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2021 Public Technology Institute (PTI) State of City and County IT National Survey

Foreword

Over the past fifteen months local government technology executives have been dealing with the challenges of the pandemic: implementing a remote work environment; expanding the types of citizen services that could be provided virtually; and tackling broadband and connectivity issues for employees, residents, and businesses.

Technology executives have demonstrated the vital role the IT organization plays within the local government. While IT has accomplished amazing tasks, the challenges local government IT face are far from over, particularly when it comes to dealing with an increasingly hostile cyber environment, competition for internal resources, and the day-to-day challenges of managing IT performance.

By reviewing the following survey analysis, you will develop a better understanding of the many priorities and areas of focus for local government IT.

For the development of this analysis report, we collaborated with Deltek, a research partner of CompTIA's Public Technology Institute (PTI). I would like to thank Chris Dixon, Senior Manager, SLED Market Analysis, for his analysis of the results and input into the development of our survey instrument. Chris has assisted in our research reports and findings for the past 10 years for which we are grateful.

I would also like to thank the technology executives who participated in the survey, and those PTI members who shared their insight and thoughts throughout this report.

Dr. Alan Shark
Executive Director
Public Technology Institute

Introduction

By providing an overview of the local government technology environment, along with PTI member insight, we hope to provide you with a robust and insightful look at the technology issues and priorities of America's city and county technology leaders.

Topics this survey explores include:
- Impact of COVID-19 on IT Operations
- Technology Priorities
- Budgeting
- ROI and IT Services
- The Cloud and Managed Services
- IT Management
- Cybersecurity
- Smart City/County Strategies
- Emerging Tech
- State of Skills of IT Personnel

Throughout this report, we cite how 2021 findings compare to those cited in last year's survey, thus providing additional understanding of the constantly shifting world of local government IT.

The survey was conducted between December 2020 and February 2021. Sixty-five local government technology executives participated.

Executive Summary

When we look at CIO technology priorities for the next two years, it comes as no surprise that cybersecurity ranks as number one—a position it has held in this survey for the past seven years. On the positive front, the increased threats that governments face are being met with new tools to identify and remediate risk and a move towards collaboration and resource sharing across all levels of government.

"Launching or updating digital services for citizens" moved up to the #2 spot in 2021 from #4 last year as local governments continue the "great pivot" towards increased online services and a remote work environment that has transformed government service delivery.

This year's survey saw significant increases in local government IT moving on-premises infrastructure to both the public cloud and the private cloud. The adoption of managed services will grow as local governments struggle to keep up with cybersecurity, application, and storage needs.

A majority of CIOs expect a "mix of returning to normal" for 2021: returning to standard planning, upgrading IT systems, etc., while remaining in a crisis management mode of operations.

This survey was conducted prior to the enactment of the Biden Administration's American Rescue Plan Act that will provide federal fiscal relief to cities and counties. It is anticipated that this should help relieve the budgetary pressures and competition for resources with which local government IT struggles.

The year 2021 will continue the trend of the "great pivot" towards online services and remote work that has transformed government service delivery.

"A culture of support and the encouragement of innovation has led to success in our workforce. I'm also a firm believer in recognition to let folks know how much you appreciate their efforts."

Bill Hunter,
Director,
Communications & Information
Technology, Roanoke County, Virginia

IMPACT OF COVID-19

With regards to the pandemic's impact on IT, 54% of respondents, stated that they saw mostly positive impacts with regards to IT infrastructure, digitization efforts, or agility.

When it came to actions influenced by COVID, 92% of respondents stated that they had expanded the use of collaboration platforms and remote meetings and 91% stated that their organizations expanded options for remote work.

About half (52%) of respondents stated that they had made investments in virtual/digital services for citizens; 42% stated that they made investments in business continuity and resilience; and 35% made changes to local government offices, to include reduction of office space and reconfiguration.

Thanks to the easy cloud scalability of collaborative and teleconferencing services, cities and counties were able to shift to remote work at a rate that would not have been possible even three years ago. Now, the debate begins as to whether remote work options will continue into the future. In the near term, a strong rebound back to the office is to be expected.

This will be due to several factors:
- An inability to provide all back-office tools and services to remote workers via the web.
- Reluctance to have empty office space until a strategy is in place to facilitate reduction of space and hoteling workspaces.
- The need for consistent determinations as to which job functions should be in office full- or part-time.
- The need to implement managerial training for a remote workforce and ways to fairly determine workers suited to such arrangements.

