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### Application Development and Management

#### Agile Success: How to Convey Performance When Measurements are Lagging

**Q1 2022**

With the adoption of agile and the emergence of DevOps, technical teams are struggling to show performance metrics that convey a true message to business leadership teams that are still looking for outdated tools that measure time, budget, and overall project performance.

EMA is focused on understanding the challenges technical teams face when reporting performance, and which tools can help in delivering an accurate picture of DevOps teams to the leadership team. How can analytics tools convey a common message across all levels of the organization on application delivery, testing, performance, and user experience? This research will identify current gaps and key areas of importance for reporting at various levels of the organization.

#### DevSecOps Has Eliminated Silos – How to Continue with Infrastructure Teams

**Q1 2022**

DevOps success has been evident over the past few years. Recently, a logical next progression was to align security into the DevOps collaboration, now known as DevSecOps. EMA is seeing even more teams integrated to include network and service management teams.

This research will survey IT organizations about their evolving requirements for integration of these teams and focus on areas that can improve by having collaboration toolsets that allow teams to communicate using a unified message. Integrating teams around common outcomes can be challenging in an IT world known for silos. This research will identify the gaps and how organizations can overcome these limitations.

#### How Containers Change the Support Model – What Does it Mean to Support, What Practices are Affected, and Do We Have the Tools?

**Q1 2022**

Organizations are moving to containerized applications for speed and reliability of deployments. A recent EMA study showed that 40% of those surveyed are running containerized environments. Containers create speed and reliability, but bring a new set of challenges.

This research will evaluate the increased complexity organizations face with using container-based applications. This includes infrastructure requirements, deploying continuous integration and continuous delivery practices, and transparency of interactions, all while trying to control highly complex environments.

#### Is DevOps Integration with Service Delivery Teams the Next Step?

**Q2 2022**

DevSecOps aligns common methodologies important in today’s complex IT landscape. This research will investigate how frameworks, including ITIL and DevOps/agile, can complement application delivery.
### Application Development and Management

**Application Performance Management Tools: The Key to Understanding Your Applications**

**Q3 2022**  
Application performance management tools evaluate an organization’s application performance as quickly as possible by determining the “why” to performance issues. The key to resolving performance issues is to understand the cause of the issue. Some APM tools only identify the problem, leaving the sleuthing to the DevOps teams.

This research will look at APM monitoring tools to understand limitations organizations are seeing in their transaction tracing of their code profiling tools. How can the right tool impact change and make an organization’s technology team become more efficient? How can APM tools optimize and proactively monitor the performance of your applications?

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### Resource Allocation: Do You Know Where Your People Are?

**Q4 2022**  
One of the leading challenges of technology leaders today is to have high visibility in resource demand and allocation. There is a significant number of tools for resource management and collaboration on project management and DevOps. However, with this abundance of resources, technology leaders still list resource allocation as one of their top concerns.

This research will look at what an organization is seeking in resource management tools and what the limitations are of the tools they are using today. How have resource management tools evolved to meet the needs of the business? How do these tools need to change to meet the high demand in a hybrid cloud DevOps world? With this research, EMA will create a picture of the information IT leaders need to be able to accurately manage resources and demand management.
**Business Intelligence**

**Data Integration - Importance of Data Integration for a Unified, Single View of Business Systems**

**Q1 2022**

In a multi-cloud hybrid environment, data integration is key to the success of any organization. However, integrating disparate business systems into a single, unified view to drive reporting, analysis, and customer experience is as complex as the data itself. Having the appropriate infrastructure, talent, architecture, and tools is critical to the success of any data integration initiative.

This EMA research study will explore data integration required in a multi-cloud hybrid environment. This study will question the limitations organizations see when integrating data residing in disparate sources and across their data warehouse/lakes to have an unified view. We will also explore why organizations have not integrated datasets to drive real-time predictive analytics and what organizations will require to move into this next step of data maturity.

**Real-Time Analytics – As Business and Technology Become More Complex, so Does the Need for Data at Your Fingertips**

**Q2 2022**

The need for real-time analytics has progressed greatly over the last few years. Whether it's to interpret business outcomes and drive customer experience or to proactively manage alerts, real-time analytics can drive efficiencies at all levels of the organization. Increasingly, for an organization to benefit from real-time analytics, the data must first provide real value that is readily accessible to the right levels of the organization.

