



Public  
Technology  
Institute

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CompTIA®

# 2020 Public Technology Institute (PTI) State of City and County IT National Survey

A Report on City and County  
Technology and Workforce Trends





# Foreword

The research and analysis that comprise this report were completed in early 2020. The data serves as an accurate snapshot through the first two months of this year -- prior to the COVID-19 pandemic, which severely affected local government operations and service delivery.

If the survey instrument was administered today, local government CIOs would most likely feel less optimistic about technology budgets, workforce development, and operational priorities. Their concern and angst is a reminder of the Great Recession of 2008 and its tremendous impact on government budgets and which took countless jurisdictions – large and small - years to recover. Many believe the current environment suggests a worse result as local governments are planning for a dramatic and significant shortfall in tax revenues.

If there is any bright spot in the pandemic it is the fact that city and county technology professionals have largely risen to the occasion and need to be recognized for their competencies and innovative ways at solving problems.

It is clear that the local government technology community is providing a vital role by actively supporting telework procedures, handling new demands placed on their digital platforms, and providing support around the clock to both staff and citizen communications support while ensuring that our local government network and communications infrastructure are safe and secure.

**Dr. Alan Shark**  
**Executive Director**  
**Public Technology Institute**

# Introduction

State and local governments combined spent over \$100 billion dollars in 2019. With over 80,000 units of government, the market is huge – as are the challenges facing governments, regardless of size and location.

This is the ninth year that PTI has conducted the State of City and County IT National Survey. By sharing information on the local government technology environment, PTI hopes to provide a robust and thoughtful look at the technology management and operational priorities of local government.

This is the first survey that we have conducted in collaboration with CompTIA. PTI merged into CompTIA in January 2019 - yet remains a distinct and semi-autonomous membership and service delivery organization. This year's survey contains many new questions and is approximately 50% more comprehensive than previous surveys, with many new questions and topics added.

We are grateful to those local government technology executives who participated in the survey and for sharing their experiences and insight. In future years we look forward to expanding on the topics covered in this year's survey and building a new baseline of data for year-to-year comparisons.

We believe the data we have collected and the analysis we present in this report represents a healthy sample of large, medium, and small jurisdictions.

# Executive Summary

This study has been greatly expanded over the previous year and is divided into six sections:

- Key Priorities and Investment Outlook
- Operationally Efficiency and Infrastructure Management
- Cybersecurity and Data Loss Prevention
- Workforce and Training
- Smart Cities and Counties and Emerging Tech
- Inter and Intra-Governmental Relationships

As in the past six years, concerns over cybersecurity occupy the number one concern facing city and county CIOs. And given this year's epidemic of publicly reported ransomware attacks, it is no wonder why such concerns carry over to the new year.

For the first time innovation has taken the second spot for CIO priorities. This strongly suggests that local government CIOs are looking for ways to be more innovative through the use of existing as well as new and emerging technologies.

More than ever, CIOs are looking to go beyond simply maintaining and safeguarding the network and moving into new areas of emerging technologies that include artificial intelligence, blockchain, drone applications, 5G, automated and autonomous vehicles, robotics, and use of augmented and virtual reality. All these emerging technologies are being adopted in one form or another in local governments.

This year, 72% of respondents expect their IT budgets to increase by 1 to 5% or more. Just over half of respondents report that their budgets are some 75% of what they had targeted. Over 58% stated they were satisfied with their return of investment of their IT budgets. All this suggests greater optimism when it comes to funding and investment among CIOs compared to previous years.

When it comes to training and professional development for IT staff, more training on emerging technology, more training on core areas (infrastructure, systems, etc.), and more cross-training to better understand government operations are the top three on the CIO wish list. And, alarmingly, 11% of respondents state that their department has no training funds at all.

There continues to be a disconnect between professional development and training and the ability to travel. For example, several governments make it very difficult to travel out of state – while others allow for training but no travel to accompany the training. Given our increasingly complex technology environment, many CIOs privately complain that while expectations for agency and employee performance are on the rise, the tools to be successful are hard to come by. Most IT executives view professional development, training, and certifications as essential in running and leading city and county technology enterprises.

The survey finds that, overall, CIOs have become more focused on how best to manage their operations with cloud and managed services providers which allows for more efficient use of manpower and use of scarce resources.

New to the survey this year are questions on local-state and cross-jurisdiction collaboration, and IT procurement.

Not surprisingly, friction still exists when it comes to IT procurement. CIOs continue to complain of often outdated and time-consuming procurement procedures as well as having difficulties with procurement staff who lack the knowledge and experience when it comes to IT.