Providing services to citizens facilitates operational resilience by preventing backlogs of service demand and preventing citizens and workers from having to congregate in crowded offices. Also, moving citizen-facing services to the cloud provides a better business case for top decision makers and provides coattails to pull back-office systems modernization along with it. This, in turn, allows for incorporation of business continuity measures as part of the modernization.
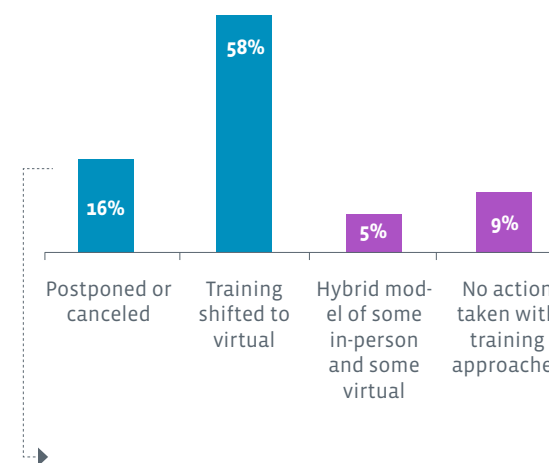
IT Operations in the Coming Months

Returning to standard planning, upgrading IT systems, and spending mode is the expectation for 30% of executives, while 63% expect a mix of returning to "normal" remaining in an as-is or crisis management mode of operations.

With the current season of COVID spread hopefully on the wane and vaccinations reaching wide availability, IT agencies should expect to have some time to assess their situation over the summer months. The temptation will be to go back, resume business as usual, and revive projects that were put on the back burner during the peak of the outbreak. However, IT leaders should be cautiously optimistic and hedge their ambitions, knowing that many citizens and workers will remain reluctant to conduct on-premises business until given the all-clear by public health officials.

With additional COVID variants in play, it is likely that public hesitance will remain a factor through the winter of 2021-22. IT leaders should be prepared to remain in the mixed mode, focusing on the most immediate citizen and workforce needs, refining virtual platforms, and building the IT agency's ambitions around those goals. Barring some reversal in COVID management, IT agencies should expect to revisit the unfulfilled goals from their 2019-20 operational strategies in 2022.

COVID Impact on Training and Development Over the Past Year

Postponed or canceled	Training shifted to virtual	Hybrid model of some in-person and some virtual	No action taken with training approaches
16%	58%	5%	9%

TECHNOLOGY PRIORITIES

City/County CIO Technology Priorities Over Next Two Years

The set of priorities for the next two years provides additional granularity to the COVID impacts assessed earlier in this survey analysis.

While sounding repetitive, it has become almost pointless in having to point out "Cybersecurity / data loss prevention" as a priority. IT leadership—if not other operational leaders—have long since come to terms with the fact that this will be an ongoing priority in all times and circumstances.

When comparing 2021 priorities to those identified in last year's survey, "Launching or updating digital services for citizens" moved up to the #2 spot (from #4 in 2020) while falling by 1% in responses. "Innovation" fell one spot while losing 19% from its 2020 percentage. These shifts are strong indicators that COVID response shifted focus away from long-planned advances toward bread-and-butter needs such as "Migrating systems / applications to the cloud" (up 6% from 2020) and "COVID-specific initiatives" (a new response option from 2020). Such COVID initiatives include provisioning remote workers, call center upgrades, citizen alert tools, data collection tools and dashboards for public health officials, and field tools for testing and vaccination sites.
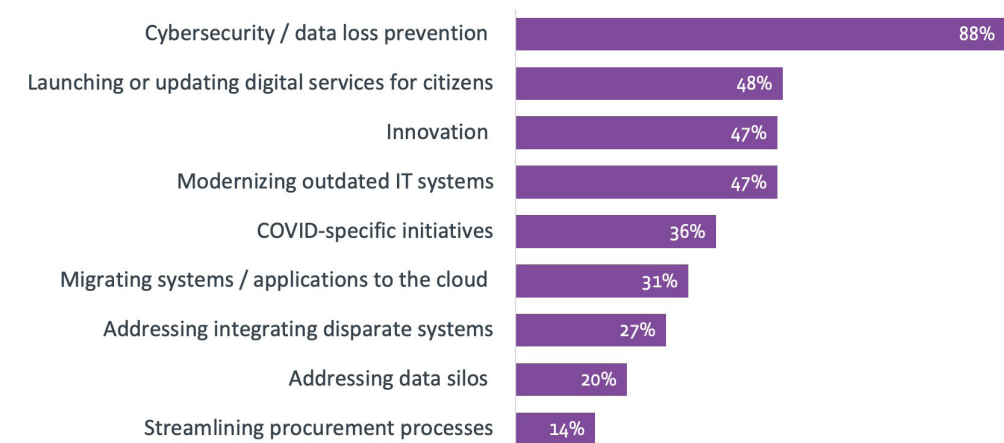
"Addressing integrating disparate systems" (down 3% from 2020), "Modernizing outdated IT systems" (down 8% from 2020), and "Addressing data silos" (down 7% from 2020) have long been thorny issues for CIOs at all levels. These decisions must be left to agency owners of the mission-critical systems with the CIO acting as the facilitator for those integration opportunities to emerge. In some cases, senior leaders (e.g., mayors, county commissioners, CFOs) will give the CIO a mandate to pursue efficiencies via consolidation, but such initiatives are fraught with political hazards and tend to be short-lived, lasting only as long as the patronage of senior leadership remains strong.