EMA is research will look at how businesses are using real-time analytics to drive efficiencies in internal processes. This study will identify where real-time analytics can accelerate business outcomes. Importantly, the research will focus on emerging use cases where real-time analytics can reduce overall cost of operations and increase collaboration across teams. This research will identify current gaps and key areas of importance for real-time analytics at various levels of an organization.

**The Predictability of Predictive Analytics**

**Q2 2022**

IT teams are overwhelmed with metrics and event notifications. The sheer amount of information has become a detriment to IT teams instead of the Holy Grail promised to free up valuable resources and improve overall performance. Application performance management teams hope to consolidate tools to quickly analyze performance issues and remediate them prior to impacting user experience. Several toolsets claim to have predictive analysis by weeding through millions of events for teams to focus efforts and reduce mean time to resolve, application performance issues, and errors.

EMA’s research will look at how companies are using ML in predictive analytics to improve performance of critical teams and ask: Have ML–based predictive analytics achieved the ability to proactively remediate events before there is an impact to the customer? How widely is predictive analytics used, and do companies have a roadmap to incorporate AI/ML into DevOps environments? This study will also explore areas of ML that teams are not using today, but could benefit from to improve efficiency and performance. How is predictive analytics based on machine learning technology changing how DevOps teams operate and deliver value to the customer?
Data Visualization - How has Data Visualization Evolved to Drive Collaboration and Efficiency Across Technology Teams?

Q3 2022

Data visualization has rapidly changed with the complexity of hybrid cloud environments. Organizations have relied on data visualization for some time, including dashboards to inform on business decisions and track performance. Data visualization has been prevalent throughout technology organizations to service-level agreements and monitor events. Additionally, in the last couple of years, we have seen growth in data visualization to drive collaboration across technology teams and enhance the customer experience.

This study will investigate how data visualization evolved over the past few years. The research will analyze how data visualization is being used today to deliver a unified message across teams to drive collaboration. Data visualization can increase efficiency, reduce development time, and deliver on business outcomes. Data visualization has expanded to be predictive in event monitoring and reduces critical issues. However, there are still significant areas that can benefit from data visualization.

Data-Driven Enterprise Maturity: What Does it Mean to be Data-Driven?

Q4 2022

EMA continues its exploration of what makes an enterprise data-driven. EMA’s previous research developed a maturity model on the stages that make up a data-driven enterprise. This research looked at the specific requirements of infrastructure teams and the use of workflow automation to be successful in ultimately driving business outcomes by incorporating analytics into the decision-making process.

The 2022 iteration of this research will survey how organizations are incorporating analytics at the infrastructure level, and how this has an overall impact on using data to drive business outcomes. There will be an additional focus on ML-based predictive analytics and how this improves overall efficiency of the organization.
### Digital Service Execution: IT Service, Experience, and Operations Management

#### AI Service Automation: Where ITSM and IT Operations Converge

**Q1 2022**  
The verdict is clear: AI-powered automation universally improves the speed and effectiveness of IT service to the enterprise. What's less clear is where the lines between ITSM and IT operations management should be drawn, if they should be drawn at all.  

Game-changing disciplines, such as DevOps and SRE, require new levels of interaction and automation for cross-domain workflows, efficiencies, and business outcomes. The ability to automate and leverage AI/ML makes those game changes possible, frequently by way of product and platform teams.  

This research examines practical considerations in the convergence of interests, outcomes, data, teams, and processes within the business context of excellence in digital service execution. It will look at the disciplines as practiced today and as planned for the near future.

#### AIOps: Crossing the ITOps/CloudOps Chasm

**Q2 2022**  
Conceptually—and often literally when implemented as a service in the cloud—AIOps sits above existing tools for monitoring and managing logs, events, metrics, and automations as it rationalizes huge quantities of diverse information. EMA research shows that enterprises frequently sport cloud-specific teams and tools that are distinct from other operational streams at the same time that digital transformation demands unified, cross-domain capabilities. This research takes a practical look at the role AIOps plays in rationalizing the dual drivers of domain specificity and end-end enterprise service. It looks at AIOps-related capabilities, such as AI analytics, observability, and hyper-automation, as they relate to the changing complex of multi-cloud/hybrid and legacy realities.

