Technical professionals find architecture decisions to be increasingly difficult. A widening skills gap exacerbates the problem and can impede digital business transformation. To help address this challenge, we summarize the top trends and planning considerations across 10 key technology areas.

Opportunities and Challenges

A business opportunity: New digital businesses emerge every day, from asset-intensive industries, to healthcare, to government and beyond. There has never been a better time for organizations to quicken their digital transformation.

A skills challenge: The pace of technological change will continue to accelerate, forcing organizations to invest in acquiring the skills necessary for digital transformation. Machine learning (ML), artificial intelligence (AI), cloud, DevOps, security and many other technologies impact every IT role.

A technology challenge: Organizations will increasingly adopt cloud and edge computing technologies, adding to the complexity of application modernization, data governance, security and identity administration, content management, and business intelligence initiatives.

What You Need to Know

Technical professionals must focus on quickly understanding, integrating and operationalizing new technologies. Acquiring the right set of skills to undergo digital transformation is imperative.

While the pace of technological change is accelerating, the demand to deliver solutions more quickly is also increasing. To succeed, technical professionals must focus on increasing agility across the IT organization.

Technologies such as cloud, analytics, security and AI are not disparate and independent entities. Each is necessary — and dependent on the others — for digital transformation. All IT roles must understand how these technologies impact their discipline.
Hybrid environments — comprising data centers, public cloud and edge computing — have become the “new normal” for mainstream enterprises of all sizes. This paradigm requires new platforms, tools and practices to address new needs.

Insight From the Analyst

Building Skills for Digital Transformation

Kirk Knoernschild, Research VP

Paul DeBeasi, VP Distinguished Analyst

We live in an era of exponential change, driven not only by advances in technologies like AI and ML, but also by the way those technologies combine. It is the combination of these disparate technologies into holistic solutions that forms the foundation of a digital technology ecosystem.

Organizations are citing skills and talent management as top impediments to their digital transformation. Thus, keeping up with the trends in your core discipline isn’t enough — you must also know what’s happening in other disciplines. But, how can you learn about the key trends for various technologies while immersed in your day-to-day activities?

Gartner for Technical Professionals’ (GTP’s) 2020 Planning Guides can help. Our research team has created a portfolio of 10 Planning Guides to inform you of the latest trends and to arm you with specific action plans. Each Planning Guide analyzes a single research area, such as cloud computing, software development, or analytics and AI. These guides provide actionable advice to help you:

- Analyze key technical trends, by offering the latest insight from GTP analysts
- Create an action plan, by specifying detailed technical planning considerations
- Assess architectural options, by analyzing design decisions and their implications
- Expand staff knowledge, by explaining the most important trends, issues and skills

This overview provides research highlights and key trends from each of the 2020 Planning Guides. After you read this overview, we encourage you to read the specific Planning Guides that align to your own technology initiatives, so that they can inform, inspire and empower you.

Sincerely,

Kirk Knoernschild and Paul DeBeasi
Executive Overview

Definition

The Planning Guides are the most highly anticipated and widely read research reports that GTP publishes. These guides cover a broad set of technologies, services and infrastructure. Each Planning Guide focuses on a specific research area, and is designed to help you quickly assimilate and act on the most important trends in that area (see Figure 1).

Technical professionals must not only stay abreast of the trends in their core disciplines, but also understand the trends developing in adjacent disciplines.

Each guide is written for the technical professional, and includes the following sections:

- **Technical Planning Trends**: Analysis of the most important technical trends for a specific research area for the upcoming year
- **Planning Considerations**: A series of technical action plans for each of the trends
- **Setting Priorities**: Guidance to help set priorities among the various competing trends
Research Highlights

Organizations are seeking to transform into digital businesses. As highlighted in Figure 2, participants in the 2019 Gartner CEO and Senior Business Executive Survey cite talent management as the No. 1 organizational competency needed to deliver on business strategy. Likewise, participants in the Gartner View From the Board of Directors: 2020 Survey find that access to skills is one of the top five trends shaping their digital business strategies. Finally, the 2019 Gartner Technical Professionals Survey reveals that two of the key impediments architectural decision makers face are rising technological diversity and increasing pace of change. Consequently, more than 50% of the survey participants find that architectural decisions today are more challenging than they were just three years ago.
Figure 2. A Focus on Skills Is a Top Priority to Help Make Complex Technology Decisions

A Focus on Skills Is a Top Priority to Help Make Complex Technology Decisions

- CEOs surveyed cite **talent management** as a core organizational competency to improve.