"Streamlining procurement processes" (up 8% from 2020) likely lags behind the rest due to the fact that IT leaders have little sway in this area. Procurement offices are overburdened but also cautious and routinized by nature, making it difficult to streamline. In the end, automation of convoluted processes and increased use of cooperative purchasing remain the primary means of expediting, if not "streamlining," actual procurement processes. However, the small boost in responses from 2020 indicates that the emergency demands of COVID response exposed some weaknesses in existing procurement process that could lead to genuine streamlining efforts in the next year or two.

> "Especially during the last year, CIO's played an integral role by keeping a positive outlook and keep the 'We can do anything' as long as we work together and keep our residents engaged."
>
> *James E Pacanowski II,*
> *Network Administrator,*
> *City of Ventnor City, New Jersey*

City/County CIO Technology Priorities Over Next 2 Years

Priority	%
Cybersecurity / data loss prevention	88%
Launching or updating digital services for citizens	48%
Innovation	47%
Modernizing outdated IT systems	47%
COVID-specific initiatives	36%
Migrating systems / applications to the cloud	31%
Addressing integrating disparate systems	27%
Addressing data silos	20%
Streamlining procurement processes	14%

BUDGETING
City/County Technology 2021 Budget Expectations

City/County Technology Budget Expectations

49% of City/County CIOs (NET) expect their IT budgets to increase in the next fiscal year

|				
17%	32%	28%	12%	11%
Increase of 5% or more	Increase of 1% - 4%	Flat – no change	Decrease of 1% - 4%	Decrease of 5% or more
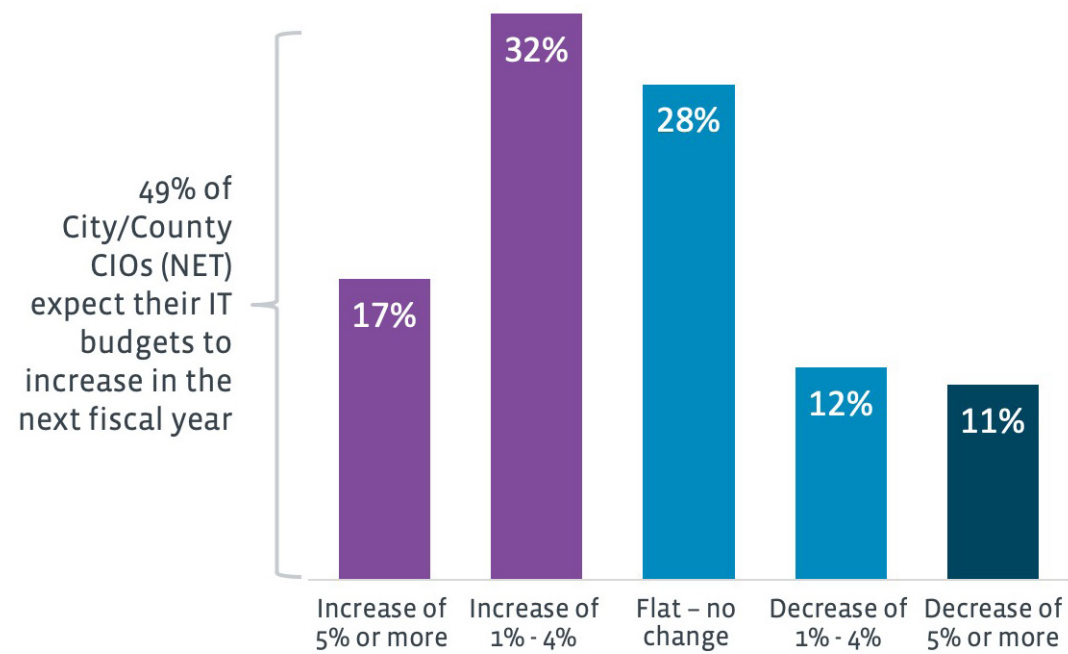
IT budgets are poised for an impressive rebound post-COVID. In many cases we can assume these increases will get many IT agencies back to their pre-COVID funding levels. The Biden Administration's American Rescue Plan Act will funnel an unprecedented amount of federal fiscal relief to cities and counties—$45.6 billion to metropolitan cities and $65.1 billion to counties—with no spending deadline.