#### AIOps Radar Report: A Use Case View of Top Vendors Today

**Q3 2022**  
EMA's 2020 groundbreaking AIOps Radar examined 17 vendors across three diverse use cases: performance and availability, change management/cloud migration, and business alignment/business outcomes. Designed to provide IT executive and technical buyers with clear, functional understanding of the differing capabilities and roadmaps of key AIOps vendors, the Radar format focuses on practical, real-world uses rather than on rankings with winners and, by implication, losers. A lot has changed in these pivotal times—changes that will be reflected in this by-invitation 2022 AIOps Radar Report.

#### Optimizing IT for Financial Performance

**Q4 2022**  
New technologies and capabilities challenge traditional answers to the question, “What is an asset?” EMA research finds that the answer increasingly includes new entries including edge devices, industrial IoT, operational technology, and other enterprise assets in the cloud and across the globe. IT is being challenged to manage assets to optimize performance from both a business service and a financial standpoint. This research will explore new developments, as well as trend against prior EMA research (“Optimizing IT for Financial Performance” 2016; “Next-Generation Asset Management” 2014).
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<th>Digital Service Execution: IT Service, Experience, and Operations Management</th>
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<td>Optimizing IT for Business Services Excellence</td>
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<td>Q4 2022</td>
<td>The term &quot;business service management&quot; faded from market favor before it became a market reality. However, as technological complexity and speed of change explode, the need to view the IT estate as it serves the business is both essential and possible. This research probes the state of IT business service management as it is implemented today, including the innovations in technology, processes, and functional organizations needed to establish actionable business contexts.</td>
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Endpoint and Identity Management

Orchestrating Low-Friction Access: A Step-by-Step Guide to Deploying Passwordless Authentication

Q1 2022

Increasing awareness on the importance of enabling low-friction user experiences to drive workforce productivity and consumer satisfaction has increased the interest in and adoption of passwordless approaches to authentication. Related technologies include biometrics, hardware keys, device authentication, and behavioral analysis. Many organizations, however, are confused about the processes they should follow to transition from high-friction password-based access controls to low-friction solutions. Leveraging survey-based research data, this project will provide actionable guidance on the optimal path to streamlining authentication processes. In particular, the research will look at best practices for adopting industry standards (e.g., FIDO2), achieving contextual awareness, performing risk-based analysis, and enabling step-up multifactor authentication in support of passwordless implementations.

EMA Radar Report for Privileged Access Management (PAM)

Q2 2022

According to EMA primary research, roughly 25% of business workers retain privileged access enterprise devices, applications, and servers. The methods for controlling access to organizations’ most sensitive data and IT services is most effectively achieved with the adoption of a privileged access management (PAM) platform. To help provide purchasing guidance on the optimal PAM solutions organizations should adopt in order to achieve their unique goals, EMA is performing an objective and independent evaluation of the leading PAM solutions. This market landscape report will clearly identify industry value leaders through careful analysis of the solutions’ breadth of functionality, cost-effectiveness, architecture, integration, deployment, administration, and vendor strength. Value leaders and innovators will be recognized with awards.

Unified Endpoint Management (UEM) in Post-Pandemic World

Q3 2022

The early days of the COVID-19 pandemic saw sudden and dramatic changes to the way workers performed job functions. While telecommuting and other remote work conditions had been accelerating in previous years, the regional shelter-at-home orders required the vast majority of business employees to function out of a home office. Many businesses scrambled to deploy remote access and security solutions. However, in the rush, the introduction of remote endpoint management processes and solutions was bypassed or forgotten completely. As the world defines new user environments enabling work-from-anywhere, UEM practices are being redefined to maximize the usability of IT resources to ensure workers have the same experience working from home that they have when they are functioning in the office. For this research report, EMA will survey organizations across a broad range of industry verticals and horizontals to determine emerging requirements for remote endpoint management with the intent of providing actionable intelligence on the most effective UEM approaches and solutions.
Orchestrating Positive User Experiences with Consumer Identity and Access Management (CIAM)