  - Talented Management: 11% First, 8% Second, 18% Overall
  - Technology Enablement: 8% First, 10% Second, 17% Overall
  - Data Centricity: 7% First, 8% Second, 15% Overall
  - Innovation: 8% First, 5% Second, 14% Overall
  - Execution: 7% First, 5% Second, 12% Overall

  Source: 2019 Gartner CEO and Senior Business Executive Survey

- BoD members surveyed cite **access to skills** as a top 5 trend shaping their digital strategy.

  - Competition From Existing Competitors in Your Industry: 19% First, 11% Second, 15% Third, 45% Overall
  - Digital Business/Technology-Driven Disruption: 18% First, 14% Second, 11% Third, 44% Overall
  - Availability and Access to Required Skills: 5% First, 19% Second, 11% Third, 35% Overall
  - Disruption Business Models: 14% First, 13% Second, 8% Third, 35% Overall
  - Competition From Non-traditional Competitors in Your Industry: 14% First, 12% Second, 7% Third, 32% Overall

  Source: Gartner View From the Board of Directors: 2020 Survey

- Technical professionals surveyed find that **technological diversity and pace of change** are top impediments to architecture decisions.

  - Technological Diversity and Choice Are Greater: 57%
  - Increasing Pace of Change: 53%
  - More System Components and Interconnections: 50%
  - Product and Service Boundaries Overlap, Making Decisions More Difficult: 46%
  - Systems Are Distributed Across Diverse Platforms: 45%

  Source: 2019 Gartner Technical Professionals Survey

Note: In the first two charts, percentage totals may not equal the sum of their parts due to rounding.

ID: 401284
The bottom line is that an emphasis on acquiring skills in key technology areas is one of the top priorities for organizations seeking digital transformation. The 10 GTP Planning Guides address this challenge by highlighting the key technology trends on which organizations must focus their attention in 2020 and beyond (see Figure 3). These are the key areas where organizations must concentrate on building their skills for digital transformation.

Figure 3. 2020 GTP Planning Guide Topics

In this overview, these research highlights and trends are organized into the following five categories:

- Cloud computing, infrastructure and operations
- Data and analytics
- Software development, application architecture and integration, and CRM and customer experience
- Security, risk management, and identity and access management (IAM)
- Collaboration and end-user technologies

Cloud Computing, Infrastructure and Operations

**Cloud Computing:** Cloud computing has become the technical foundation that enables businesses to transform, differentiate and gain a competitive advantage. Cloud computing has evolved to support the execution of data, analytics, Internet of Things (IoT), security and application strategies. Many organizations now have a cloud-first strategy as they advance the use of cloud services across the business. Given this reality, organizations must continue to invest in and mature their
cloud competencies to ensure that cloud computing becomes the mainstream computing platform in the organization.

However, cost concerns and trust issues are counteracting the enthusiasm for cloud computing. These challenges are stalling cloud investment in some organizations while cloud computing is driving the future of digital business in others. Organizations must overcome these challenges, or risk not having the agility to meet the needs of their business. To do this, technical professionals must manage cost, security and governance as a key part of their cloud strategy.

Figure 4 lists Gartner’s 2020 technical planning trends and planning considerations for cloud computing.

Infrastrucure and Operations (I&O): Cloud computing has wrought unprecedented disruption to established I&O practices, and this disruption shows no signs of abating in 2020. In particular, the need for rapid creation, deployment, management, governance and destruction of dynamic application environments has pushed traditional I&O practices beyond their breaking point.

However, this doesn’t mean that all new applications will run in a public cloud environment. Applications will continue to run in data centers when cloud computing options can’t support an
application’s technical, compliance or data residency requirements — or when the costs of migrating to the cloud will far exceed the benefits.

To meet all these challenges, I&O technical professionals will need to build a manageable hybrid IT strategy. This strategy must effectively address all of the organization’s required data processing functions, regardless of whether they occur in data centers, public clouds or edge computing endpoints. Figure 5 lists Gartner’s 2020 technical planning trends and planning considerations for infrastructure and operations.