It is impossible to know how much of this will be put toward revenue replacement but, regardless of how it's allocated, this relief should lift significant pressure from operational expenditures such as IT and reduce COVID-related drag on progress toward capabilities targets in key domains such as cybersecurity, cloud enablement, and other components of the managed services infrastructure.

Self-reported assessment of IT capabilities vs. target

About 90% of target — 20%

About 75% of target — 51%

About 50% of target — 22%
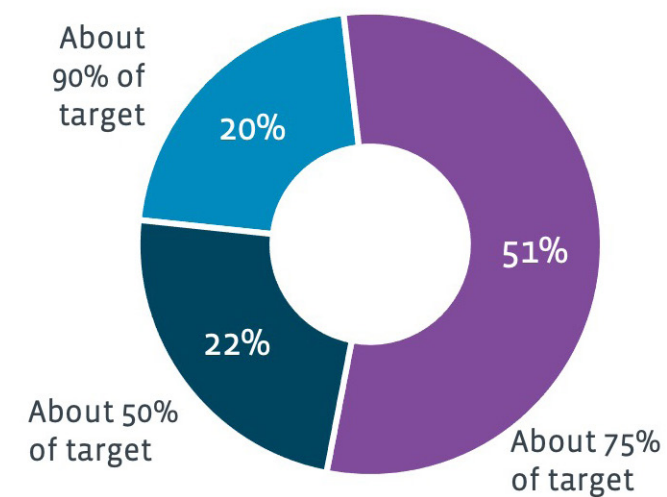
ROI AND IT INVESTMENTS

Degree of satisfaction with ROI of IT investments

Mostly satisfied **66%**

About in the middle **32%**
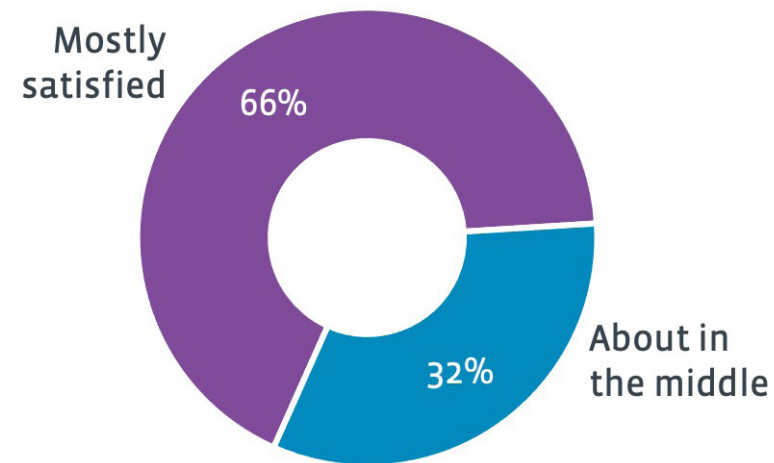
City and county CIOs showed slightly improved satisfaction with the return on investment (ROI) of IT investments compared to 2020. The top reasons for dissatisfaction fell in the same order as last year.