Q4 2022  While CIAM solutions are most frequently adopted to help organizations meet security and compliance requirements, their employment has a direct impact on the experiences of all consumers involved in digital engagements. Access processes are instrumental in forming the first impressions consumers will have with a business’s brand, products, and service, and that perspective will be reinforced during each and every future engagement. Consumer experiences are impacted by the types of adopted CIAM-specific processes and solutions, including for low-friction authentication, self-registration, privacy consent, credential resets, and progressive profiling orchestration. EMA will conduct primary, survey-based research to identify the types of approaches employed for each of these and quantify their value for attracting and retaining consumers of business IT services.
Hybrid Cloud, Software-Defined Infrastructure, and Machine Learning

Machine Learning on Kubernetes at Scale: Critical Pain Points, Enterprise Priorities, and Success Factors

Q1 2022

The study will explore key requirements, adoption patterns, pain points, investment priorities, and success factors of deploying and operating machine learning models on Kubernetes. The study will provide guidance to organizations looking to enhance existing and future applications that run within the corporate data center, the public cloud, at near-edge low-latency data centers, or at far-edge locations. We will identify the challenges and opportunities of enabling applications to analyze streaming real-time data and static transactional data in order to open new business cases.

Code Once, Deploy Anywhere: Critical Steps Toward Maximizing Developer Productivity

Q2 2022

Software developers spend approximately 50% of their day on non-development-related tasks. Freeing up the “other 50%” of developer productivity would significantly increase an organization’s ability to beat its competition by releasing better products faster and cheaper. This study will identify all non-development tasks that are part of a developer’s day and determine a list of requirements for organizations to address or eliminate these tasks to unleash optimal developer productivity. Within this context, we will look into the importance of infrastructure as code, GitOps, MLOps, observability, automation, and machine learning.

Site Reliability Engineering: Pain Points, Trends, Requirements, and Technology Adoption Patterns

Q2 2022

This report will reveal critical success factors for implementing the SRE paradigm while exploring the importance of today’s trends in DevOps, IT operations, and machine learning. Readers will learn from the successes and failures of enterprises that transitioned to a site reliability engineering approach of optimizing cost, speed, quality, and innovation of their product and services portfolio. The study will explore how enterprises can accelerate the successful adoption of the SRE model and the critical tools and technologies in the areas of automation, root cause analytics, observability, compliance, and performance. Finally, we will look at how machine learning, deep learning, reinforcement learning, and similar technologies can make SREs more effective.

Unified Kubernetes Management for Policy-Driven Application Deployment and Day-2 Management in a Data Center, Public Cloud, and at the Edge

Q2 2022

The study will determine challenges, adoption patterns, priorities, and success factors related to managing Kubernetes clusters in different data center, cloud, and edge locations in a unified manner that enables automated policy-driven application deployment and day-2 management. AWS, Azure, and Google Cloud Platform all offer their own set of tools and technologies for DevOps, MLOps, and general operations management on their Kubernetes cloud. We will explore the options available to organizations aiming to maximize their ability to deploy, run, and operate applications wherever they can run in the most compliant and cost-effective manner, without changes to the application code, security policies, operations processes, and management tools.
Hybrid Cloud, Software-Defined Infrastructure, and Machine Learning

Scaling Up MLOps in 2022 - Accelerating Time to Value

Q3 2022

The study will identify critical gaps in an organization’s ability to quickly and cost-effectively build, train, deploy, continuously enhance, and share machine learning models. We will attempt to quantify the gap between potentially viable machine learning use cases and the use cases that are feasible under an organization’s current constraints. The analysis will look at all aspects of MLOps, including experimentation, training, tuning, pipeline building, infrastructure automation, data management, feature lifecycle management, use of purpose-built hardware, real-time data analysis, and numerous further potential factors. Finally, we will provide a checklist for enterprises to determine their own individual strengths and weaknesses.