Figure 5. Planning Considerations for Infrastructure and Operations

<table>
<thead>
<tr>
<th>2020 Key Planning Considerations for Infrastructure and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increasing Expectations for IT Agility Will Require Modernizing On-Premises Assets</strong></td>
</tr>
<tr>
<td>• Focus on programmable infrastructure</td>
</tr>
<tr>
<td>• Assess hyperscale cloud on-prem solutions</td>
</tr>
<tr>
<td>• Modernize virtualized infrastructure</td>
</tr>
<tr>
<td>• Redesign networks for cloud</td>
</tr>
<tr>
<td><strong>Pervasive Hybrid IT Will Require Rebuilding IT Operations Processes and Procedures</strong></td>
</tr>
<tr>
<td>• Evaluate operation tools on breadth vs. depth</td>
</tr>
<tr>
<td>• Modernize monitoring to provide observability</td>
</tr>
<tr>
<td>• Implement programmatic governance controls</td>
</tr>
<tr>
<td>• Evolve IT asset-tracking practices</td>
</tr>
<tr>
<td>• Enable self-service IT capabilities</td>
</tr>
<tr>
<td><strong>Demand for Container-Centric and Serverless Capabilities Will Require New Platforms</strong></td>
</tr>
<tr>
<td>• Assess private PaaS platforms/capabilities</td>
</tr>
<tr>
<td>• Investigate serverless function PaaS offerings</td>
</tr>
<tr>
<td>• Plan for container-centric development</td>
</tr>
<tr>
<td><strong>Agility and Scaling Demands Will Force Organizations to Invest in Automation</strong></td>
</tr>
<tr>
<td>• Look for immediate automation opportunities</td>
</tr>
<tr>
<td>• Build infrastructure-as-code strategies</td>
</tr>
<tr>
<td>• Automate network operations</td>
</tr>
<tr>
<td>• Define the future role of AI in operations</td>
</tr>
<tr>
<td>• Build frameworks for proactive AIOps</td>
</tr>
<tr>
<td><strong>Edge and IoT Use Cases Will Drive Compute Capabilities Even Closer to Users</strong></td>
</tr>
<tr>
<td>• Design edge and IoT reference architectures</td>
</tr>
<tr>
<td>• Evolve networking to address edge use cases</td>
</tr>
</tbody>
</table>

Source: Gartner
ID: 401284

Related Research

- “2020 Planning Guide for Cloud Computing”: In 2020, infrastructure, applications and data will be everywhere. Technical professionals focused on cloud must design a secure, holistic strategy to embrace multicloud, integrate the edge and maintain the data center. This Planning Guide outlines trends for cloud adoption.

- “2020 Planning Guide for Infrastructure and Operations”: The pace of change in IT has been radically accelerated by cloud computing, along with industry-specific competitive pressures. This Planning Guide highlights key areas that I&O technical professionals must focus on in 2020 to modernize operations across on-premises, cloud and edge environments.
Data and Analytics

**Data Management:** Digital transformation is driving the need to analyze what is happening now, not what happened yesterday or last month. Frictionless data movement will demand a modular, flexible, end-to-end data architecture spanning edge, cloud and on-premises facilities. Consequently, data stores are experiencing an unprecedented transformation to fulfill the capacity and capability requirements of new use cases. The proliferation of new use cases has led to the creation of many niche databases, belying the common logic that this market is rife for consolidation.

AI and ML technologies are being deployed to achieve higher efficiencies in areas such as improving data quality. New ML-based options can infer anomalies and provide recommendations for remediation. Open-source software has evolved to incorporate ML-enabled features. For example, the open-source database PostgreSQL includes GPU-accelerated processing for deep learning model training through Apache MADlib.

Figure 6 shows Gartner’s 2020 technical planning trends and planning considerations for data management.