It is hard to believe that 2021 would be the year that provided much opportunity for CIOs to address these concerns. One place CIOs might need to look to improve ROI in the top three areas of concern would be at the intersection of cybersecurity and the cloud. Why is the cloud not fulfilling its promise of improved security thanks to the world-class resources of major services providers? Why is complexity not decreasing and freeing up staff support time? Are these questions of the quality of the solutions provided (unreliability or features/capabilities don't meet needs) or a lack of discipline in operational implementation?

Top reasons for dissatisfaction with ROI of IT investments

1. On-going maintenance costs / support fees / upgrades

2. Staff time requirements to operate and maintain

3. Complexity / poor user experience

4. Upfront cost / too expensive for return

5. Unreliable /doesn't work as expected

6. Features/capabilities don't meet needs

THE CLOUD AND MANAGED SERVICES

> " The story of how we were able to deliver technology solutions to assist with the housing crisis in a matter of days was because we focused on the minimally viable product to be delivered in a short timeframe to meet an urgent need. As long as we understand the goal, outcomes are defined, and business processes clearly identified then technology is more easily delivered."
>
> *Vanetta Pledger,*
> *Chief Information Officer,*
> *City of Alexandria, Virginia*

City/County CIOs Continue to Refine Their Cloud Strategies

43% Moved on-premise infrastructure to <u>public</u> cloud

42% Moved on-premise infrastructure to <u>private</u> cloud

72% Shifted from using a local version of an application to a cloud application (SaaS)

66% Began using a new cloud application (SaaS)

44% Integrated a cloud application (SaaS) with an on-premise application via APIs, etc.

25% Integrated two or more cloud applications (SaaS) via APIs, etc.
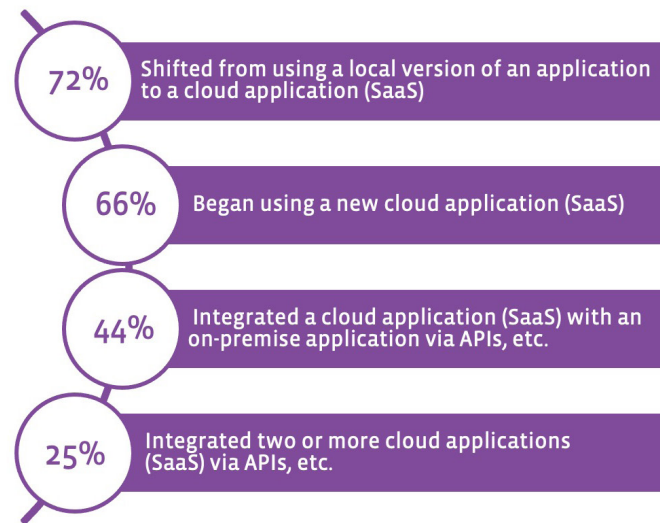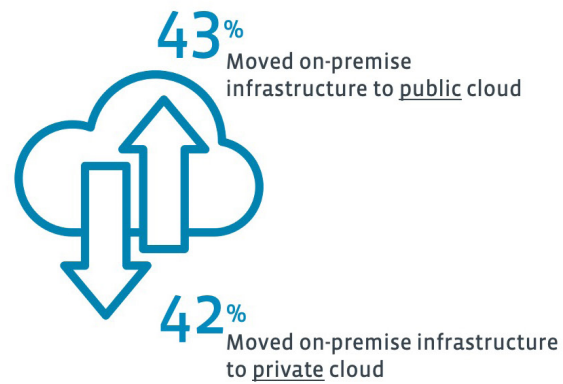
This year's survey saw significant increases in those reporting moving on-premises infrastructure to the public cloud (up 17% from 2020) and on-premises infrastructure to the private cloud (up 7% from 2020).

One of the breakthroughs of the last several years has been the decline in the use of the term "hybrid cloud," which had become a sort of all-purpose security blanket in the public sector. The concept allowed IT leaders to urge movement to the cloud without raising the alarm bells over operational data residing in some far-off data center. Currently, a more mature sense has emerged allowing city and county CIOs to determine where governing regulations or mission-critical needs require data to reside in a private vs. public cloud service.