One might conclude that 2020 is a major transition year for city and county CIOs as they continue to build upon a new sense of professionalism that reflects the multimillion-dollar portfolios for which they are charged to lead and manage.

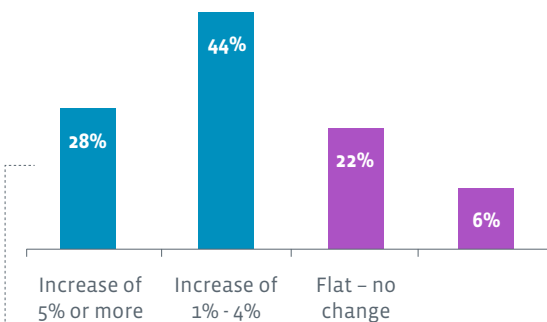
## 1

## Key Priorities and Investment Outlook

Not surprisingly given government budgeting trends, over the next two years, many city and county government officials must continue to find ways to do more with less. New priorities, especially in cybersecurity and data loss prevention, are dominating executives' daily concerns.

Overall, 72% of respondents expect their IT budgets to increase by 1 to 5% or more. Just over half of respondents report that their budgets are some 75% of what they had targeted. Nonetheless, some 22% of respondents actually see their IT budgets remaining flat or seeing very modest growth (1% or less) – and 6% even believe their budgets may drop in the near future.

### City/County Technology Budget Expectations

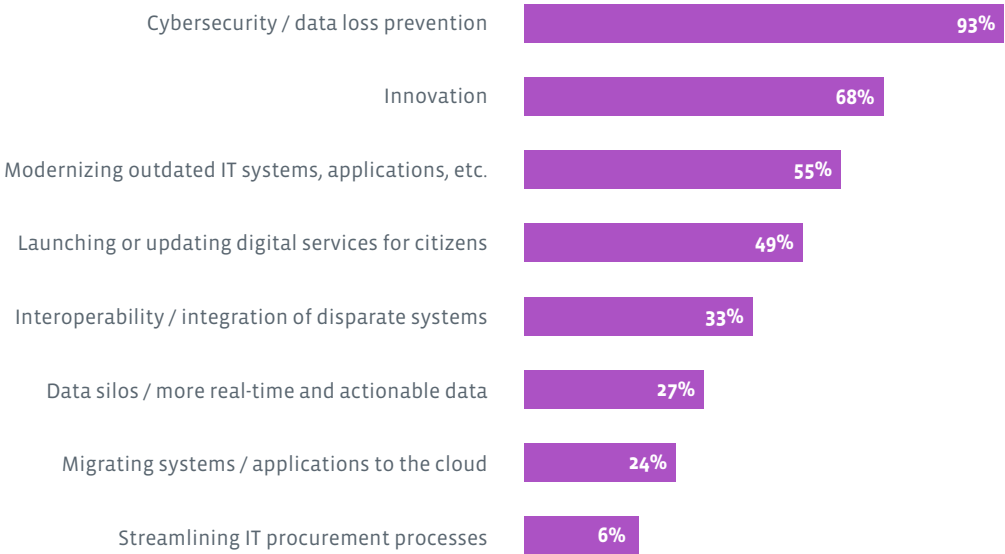


When asked to prioritize IT initiatives through 2022, cybersecurity and data loss prevention topped the list. In descending order of priority, innovation and application of technology to help solve problems was voted as second most important, while modernization of outdated IT systems and applications ranked third.

Continuing down the list, launching of citizen-facing digital services –whether through mobile apps, web services or other means – were in fourth place, with integration and interoperability of disparate systems and applications ranking fifth.

The last three on the list, in terms of importance, included addressing data silos and means of making data input and access more real-time and actionable and migrating systems and applications to the cloud. Streamlining procurement processes to purchase and implement technology came last in the ranking.

### City/County CIO Technology Priorities Over Next 2 Years



Respondents seemed confident in their IT infrastructures’ capability to stand up to these priorities. Asked to rate where their jurisdictions stand in terms of utilization, management and performance of IT systems, a combined 72% consider these systems (including applications data and related technology) to be at least three-quarters (75%) of the way there.