**Figure 6. Planning Considerations for Data Management**

<table>
<thead>
<tr>
<th>2020 Key Planning Considerations for Data Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectures Span Edge, Cloud, On-Premises</strong></td>
</tr>
<tr>
<td>• Ingest streaming and cloud-born external data</td>
</tr>
<tr>
<td>• Modernize integration strategy</td>
</tr>
<tr>
<td>• Deliver data through virtualization and LDW</td>
</tr>
<tr>
<td>• Incorporate DataOps</td>
</tr>
<tr>
<td><strong>Data Stores Address Complex Use Cases</strong></td>
</tr>
<tr>
<td>• Reduce polyglot persistence via multimodel</td>
</tr>
<tr>
<td>• Enhance conceptual and semantic models</td>
</tr>
<tr>
<td>• Deploy data lakes on object stores</td>
</tr>
<tr>
<td>• Explore metamodels on multistructured data</td>
</tr>
<tr>
<td>• Optimize in-memory and nonvolatile memory</td>
</tr>
<tr>
<td><strong>Regulations Drive Data Governance</strong></td>
</tr>
<tr>
<td>• Deploy metadata tools in distributed pipeline</td>
</tr>
<tr>
<td>• Democratize data through data-as-a-service</td>
</tr>
<tr>
<td><strong>AI/ML Augment Data Management</strong></td>
</tr>
<tr>
<td>• Use AI/ML-enabled tools in data pipeline</td>
</tr>
<tr>
<td>• Optimize operationalization of models</td>
</tr>
<tr>
<td><strong>Changes Drive New Operating Models, Roles</strong></td>
</tr>
<tr>
<td>• Evaluate &quot;as-a-service&quot; (e.g., dbPaaS)</td>
</tr>
<tr>
<td>• Introduce tools with autonomous capabilities</td>
</tr>
<tr>
<td>• Use open standards on multicloud</td>
</tr>
</tbody>
</table>

Source: Gartner
ID: 401294
**Business Analytics and Artificial Intelligence:** To improve the decision-making process in your organization, you’ll need to use analytics and some form of business intelligence (BI) and AI. Advancements in analytics technologies such as AI and ML are accelerating the ability of humans to acquire knowledge and improve productivity. The rapid distribution of infrastructure, applications and data means that technical professionals must architect BI systems to support interconnected sets of analytics outputs.

The future of business analytics and artificial intelligence (BA&AI) will be based on connected intelligence. Connected intelligence is a collection of intelligent and analytical systems related by common management. In connected intelligence, an organization is responsible for multiple analytics systems in multiple phases of development, but those environments may not have a common design, or be operationally interconnected.

Figure 7 shows Gartner’s 2020 technical planning trends and planning considerations for business analytics and AI.

**Figure 7. Planning Considerations for Business Analytics and Artificial Intelligence**

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### 2020 Key Planning Considerations for Business Analytics and AI

**Organizations Will Connect to an Assortment of Distributed Intelligence and Analytics**

- Architect for a portfolio of intelligence systems
- Implement collaborative platforms for building and trading analytics outputs
- Move to streaming analytics pipeline management

**Augmented Analytics Will Transform Analytics Initiatives, Roles and Delivery**

- Develop an augmented analytics strategy that aligns with your AI strategy
- Complement existing analytics initiatives with augmented capabilities
- Nurture new roles enabled by augmented analytics
- Equip data scientists to monitor, integrate and customize machine-assisted models

**Distributed and Coordinated Analytics Governance Models Will Flourish**

- Develop a coordinated analytics governance strategy
- Align governance activities via multimodal network, or decentralized, governance models
- Embed functions within analytics COEs
- Measure network governance effectiveness

**Data and Analytics Tooling Will Converge**

- Leverage cloud to build converged analytics platforms
- Evaluate total cost of ownership (software, infrastructure and implementation costs)
- Upskill resources to support diverse data and analytics pipelines

**Unbiased and Ethical AI Will Drive the Need for Interpretable Models and Explainable AI**

- Enforce compliance environments for ML models to explain the recommendations
- Promote AI fairness toolkits and explainable AI frameworks

Source: Gartner

ID: 401284
Related Research

- **“2020 Planning Guide for Data Management”:** Data management architectures and technologies continue to evolve rapidly. They promise higher efficiencies but demand deeper understanding of risks and implications. Data and analytics technical professionals must prepare to adopt the innovations to meet current business needs and future demand.

- **“2020 Planning Guide for Business Analytics and Artificial Intelligence”:** In 2020, organizations will demand business analytics and AI capabilities everywhere. Data and analytics technical professionals must understand these trends in order to foster innovation, tackle shifting technologies and create enterprise-grade analytics services.

Software Development, Application Architecture and Integration, and CRM and Customer Experience

**Software Development and UX:** Digital disruption is reinventing business models, and will impact every industry. This disruption is led by organizations working on innovative projects, such as experimenting with new solutions and exploring surprising use cases. As organizations look to modernize their legacy systems, they must also focus on giving those systems a better user experience (UX).