As we look back to the reported dissatisfactions with cloud ROI, complexity and staff time were major complaints. The data here shows that new cloud applications are flooding into the enterprise. This was down from 93% in 2020, which might be due to COVID diversions. Shifting activities held steady, with an increase of 4% over 2020, and integration activities fell significantly from last year. However, further research and best practices are needed to determine whether the sheer volume of new cloud applications is overwhelming the resources that could be deployed to integration activities to reduce complexity. That said, all integration activities incur up-front costs with uncertain ROI, begging the question as to whether the new cloud applications should simply replace older ones completely over time.
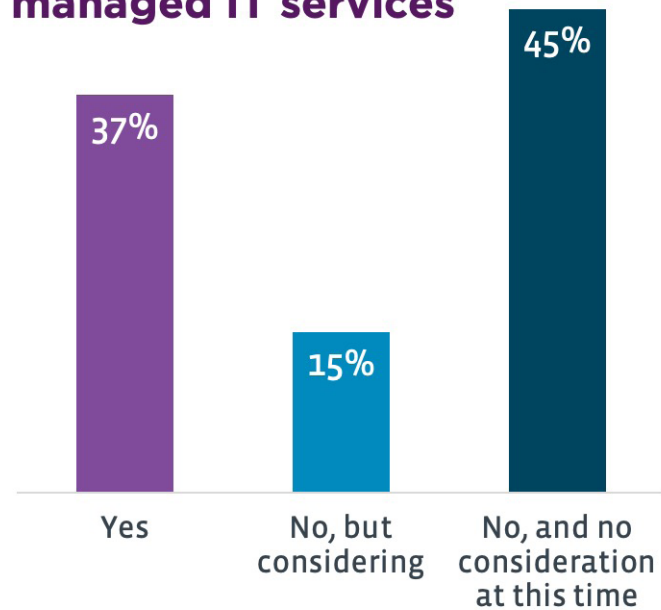
IT MANAGEMENT AND EVALUATION TACTICS

> " Prioritize for tomorrow, not today; today's problems are usually a result of your own nearsightedness."
>
> *Bill Hunter,*
> *Director,*
> *Communications & Information Technology,*
> *Roanoke County,*
> *Virginia*

Reported use of managed IT services

Yes	No, but considering	No, and no consideration at this time
37%	15%	45%

The transition of city and county enterprise CIOs into managed services providers (MSPs) has been long discussed and the data here shows that a narrow majority of city and county CIOs could be using this approach within several years.

However, the use of outcomes-based analytics lags behind with only 11% of respondents committed to it as compared to 37% using managed services. Given that analytics are key to driving the value of managed services, there is some catching up to do. CIOs face two dilemmas: first, given that the public sector is not governed by profit and loss statements what are the best outcomes to measure and, second, does the CIO have the authority and the data feeds to track these outcomes? If a CIO is confident in both of those considerations, their success as an MSP should be highly likely, if not guaranteed.
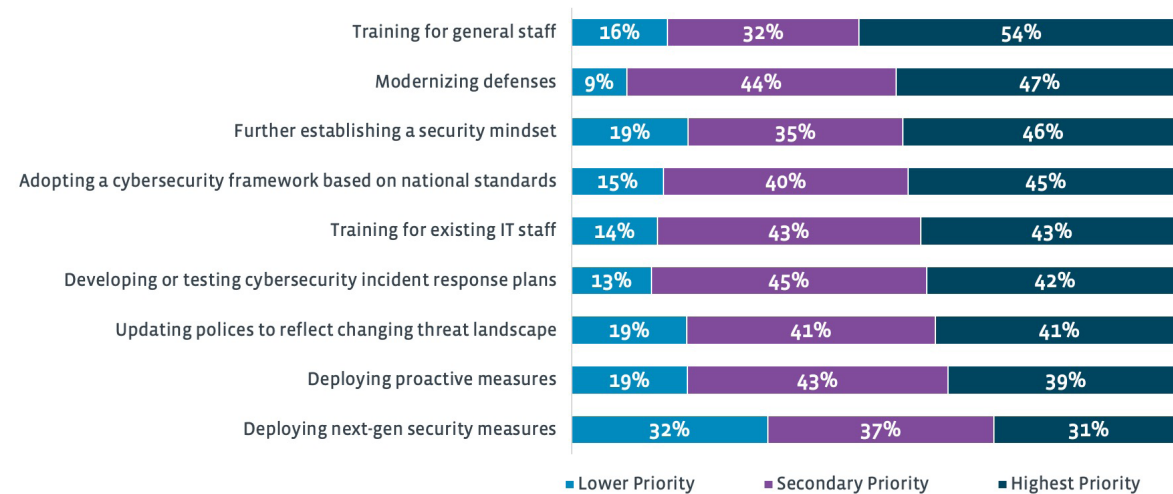
CYBERSECURITY

CIO assessment of cybersecurity capabilities is not far off from the general assessment of capabilities reported earlier in this report, with the vast majority reporting between 75% and 90% attainment. Cybersecurity has ranked at or near the top of this and various other public sector CIO priorities lists for roughly the last decade. Perhaps this emphasis has borne fruit in terms of capabilities.