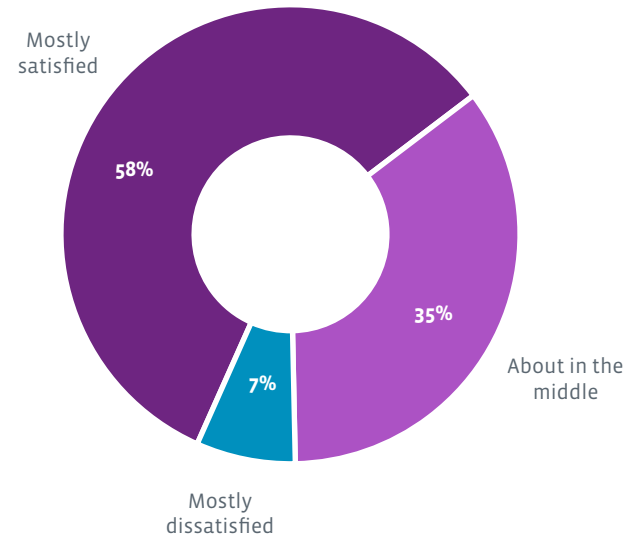
One in five see themselves as 90% ready, and 2% consider themselves exactly where they want to be. Just over one-quarter (27%) were somewhat less confident, estimating their readiness to meet priorities at only halfway to where they want to be.

When considering areas in which to drive investment in IT products or services, agencies and departments are only occasionally (33%) or rarely (45%) using outcome-based analytics. Only 12% of those responding considered themselves to be frequent users of such analysis tools in determining levels of investment.

Despite this only occasional use of outcome-based analytics, the majority of respondents (58%) were satisfied with return on their IT investments. Just over one-third (35%) were on the fence in terms of satisfaction, with only 7% expressing dissatisfaction with ROI on their investments.

Of the group expressing ROI dissatisfaction, the main reasons cited included on-going maintenance costs, support fees and upgrade expenses; staff time required to operate and maintain their investments; complexity of systems, which tend to lead to poor user experience; upfront costs that were too expensive to realize a return; and features or capabilities that did not meet their needs or expectations.

### Degree of satisfaction with ROI of IT investments



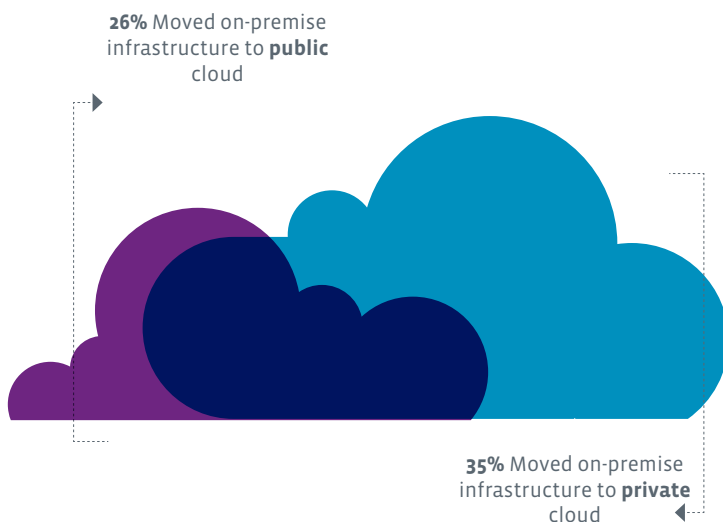
## 2

## Operational Efficiency and Infrastructure Management

Cloud computing is the phrase on everyone's lips when it comes to the efficient operation and management of IT infrastructure. And yet, the percentage of respondents who have not yet moved on-premise infrastructure to a public or private cloud is just shy of half (47%).

Interestingly, while Software as a Service (SaaS) applications are gaining ground within city and county IT organizations, digital services are still being delivered on an ad-hoc basis to constituents, with a large segment of respondents unsure of where the future may take them.

### City/County CIOs Continue to Refine Their Cloud Strategies



As mentioned above, most respondents reported they had not engaged in any cloud migrations, public or private, in the past two years. Of those who had, just over one-third (35%) moved their on-premise infrastructure to a private cloud, with slightly more than one-quarter (26%) opting for the public cloud. Surprisingly, 5% of those responding actually moved infrastructure components back to on-premises facilities.

Nonetheless, cloud-related activities saw significant interest this year, with 62% of responses indicating that local governments have implemented new cloud applications. Shifts from local versions of application to cloud applications were indicated in 57% of responses. Cloud application integration to on-premises applications via APIs saw the third most popular response (28%) and 17% integrated two or more such applications. (Despite the clear popularity of cloud-based services, however, fully 20% of responses indicated no such SaaS usage or integrations.)

Microsoft Azure was the Infrastructure as a Service (IaaS) platform of choice for 48% of the responses, beating out Amazon AWS by a considerable margin – just under one-third (32%) of responses were in favor of AWS. Google Cloud Platform was claimed in only 5%



of ranked responses, with 15% of responses indicating some other platform. Thirty-three percent (33%) of responses were “none of the above.”