Rapid adoption of SaaS and aPaaS either displaces developers working on traditional systems or focuses on migrating those systems to modern platforms. In order to evolve, innovate and stay relevant, these developers must take lessons from organizations causing industry disruption, and apply them in their daily work and culture.

Figure 8 shows Gartner’s 2020 technical planning trends and planning considerations for software development and UX.
Application Platforms, Architecture and Integration: Delivering applications and systems that support a modern digital business is a challenge to even the best architects. They must:

- Meet functional demands of business users and customers
- Support agility, flexibility and robustness
- Balance these requirements against time, resource and risk factors

Based on our research and client discussions, we see a new primary theme emerging in 2020 — modernizing application delivery.

This theme reflects the maturation of new architecture and integration technologies, patterns and practices. Microservices, APIs, event-driven architectures, containers and cloud-native platforms based on Kubernetes have moved from the leading edge to mainstream adoption. In 2020, organizations will be more confident than ever about adopting these once-trendy technologies in their systems of differentiation and systems of record. The focus will be on modernizing existing applications and systems, rather than building new systems of innovation. The programs, projects
and products delivered will represent full and partial replacements of existing applications, as well as deeper integrations between new components and existing application assets that remain valuable.

Figure 9 shows Gartner’s 2020 technical planning trends and planning considerations for application platforms, architecture and integration.

**Figure 9. Planning Considerations for Application Platforms, Architecture and Integration**

### 2020 Key Planning Considerations for Application Platforms, Architecture and Integration

**Digital Business Agility Will Accelerate Application Modernization**
- Define clear modernization goals and drivers
- Don’t address architecture or platform in isolation
- Establish self-service application platforms
- Control the scope and pace of modernization

**Microservices Hype Will Continue to Drive Modernization of Application Delivery**
- See through the hype of microservices
- Start with the simplest architecture
- Identify where MSA will and won’t help
- Improve your processes before architecture
- Treat modernization as a continual evolution

**Scaling Digital Business Delivery Will Require Modern Integration Technology and Practices**
- Adopt agile approaches to integration delivery
- Create an integration technology portfolio
- Establish an API-centric integration strategy
- Use digital twins as a conceptual model

**Multicloud Computing Will Create New Architectural Challenges and Opportunities**
- Choose correct multicloud app architecture
- Build edge computing into your architecture
- Address service mesh challenges for multicloud
- Use platforms that have a “biplane architecture”

**Source:** Gartner
**ID:** 401284

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**CRM and Customer Experience (CX):** Meeting customer and business expectations is a daunting task, even for the most seasoned CRM and CX teams. Teams must continually incorporate advanced capabilities, such as AI, ML and conversational UIs. At the same time, they must pull together a unified view of the customer and provide a continuous customer experience. While this is happening, CRM and customer data management markets continue to expand and overlap, causing uncertainty on which tools are best for what situations.

Figure 10 shows Gartner’s 2020 technical planning trends and planning considerations for architecting, integrating and developing CRM and CX technologies to meet digital business demands.
2020 Key Planning Considerations for CRM and CX

Organizations Will Take a Multifaceted Approach to Customer Data Management
- Enforce standards for shared customer data
- Implement data sync for shared customer data
- Ensure customer data privacy drives customer data flow

Anytime, Anywhere Engagement Will Require Channel Growth and Continuity
- Capture an outside-in view to understand customer expectations
- Use customer journey insights to influence customer channel evolution and expansion
- Build continuity between channels that are commonly used together

Demand for Agility Will Drive Changes to Development and Integration for CRM
- Embrace headless architectures for CRM reuse
- Incorporate agile and DevOps practices within CRM efforts
- Adopt existing organizational integration and service mediation technologies and strategies

Source: Gartner
ID: 401284

Related Research
- “2020 Planning Guide for Software Development and UX”: Developers are a force multiplier to business innovation and growth. Application technical professionals responsible for software development must embrace agile, DevOps practices and modern technologies to compete and stay relevant.
- “2020 Planning Guide for Application Platforms, Architecture and Integration”: Modernizing your application and integration architecture and delivery is necessary to support sustainable business agility. In 2020, application technical professionals responsible for platforms, architecture and integration must rationalize recent innovations to revitalize their app portfolios.
- “2020 Planning Guide for CRM and Customer Experience”: Incorporating agile practices, implementing holistic customer data management and providing a continuous experience are all necessary to meet today’s expectations for CRM and CX. In 2020, application technical professionals responsible for CRM and CX must adopt these principles to stay competitive.