Most of the cybersecurity priorities retained similar emphasis profiles from 2020. "Training for general staff" saw a significant shift toward the lower priority levels. "Deploying next-gen security measures" saw a noticeable shirt toward the highest priority level. For the last decade, cybersecurity measures were focused on the cultural change in the habits of general staff combined with the ever-improving protections that could be deployed from the perimeter all the way to the end-user devices.

As CIOs become confident with the current security posture, they can shift some emphasis toward looking ahead to see where employing "next-gen" solutions such as artificial intelligence (AI), machine learning, and blockchain will prove most useful in the enterprise. Also, the communications transition to 5G will raise a new wave of security concerns.

> "Cybersecurity is of utmost importance because we have to methodically reduce risks and having staff knowledgeable about threat actor tactics is one of our best defenses."
>
> *Vanetta Pledger,*
> *Chief Information Officer,*
> *City of Alexandria, Virginia*

City/County Cybersecurity Priorities on Many Fronts

Priority	Lower Priority	Secondary Priority	Highest Priority
Training for general staff	16%	32%	54%
Modernizing defenses	9%	44%	47%
Further establishing a security mindset	19%	35%	46%
Adopting a cybersecurity framework based on national standards	15%	40%	45%
Training for existing IT staff	14%	43%	43%
Developing or testing cybersecurity incident response plans	13%	45%	42%
Updating polices to reflect changing threat landscape	19%	41%	41%
Deploying proactive measures	19%	43%	39%
Deploying next-gen security measures	32%	37%	31%

■ Lower Priority   ■ Secondary Priority   ■ Highest Priority

SMART CITY/COUNTY STRATEGIES

> " Cybersecurity and communication as a whole must be bought in by all staff and not just a few."
>
> *James E Pacanowski II,*
> *Network Administrator,*
> *City of Ventnor City, New Jersey*

The term "smart cities and counties" has been so overused in recent years that technology leaders have begun tuning out and related initiatives have struggled to gain traction. In the current survey, only 27% of respondents report having some type of smart city/county strategy in place, while 50% have no plans to implement—an increase of 15% over last year's survey results.

Perhaps a better strategy would be to adopt the concept of "smarter government" and leverage the successes from the pandemic where IT agencies collaborated with other departments. In addition, with the threat of COVID receding, public health and wellness could serve as a rallying point for a revised smarter government agenda.

Whichever term you prefer, the smart city/county movement has struggled to achieve momentum due to a chronic lack of national leadership or funding. The federal government is not really in a position to designate— much less provide billions in funding for—a "showpiece" community that would compare to places like Barcelona or Singapore. Also, the vastly dispersed and multi-nodal nature of America's urban communities has led to a smart city/county movement more akin to a thousand points of light with each metro area investing in smart solutions most relevant to its specific economic, demographic, topographic, and climatic needs.

If the smart city/county movement is ever to gain speed, some effort will have to emerge that can spur cross-pollination of best-in-class projects from across the nation and help weave them into a full-featured profile (or architecture) of what a smart city/county should look like.

Top Reasons For Not Having A Smart City/County Strategy In Place

1. Not a high enough priority / other more pressing issues

2. Unclear business case/ROI of smart city/county investments

3. Lack of resources to develop a smart city/county strategy

4. Lack of internal expertise to develop a smart city/county strategy

EMERGING TECHNOLOGIES START TO IMPACT CITIES AND COUNTIES

A number of new technologies are finding their way into the operations of cities and counties. Those technologies with the most readily identifiable ROI—UAVs, automation, IoT, 5G, and AI—are seeing widespread uptake. However, if these disparate technologies are to make a city or county smarter rather than provide isolated operational efficiencies, a defined vision is needed as to how the contributions of each technology can be combined into an operational awareness that helps senior leadership make better strategic decisions that improve the entire enterprise as well as the quality of life for residents of the jurisdiction.