Data Analytics and Machine Learning for Everyone

Q4 2022

While machine learning is and has been one of the critical trends in business, most business staff are unable to leverage data analytics and machine learning capabilities to solve daily business challenges. This study will look at the potential business impact of “democratizing” machine learning at all levels of the business, corporate IT, and DevOps. We will identify the low-hanging fruit, the high-value targets, and everything in between to determine concrete steps for businesses to beat the competition through enabling machine learning-driven decision-making and automation everywhere. This report may include the introduction of tools and platforms for businesses to look at in order to accelerate their journey toward an AI-driven enterprise.
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<td><strong>Worldwide Workload Automation Market Size and Forecast, 2022 to 2027</strong></td>
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**Q1 2022**

This EMA study will estimate the size of the workload automation market in 2022 and consider growth factors and trends to forecast the market growth for 2023 to 2027. In 2021, the worldwide workload automation software market continued its march toward a broader enterprise automation orchestration role. This class of software continues to play a significant role in enterprise digitalization efforts. The increasing importance of this IT management software category is attracting new investment and consolidation, and traditional players are increasing R&D and marketing spend. Workload volumes are increasing as use cases expand for traditional user organizations. New organizations are using this type of software for the first time. EMA will capture the impact of these trends in forecasting the growth in this mature, but changing, market.

**From Scheduler to Automation Fabric for the Enterprise: Workload Automation Transformation in 2022**

**Q2 2022**

The workload automation market continues its rebirth from a 40-year-old batch reporting job scheduler to a broad automation orchestrator. The most impactful change resulting from this trend is the broadening user groups interacting with WLA software. Traditional 5-7-person teams that took scheduling information in through ticketing software and did all the schedule setup, and administration of the WLA tool is giving way to the more modern 5-7-person team that sets naming standards and best practices to a broad group of users of WLA tools. For some enterprises, WLA users count in the 500+ range including developers, testers, broader IT operations staff for configuration management and change management, service desk staff, and even line of business staff. As more and varied users within the enterprise benefit from the capabilities of WLA software, WLA tools are morphing into a core part of the fabric of enterprise IT. EMA believes that, with the right WLA tool, as much as 40% of the functionality required for new digitalization processes can be invoked via API, and the WLA software can handle many functions on behalf of developers, reducing the new code, testing, and other overhead of larger applications. EMA believes this is the future of WLA software.

The research will also update many of the key metrics EMA has been tracking since 2013 to add current data to extend trends being tracked.
Network Management Megatrends 2022: Work-From-Anywhere, the IoT Edge, and the Networking Brain Drain

Q1 2022

EMA's biannual network management megatrends research is the benchmark for the network management industry. Since 2008, this research has tracked how network infrastructure and operations teams have evolved their tools and practices in the face of industry megatrends. It reveals the initiatives that drive network management strategies, and it tracks the requirements that network managers have of their tool vendors.

The 2022 iteration of this research will survey IT organizations about how they are conducting network operations after two years of pandemic conditions. It will explore how network operations teams are reacting to work-from-anywhere initiatives, shortages of technical personnel, IoT edge connectivity requirements, and more.

Network Packet Brokers for Hybrid Infrastructure

Q2 2022

Packet data is essential to network operations and security operations. IT organizations often implement visibility fabrics comprising network packet brokers and TAPs to deliver packet data to network monitoring and analysis tools. With enterprises embracing private, public, and hybrid cloud architectures, they need modern visibility fabrics that can deliver network data from any hypervisor, any container, and any cloud.

This research will survey IT organizations about their evolving requirements for network packet brokers (NPB) as they embrace software-defined data centers and multi-cloud architectures. It will also examine buying decisions, budgets, and best practices for these solutions as they evolve to better support hybrid infrastructure visibility.

The Future of Network Performance Management

Q3 2022

Network performance management (NPM) is a practice, not just a tool. IT organizations often assemble a suite of tools from multiple vendors to fulfill their NPM requirements for network monitoring, network troubleshooting, and network capacity planning.

EMA will survey buyers and users of NPM solutions to identify how they are evolving their tool suites, with a particular focus on hybrid and multi-cloud, work-from-anywhere, and the IoT edge. We will identify emerging requirements for data collection, functionality, AIOps enhancements, and deployment and licensing models. This research will help shape product roadmaps and marketing strategies of NPM vendors.
## Network Infrastructure and Operations

**Application Delivery Controllers for Multi-Cloud Enterprises**

**Q3 2022**

Enterprise cloud adoption has disrupted the Layer 4-7 networking world, as DevOps and cloud teams and network infrastructure and operations teams diverge in how they address load balancing, application delivery services, and application security. In 2020, EMA found that 81% of enterprises have experienced fragmentation in operational and administrative ownership of application delivery infrastructure, leading to increased security risk, compliance challenges, and operational inefficiency. IT infrastructure teams and cloud teams are struggling to get on the same page.