Security, Risk Management, and Identity and Access Management

Security and Risk Management: Cybersecurity has long been a major concern for organizations, and security teams have found it challenging to keep up with the changing risk, compliance, business and IT landscapes. Data is being used in more places, for more business purposes, and by more partners in the digital business ecosystem. Applications and APIs are expanding to make more business functionality accessible, and cloud makes critical applications potentially accessible.
to a wide range of attackers. In addition to data breaches and ransomware, abuse and fraud are an increasing threat.

Because clients are at various levels of security maturity, the planning considerations for 2020 cover many security controls within each practice. Each practice has basic hygiene controls (e.g., firewalls) and more advanced options (e.g., cloud access security brokers), usually selected based on specific risks and organizational capabilities. Even in the face of changes to the compliance and risk landscapes, organizations must remain pragmatic and continue advancing their security programs and architecture initiatives based on a solid security baseline.

Figure 11 shows Gartner’s 2020 technical planning trends and planning considerations for security and risk management.

Figure 11. Planning Considerations for Security and Risk Management

<table>
<thead>
<tr>
<th>2020 Key Planning Considerations for Security and Risk Management</th>
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</thead>
<tbody>
<tr>
<td><strong>Major Changes in Compliance and Risk</strong></td>
</tr>
<tr>
<td>Impact Security Program and Roadmap</td>
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<tr>
<td>- Evangelize pragmatic approaches to risk</td>
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<tr>
<td>- Triage high-exposure risk areas</td>
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<tr>
<td>- Improve third-party assessment and control</td>
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<tr>
<td><strong>Effective Security Monitoring and Response</strong></td>
</tr>
<tr>
<td>Depend on Automation and Analytics</td>
</tr>
<tr>
<td>- Develop and enhance incident response</td>
</tr>
<tr>
<td>- Focus on activity and access monitoring</td>
</tr>
<tr>
<td>- Assess machine learning and deception</td>
</tr>
<tr>
<td><strong>Security Solution Architecture Is Increasingly Driven by</strong></td>
</tr>
<tr>
<td>Integrated Platform Approaches</td>
</tr>
<tr>
<td>- Create a security capability model</td>
</tr>
<tr>
<td>- Use threat and attack models</td>
</tr>
<tr>
<td>- Evaluate integrated cybersecurity platforms</td>
</tr>
<tr>
<td><strong>Containers, DevSecOps, Hybrid Cloud and</strong></td>
</tr>
<tr>
<td>Multicloud Transform Infrastructure Security</td>
</tr>
<tr>
<td>- Embrace DevSecOps for automation</td>
</tr>
<tr>
<td>- Modernize network, workload, data security</td>
</tr>
<tr>
<td>- Emphasize visibility, monitoring, management</td>
</tr>
<tr>
<td><strong>Ecosystems Cement the Need for Data-Centric</strong></td>
</tr>
<tr>
<td>Security Architecture and Application Security</td>
</tr>
<tr>
<td>- Create discovery, visibility and control</td>
</tr>
<tr>
<td>- Design flexible security for data and analytics</td>
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<tr>
<td>- Enhance application and API security practices</td>
</tr>
<tr>
<td><strong>Mobile Devices, Things, Agents &amp; SaaS Drive</strong></td>
</tr>
<tr>
<td>Need for Native Security &amp; Security Add-Ons</td>
</tr>
<tr>
<td>- Implement endpoint threat and data protection</td>
</tr>
<tr>
<td>- Design mobile security with cloud AppSec</td>
</tr>
<tr>
<td>- Factor IoT devices, agents into security plans</td>
</tr>
</tbody>
</table>

**Identity and Access Management:** Four major forces are fueling the IAM trends that organizations must plan for in 2020:

- **Privacy mandates:** In 2019, the EU’s General Data Protection Regulation (GDPR) leveled substantial fines for organizations that failed to keep personal data secure, marking a departure
from previous GDPR fines that were much smaller. Also looming is the California Consumer Privacy Act (CCPA), which goes into effect in 2020. California is the fifth largest economy on the planet, and the enforcement of CCPA has major implications.