In terms of cloud applications, Microsoft Office was the clear leader in SaaS applications used by city and county IT departments, factoring as the preferred application in more than half (52% of responses). Google G Suite was cited in 13% of cases, although nearly one-third of responses indicated that neither platform was used.

While SaaS applications were seemingly popular within IT organizations at the city and county level, the same interest did not seem to extend to delivering customer services. One-third of responses (33%) indicated that digital delivery of services to constituents was still done on an ad-hoc basis with respondents unsure of a future course.

Relatedly, 16% of responses indicated that the agencies or departments were moving towards internal digital services organizations (such organizations were already being used in 29% of responses). In 29% of responses, individual agencies or departments were expected to take on the responsibility of such services delivery themselves.

Remote IT services provided by a managed services provider (MSP) in an annual contract were cited in 34% of responses, with 28% considering such services in the future. In 35% of responses, however, no managed services were being considered at all.

Regardless of their use of cloud-based services, it was clear from the numbers reported that there is no clear, consistent ratio of full-time IT employees tasked to provide service to end users in a given jurisdiction. Reported numbers ranged from as many as 13 employees serving 100 end users to as few as 38 employees serving a staggering 12,000 users.

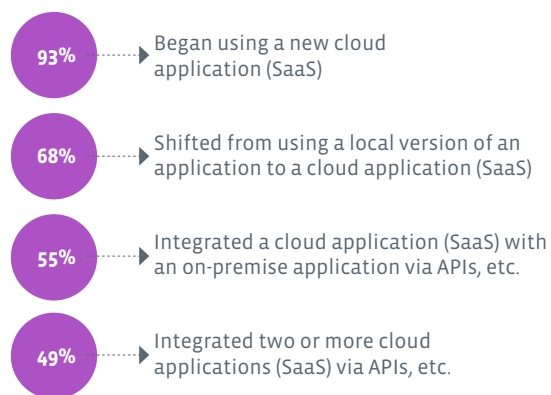
When tending to the analytics needs of their customers, the overwhelming majority (71%) were typically called upon to provide tools. Performing analytics on behalf of customers was indicated in 57% of responses, with procuring solutions also ranking high, at 50%.

In terms of procurement, it seems intuitive to imagine that the CIO or IT director at an agency or department should have ultimate procurement authority. In fact, however, complete authority was reported in 44% of responses. More than half of responses (51%) indicated that IT leadership had only partial authority in procurement, with 5% reporting little to no authority in IT-related procurements.

Given these results, it's understandable that increased CIO spending authority was among improvements to the technology procurement process proposed by city and county CIOs. Recommendations overall were wide-ranging, including easier or faster agreement execution and prevention of unauthorized end-user “shadow” IT purchases. Other recommendations included easier agreement renewals, contract management automation and expedited legal review of contracts, and procurement alternatives to traditional full Requests for Proposals.

Greater centralization and invoice-based ordering, along with standardized evaluation processes were also suggested. In the end, however, it seems that better governance as well as better understanding of government and business technology markets on the part of procurement officers, may be required to improve IT acquisition, respondents indicated.

### City/County CIO Technology Priorities Over Next 2 Years



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## Cybersecurity and Data Loss Prevention

Given the spate of ransomware attacks at the local level in 2019 and into 2020, it is understandable that IT professionals surveyed now consider cybersecurity and data loss prevention as among the most significant aspects of their job. Fortunately for their constituents, nearly three-quarters (a combined 74%) believe their government's cybersecurity posture is 75% to 90% of where they want it to be. Less than a quarter of respondents (24%) believe their cybersecurity is 50% of where they want to be.

When prioritizing areas for improving their cybersecurity posture, security awareness training for staff was identified as the highest priority in 70% of responses. Training of existing IT staff was of highest priority in 53% of rankings. (More information on training overall is addressed in the next section of this report.)

Other highest-priority measures for cybersecurity improvement included modernizing defenses to take into account cloud security, fostering a security mindset across all facets of city and county government, and updating policies in areas such as ransomware to better address the changing threat landscape.

Respondents also ranked adoption of a cybersecurity framework based on national standards as a highest priority, along with developing or testing cybersecurity incident response plans and deploying proactive measures such as penetration testing.

So an emphasis on the basics of training staff and promoting a cybersecurity mindset across their organizations, coupled with benchmarking of security practices against national guidelines, are of greatest importance to city and county IT professionals.