In this update of our 2020 research, EMA will survey enterprises about how they are addressing this fragmentation and building a new architecture for Layer 4-7 networking across on-premises data centers and hybrid and multi-cloud architectures.

## Enterprise WAN Transformation: SD-WAN, SASE, and Cloud Connectivity

**Q4 2022**

The internet and the cloud have redefined the meaning of wide-area networking. SD-WAN solutions are fundamentally transforming how enterprises connect corporate sites. SD-WAN and SASE are redefining how work-from-anywhere connections are enabled. A new class of networking as a service providers (NaaS) are redefining how enterprises establish connectivity to their multi-cloud footprints. The new WAN architecture must be dynamic, secure, and observable.

EMA's biennial research on WAN transformation will examine how enterprises are engaging with SD-WAN, SASE, and NaaS solutions to transform their WAN architecture. We will examine how enterprises derive value from these investments. We will also identify how IT organizations are updating their network management toolsets to support these new architectures.
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<td>Q1 2022</td>
<td>Data privacy regulations are becoming more relevant to every size of business. GDPR and CCPA regulators are starting to issue violations, and China has released their own set of regulations with the PIPL. As the various courts issue verdicts that determine how data privacy is regulated, the impacts that it will have on organizations big and small will add complexity to a crowded regulatory framework. Organizations are turning to security vendors to understand these regulations and gain control of their data estates using tools and services from the security ecosystem.</td>
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<td>The Future of EDR/XDR: Why Cloud Adoption and Emerging Threats Require Proactive Security Response</td>
<td>Security incidents continue to increase, and high-profile attacks have enterprise leaders asking how they can prevent their companies from appearing on the 9:00 o'clock news. As security leaders evaluate the vast array of tools available to combat ransomware attacks, endpoint and extended detection and response solutions stand out as the best defense against emerging threats. EDR/XDR vendors provide a broad set of security functions, but the enterprise has specific needs and wants. Plus, security buyers have shifted and the enterprise is looking for additional functionality to address LOB and risk/compliance considerations.</td>
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<td>API Security: The Critical Intersection Between Application Development and Security</td>
<td>2022 will be the year that enterprises are forced to pay attention to application security. For years, security vendors have discussed DevSecOps solutions and the benefits that they bring to the mature enterprise, but forecasted attacks on APIs and infrastructure as code (IaC) have put application security in the spotlight. Organizations of every size will invest in application security tools, and tools that address every market of every size will have a decisive advantage to exploit this emerging trend. As application security teams and development organizations pivot to address these new risks, this research will seek to measure how far enterprises have come in protecting APIs, uncover the challenges they face in trying to secure APIs, and look at strategies in place and being formulated to defend against these new types of threats.</td>
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<td>The Transformation From Cybersecurity Management to Risk Management</td>
<td>Cybersecurity has been around for nearly 50 years, constantly evolving to address new vulnerabilities and threats. The methods, tools, and procedures for security management vary greatly between different organizations—sometimes there is significant variance in the organizations themselves. Risk management has matured its processes and requirements to produce high-quality decision-making information. Ironically, security and risk management are often separate, non-integrated processes. The result is a diminished risk assessment and a security practice that often does not receive the necessary visibility. Security must be able to communicate how proposed business tools and processes will negatively affect the business risk profile and attack surface. Security must also be able to communicate how tools they use and want to purchase will positively affect the same.</td>
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Security, Risk, and Compliance Management

Security Operations and Technology Megatrends: Driving Better Security Outcomes

Q3 2022  After several years on hiatus, Enterprise Management Associates is revisiting a Security Management Megatrends study as the definitive benchmark for tracking the evolution of enterprise security management tools, issues, and practices. This ongoing research will survey security management on emerging tool requirements, organizational strategies, and operational challenges. EMA’s Megatrends research also examines the impact of critical technology trends on security managers. EMA is collaborating with research sponsors to determine the trends to focus on in 2022-2023. Security Megatrends topic considerations include managed services adoption, security considerations and views on public and hybrid cloud adoption, the expansion of security automation, the security team impacts from NetOps and DevOps, the perceived levels of need for convergence of network operations and security operations, and more.