> "Whether we choose to go to the cloud or are forced to go into the cloud some of the issues will remain the same. Vendor commitments and security standards will be of paramount importance. Beware of the cloud you live in as your cyber-issues have certainly followed you there."
>
> *Bill Hunter,*
> *Director,*
> *Communications & Information*
> *Technology,*
> *Roanoke County,*
> *Virginia*

Emerging Technologies Impacting Cities and Counties

Technology	No action	Considering	Piloting	Production
Drones / Unmanned aerial vehicles (UAV)	29%	13%	14%	44%
Telehealth	63%	8%	7%	22%
Automating technologies	26%	38%	15%	21%
Internet of things (IoT)	43%	21%	19%	18%
3-D printing	69%	8%	12%	12%
5G	49%	30%	10%	11%
Artificial intelligence (AI)	56%	23%	12%	10%
Robotics	89%	5%	2%	5%
Autonomous vehicles / Self-driving vehicles	84%	8%	7%	2%
Augmented or Virtual reality	81%	16%		3%
Blockchain / Distributed ledger technology (DLT)	79%	18%		3%

STATE OF SKILLS OF IT PERSONNEL

"Embracing new technology solutions very quickly in order to transform the way we work and how engage our community made us more agile in meeting the varied needs."

Vanetta Pledger,
Chief Information Officer,
City of Alexandria, Virginia

Technology executives are relatively satisfied with skills attainment of their IT teams, with 28% stating that they are "90% of where we want to be" and 45% stating that they are "75% of where we want to be."

The top three capabilities priorities—cybersecurity, soft skills, and the cloud—align well with previously stated concerns.

Cybersecurity speaks for itself, but each CIO will have to determine how to develop capacity that will support a particular in-house priority, such as updating incident response plans, deploying proactive measures, and evaluating next-gen measures.

Improving the soft skills of the IT workforce lends itself well to advancing the role of the IT agency as a managed services provider that can truly partner with client agencies to determine their service delivery needs and provide a high level of satisfaction.

Boosting the cloud implementation skills of agency staff should help to capture more ROI from all facets of the ever-expanding menu of cloud options.

Top priorities for bridging skills gaps

#1	Cybersecurity
#2	Soft skills, i.e. improvements to communications, collaboration, team IQ
#3	Cloud, i.e. infrastructure migration, application or platform deployment
#4	Infrastructure, i.e. improvements to network/systems reliability, performance
#5	Digital transformation, i.e. modernizing systems, embracing digital government
#6	Integration, i.e. disparate systems, applications, data streams
#7	Crisis management, e.g. readiness, response, recovery

Conclusion

As you review the survey findings and the insight provided by local government technology executives, consider any similarities with regards to the issues that you are dealing with, and the actions that you and your organization are taking to address your technology needs. It is also important to recognize and build upon your successes over the past year.

Beyond this survey, in conversations with CIOs from across the country, one trend and perception that is quickly growing is that IT is no longer a silo, or "just IT." Local government IT is recognized, finally, for cutting across all service areas of local government—both internal operations and constituent services.

It is clear that the stature of the CIO has increased and executives are being recognized for the leadership role they played throughout the pandemic. And, perhaps most significant: 2020 and 2021 are erasing, slowly but surely, the perception that the IT department is the "Department of NO." The pandemic has proven the value and absolute need for technology support and IT will be recognized as a strategic asset and a trusted and valued partner.

ABOUT PTI

PTI merged into CompTIA in January 2019 yet remains a distinct and semi-autonomous membership and service delivery organization. Established in 1971 by the several major national associations representing state and local governments, PTI has been viewed as the focal point for thought leaders who have a passion for the furtherance and wise deployment of technology. PTI's initial funding was through a grant from the National Science Foundation. Today, PTI actively supports local government officials through research, education, professional development, executive-level consulting services, and national recognition programs. Visit www.pti.org

ABOUT COMPTIA

The Computing Technology Industry Association (CompTIA) is the voice of the information technology industry With approximately 2,000 member companies, 3,000 academic and training partners and nearly 2 million IT certifications issued, CompTIA is dedicated to advancing industry growth through educational programs, market research, networking events, professional certifications and public policy advocacy Through its Public Sector Councils and its advocacy arm, Comp-TIA champions member-driven business and IT priorities that impact all information technology companies – from small managed solutions providers and software developers to large equipment manufacturers and communications service providers CompTIA gives eyes, ears and a voice to technology companies, informing them of market trends and policy developments – and providing the means to do something about it.
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