- **The rise of multicloud**: For many years, organizations have leveraged a single IaaS platform. Recently, however, Gartner has observed an explosion in the use of multiple IaaS providers. Integrating these IaaS platforms comes with IAM and security implications.

- **Maturing commercial authentication standards**: The Fast Identity Online (FIDO) Alliance has released the second generation of its authentication specifications. FIDO2 standards have observable benefits, such as passwordless authentication that can improve UX.

- **Identify governance and administration (IGA) challenges**: IGA systems are notoriously difficult to deploy. But, IGA is an essential IAM function for most organizations, because it provides compliance and data protection benefits, and enables user life cycle management across heterogeneous applications. In the era of high-velocity digital business, high-stakes data breaches and new privacy mandates, agile IGA powered by advanced identity analytics is crucial.

Figure 12 lists Gartner’s 2020 technical planning trends and planning considerations for IAM.

**Figure 12. Planning Considerations for Identity and Access Management**

**2020 Key Planning Considerations for Identity and Access Management**

**Passwordless Authentication Will Deliver Improved UX and Security**

- Identify use cases
- Implement a phased rollout
- Plan for the long-term existence of passwords

**Organizations Will Demand More Value From IGA Deployments**

- Focus on governance first
- Define key metrics for success
- Prioritize analytics to streamline IGA
- Adopt a modern IGA architecture

**Businesses Will Scale to Protect Against Privacy Violations**

- Support IAM projects with broader cross-functional teams
- Ensure that IAM data exchanges are privacy-aware
- Reevaluate your budget justification posture

**Organizations Will Embrace New Strategies for Hybrid and Multicloud IAM**

- Implement resource tagging for IaaS access control
- Use Active Directory for IaaS and multicloud

**Source**: Gartner

ID: 401284

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**Related Research**

- “**2020 Planning Guide for Security and Risk Management**”: The security landscape is ever-changing, but control selection and implementation are becoming particularly challenging.
Security and risk management technical professionals must understand major security trends to continue practicing strong planning and execution of security initiatives in 2020.


**Collaboration and End-User Technologies**

SaaS technologies have distributed information and applications across a variety of endpoints and cloud services. As a result, the location of where services originate and where content resides has become increasingly irrelevant to end users. Collaboration applications are now deployed as a loosely coupled federation of distributed services with frequent software release cycles. These changes will disrupt virtually every aspect of IT operations.

Many organizations look to Microsoft’s Office 365 as a potential savior. They anticipate that a single productivity and collaboration solution such as Office 365 will simplify both the IT implementation and the end-user adoption process. Unfortunately, Office 365 isn’t really a single solution. It is an increasingly complex suite of loosely coupled offerings with many independent administration mechanisms.

The process of endpoint deployment and management is undergoing a dramatic reexamination. The strategy of using a variety of endpoint management tools is giving way to unified endpoint management (UEM). UEM offers a single method of management regardless of endpoint — PC, Mac, tablet, phone, wearable or whatever comes next. This seismic shift will take most organizations years to complete. It will come with drastic policy and process changes that will alter how IT interacts with its end users.

As data and applications move to the cloud, what becomes of Windows? Although Windows-specific applications are in decline, they are not close to extinct and will not be for a long time. IT organizations must still deliver these applications, and many are betting on desktop as a service (DaaS) to fill that need.

Figure 13 shows Gartner’s 2020 technical planning trends and planning considerations for collaboration and end-user technologies.
2020 Key Planning Considerations for Collaboration and End-User Technologies

Office 365 Will Require New Deployment, Administration and Governance Strategies
- Appoint a release coordinator
- Design an Office 365 Groups strategy
- Plan for an enterprisewide deployment of Teams
- Think in terms of business policies

SaaS Will Blur IT Boundaries, Spreading Information and Risk Wider and Faster
- Develop a business service catalog
- Establish content and data standards, and insist on data classification
- Invest in comprehensive enterprise search and discovery tooling
- Invest in SaaS performance monitoring

Accelerated Software Release Cadences Will Disrupt All Aspects of IT Operations
- Revisit and rebuild all policies and procedures based on old release cycles
- Triage and streamline testing and change management
- Create purchasing policies that minimize OS-specific applications

