cycle for Digital Workplace Infrastructure and Operations, 2021 - 22 July 2021

Hype Cycle for Digital Workplace Infrastructure and Operations, 2020 - 4 August 2020

Hype Cycle for Mobile, Endpoint and Enterprise Wearable Computing, 2019 - 2 August 2019

Hype Cycle for Mobile, Endpoint and Enterprise Wearable Computing, 2018 - 31 July 2018

Hype Cycle for Mobile and Endpoint Technologies, 2017 - 3 August 2017

Recommended by the Authors

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Understanding Gartner's Hype Cycles

Tool: Create Your Own Hype Cycle With Gartner's Hype Cycle Builder

Hype Cycle for Digital Workplace Applications, 2023

I&O Digital Workplace Transformation Primer for 2023

Enhance Maturity and Improve Investment Prioritization Using Gartner's Digital Workplace Maturity Model

The Best and Worst Ideas for Achieving Digital Workplace Sustainability

Table 1: Priority Matrix for I&O Digital Workplace Transformation, 2023

Benefit	*Years to Mainstream Adoption*			
↓	***Less Than 2 Years*** ↓	***2 - 5 Years*** ↓	***5 - 10 Years*** ↓	***More Than 10 Years*** ↓
Transformational	Digital Employee Experience	Workplace Experience Apps	AR Cloud Digital Platform Conductor Tools	
High	Desktop as a Service Digital Work Hubs Indoor Location for People Tracking UEM Tools	BYOPC Security DaaS Optimization Tools DEX Tools Influencer Network PC as a Service Unified Endpoint Security Workstyle Analytics	Autonomous Endpoint Management Immersive Meetings	
Moderate	Docking Monitors Enterprise App Store	Chromebooks for Enterprise Continuous Endpoint Engineering Group Interactive Displays Smart Meeting Room Systems	IT Sustainability Management Modular Devices Peer IT Support Remanufactured IT Equipment SMP	Collaborative Support Hub
Low			Employee Enablement Linux Endpoint Management	

Source: Gartner (July 2023)

Table 2: Hype Cycle Phases

Phase	*Definition*
Innovation Trigger	A breakthrough, public demonstration, product launch or other event generates significant media and industry interest.
Peak of Inflated Expectations	During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the innovation is pushed to its limits. The only enterprises making money are conference organizers and content publishers.
Trough of Disillusionment	Because the innovation does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.
Slope of Enlightenment	Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the innovation's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.
Plateau of Productivity	The real-world benefits of the innovation are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk; the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.
Years to Mainstream Adoption	The time required for the innovation to reach the Plateau of Productivity.

Phase ↓	Definition ↓

Source: Gartner (July 2023)

Table 3: Benefit Ratings

Benefit Rating ↓	Definition ↓
Transformational	Enables new ways of doing business across industries that will result in major shifts in industry dynamics
High	Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
Moderate	Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
Low	Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings

Source: Gartner (July 2023)

Table 4: Maturity Levels

Maturity Levels ↓	*Status* ↓	*Products/Vendors* ↓
Embryonic	In labs	None
Emerging	Commercialization by vendors Pilots and deployments by industry leaders	First generation High price Much customization
Adolescent	Maturing technology capabilities and process understanding Uptake beyond early adopters	Second generation Less customization
Early mainstream	Proven technology Vendors, technology and adoption rapidly evolving	Third generation More out-of-box methodologies
Mature mainstream	Robust technology Not much evolution in vendors or technology	Several dominant vendors
Legacy	Not appropriate for new developments Cost of migration constrains replacement	Maintenance revenue focus
Obsolete	Rarely used	Used/resale market only

Source: Gartner (July 2023)