EDR/XDR Security Top 3 Assessment: Automated Analysis, Threat Detection, Alert Management, and Cloud Integration

Q3 2022  In this series of research analysis, EMA will assess and compare endpoint/extended detection and response vendors. The leaders will be identified and receive recognition in the review. The “EDR/XDR Security Top 3” assesses feature strengths, use cases, and other capabilities of malware detection and prevention solutions to rank how the solutions meet business needs.

Ransomware: How Increasing Attacks Have Changed the Enterprise’s Security Priorities and Spending

Q4 2022  Ransomware attacks continue to increase, as orchestrated groups create complicated and sophisticated attacks targeting organizations of every size and vertical. They also understand that it is a game of large numbers: sending out attacks with what seem to be small or insignificant payouts to every kind of network in hopes of receiving the occasional untraceable payout. Small companies—many times unnoticed by the bad actor organizations—are no longer immune to attacks, as the bad guys realize they can easily make a quick dollar for minimal effort.
### Security, Risk, and Compliance Management

#### The Threat From Within: Strategies to Defend Against a Growing Threat Vector

**Q1 2022**

Threat researchers continue to document a disturbing shift in the source of big, expensive data breaches from external attackers to insiders, whether through malicious insider activity, credential theft, or sheer negligence. For example, in a 2020 study, McKinsey found that 50% of data breaches in the last year involved an insider. In another 2020 study, the Ponemon Institute reported that the cost of data breaches resulting from insider threats rose by 31% in two years, topping $11.45 million per breach (on average). This shift raises a host of questions: What strategies are security teams using to thwart such breaches? What defenses do IT security teams think work best? Are enterprises putting formal programs in place to address the threat? How frequently do IT security teams uncover insider threats? This research project will seek answers to these and other questions around improving insider threat defenses.

### The Journey to Secure Access Service Edge: What Have We Learned So Far?

**Q2 2022**

Initial EMA research in 2020 into secure access service edge (SASE) awareness and use among organizations indicated good mindfulness of the SASE moniker and a head start in deployment among networking teams. It is still early days in the adoption of the converged security and networking architecture, though, and there is much to be learned in the process of re-architecting how and where specific networking and security services are deployed. What speed bumps have those deploying SASE hit along the way? How far along are they in their SASE journey? What benefits are they already seeing in their SASE deployments? What benefits do they expect to see once they are fully deployed? How long do they think it will take to create an end-to-end SASE infrastructure? What impact has changing work locations as a result of the pandemic had on their SASE plans? This EMA research project will take an in-depth look at where organizations are in their journey toward a SASE promised land.

### Shifting Security Left: Improving Application Security in the Brave New World of CI/CD

**Q3 2022**

As more organizations adopt the CI/CD development methodology, security and development must adapt to ensure that applications remain secure without introducing bottlenecks to the release of critical new functionality. What strategies are security practitioners putting in place to adapt to this fast, new way of releasing software as organizations shift more applications and workloads to the cloud? What tools are they using? How are they engaging with the development organization to keep pace and ensure that vulnerabilities and even malware aren't being injected into new applications through open-source code reuse? How are they adapting to DevOps and security DevOps/DevSecOps? This research will survey IT security professionals to better gauge how they are adapting to the move to microservices and open-source software, and what they are doing to ensure the security of those constantly updated applications.
Security, Risk, and Compliance Management

End-User Security Awareness Training: Have We Become Any Smarter About How the Bad Guys Work?

Q4 2022

By some estimates, 90% of cyber insurance claims stem from end-user error or bad behavior. Whether it’s malicious or clueless, end users are more often than not the weak link in the chain of defenses that security pros put in place to protect their organization’s critical information assets. With the sudden shift to work from home as a result of the global pandemic, these chain links have been weakened further. EMA explored the use of security awareness training in 2015, but much has changed in the last six years. The bad guys have gotten even better at social engineering, and breaches still happen as a result of users clicking on malware-laden weblinks or attachments. How has the training evolved over that time? Are more organizations working with end users to improve their threat awareness? How can you measure the success of an end-user training program? This research will look at how security awareness training has evolved in the last five years, what progress IT security pros have made in improving end-user awareness, and what’s not working.
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