Desktop as a Service Solutions Will Begin to Erode the VDI Footprint
- Pilot DaaS to understand which use cases will work and which will not
- Review the organization’s cloud data strategy, and use it to inform DaaS decisions
- Rank DaaS providers not only by features and cost, but by distance and roadmap

Related Research
- “2020 Planning Guide for Collaboration and End-User Technologies”: Technical professionals supporting collaboration and end-user technologies face a fragmenting IT environment of emerging SaaS products and legacy enterprise solutions. This research identifies five major trends driving this dynamic and provides guidance for addressing them in 2020.
Related Priorities

Table 1. Related Priorities

<table>
<thead>
<tr>
<th>Priority</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure, Operations and Cloud Management for Technical Professionals</td>
<td>This initiative focuses on the technical evolution of infrastructure, operational processes and human capabilities that enable and enhance business agility.</td>
</tr>
<tr>
<td>Cloud Computing for Technical Professionals</td>
<td>Cloud computing is a critical component of business and IT as next-generation technologies and initiatives (such as digital business, IoT and artificial intelligence) become reality.</td>
</tr>
</tbody>
</table>

Source: Gartner

Related Resources

Webinars

“The Road to DevOps: Automate Server and Application Delivery”

“Enable Connected Digital Experiences With a Customer Centric DXP”

“How to Address SaaS Change Management”

“Scale Agile and DevOps for Digital Transformation”

Evidence

1 See “2019 CEO Survey: The Organizational Competencies CEOs Say Are Most Needed.” The survey methodology is listed below:

2019 Gartner CEO and Senior Business Executive Survey. Gartner conducted this research from September through December 2018 to examine CEO and senior business executive views on current business issues, as well as some areas of technology agenda impact. In this year’s annual survey, 473 business leaders were qualified and surveyed. The research was conducted via an online survey (355); an additional 112 surveys were achieved through telephone interviews, and six were self-administered paper surveys. All respondents were screened for active employment in organizations with $50 million or more in annual revenue. Sixty percent had $1 billion or more, and 15% had $10 billion or more in revenue.

The sample mix was as follows:

- CEOs = 288 responses
- CFOs = 84 responses
- COOs = 25 responses
- Chairperson, president, board of directors or other C-level = 76 responses

By region:
- North America = 184 responses
- Europe = 109 responses
- Asia/Pacific (APAC) = 109 responses
- Latin America (LATAM) = 45 responses
- South Africa = 16 responses
- Middle East = 10 responses

By size:
- $50 million to <$250 million = 78 responses
- $250 million to <$500 million = 67 responses
- $500 million to <$1 billion = 47 responses
- $1 billion to <$10 billion = 211 responses
- $10 billion or more = 70 responses

A team of Gartner analysts who examine IT's role in business developed the survey, and Gartner's Research Data and Analytics team reviewed, tested and administered it.

Results of this study are representative of the respondent base and not necessarily business as a whole.

2 **Gartner View From the Board of Directors: 2020 Survey.** Results presented are based on a Gartner study to understand how BoDs view the impact of technology on their enterprise and their assessment of their organization's readiness to deal with the technology disruption. The primary research was conducted online from July through August 2019 among 133 respondents in the U.S., EMEA and Asia/Pacific.

Companies were screened to be midsize, large or global enterprises. Respondents were required to be a board of directors member. If they served on multiple boards, respondents answered for the largest company, defined by its annual revenue, for which they are a board member.

The study was developed collaboratively by Gartner analysts and the Primary Research team that covers digital business.

Results do not represent "global" findings or the market as a whole, but reflect the sentiment of the respondents and companies surveyed.
This study was designed to understand how IT organizations deal with architecture decisions. The primary research was conducted online during 11 March through 8 April 2019 among 2,396 respondents in North America, EMEA, Asia/Pacific and Latin America.

A subset of Gartner for Technical Professionals seatholders were invited to participate. In addition, Gartner IT Leaders seatholders with the job level of “associate” were invited to participate.

Respondents were required to be a member of their organization’s IT staff or department (or serve in an IT function). Furthermore, they could not serve as a member of the board, as president, or in an executive-level or IT leadership position.

The study was developed collaboratively by Gartner analysts and the Primary Research team that covers technical professionals.

Results do not represent “global” findings or the market as a whole, but reflect the sentiment of the respondents and companies surveyed.