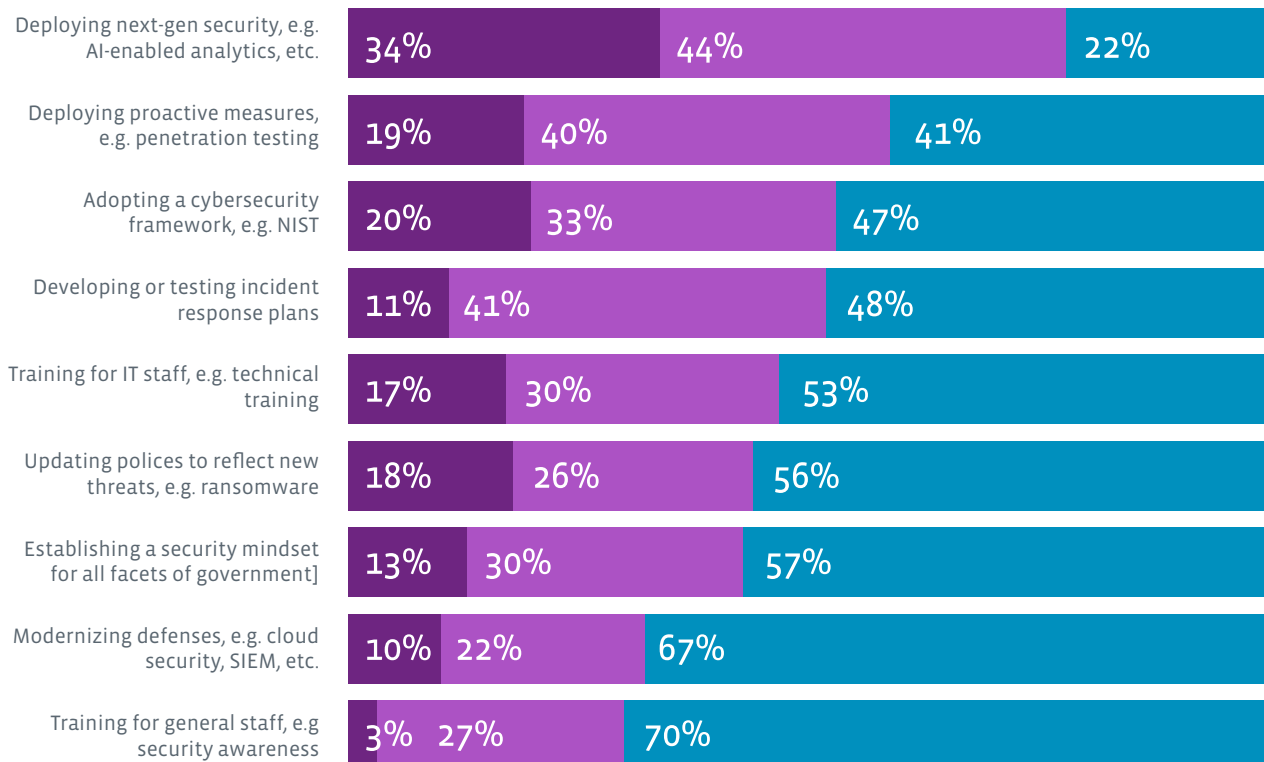
Deploying next generation security, such as AI-enabled analytics, was seen as less important overall – ranked as a secondary priority in 44% of responses, and low priority in 34% of cases.



Share information about emerging technologies, industry cyber threats, and vendors that “get” your business limitations and goals.”

*Laurel Caldwell,  
ITS Director, Latah County, Idaho*

### City/County Cybersecurity Priorities on Many Fronts



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## Workforce and Training

The number of local government IT employees serving end users varies widely in this report (as described in Section 2), from as many as many as 13 employees serving 100 end users to as few as 38 employees serving some 12,000 users. Workforce training, therefore, is not surprisingly a key concern for survey respondents, particularly in areas of emerging technologies and the ever-changing landscape of cybersecurity.

### Wish list for training at CIO's agency / department

- #1 More training on emerging technology areas
- #2 More training on core areas, e.g. infrastructure, systems, data, etc.
- #3 More cross-training to better understand government operations
- #4 More training on project management, agile design, user-centered design, etc.
- #5 More leadership training for managers
- #6 More soft skills training
- #7 More simulations / real-world training scenarios

Ranking the relative importance of technology and skills training, fully 80% of responses cited cybersecurity training as the top requirement, followed by improving the user experience with IT support, and better understanding of infrastructure – particularly in network and systems reliability and performance.

Other key areas cited as needing more workforce training included digital modernization of systems, and emerging technologies such as the Internet of Things, artificial intelligence and automation. Cloud training related to infrastructure migration and application or platform deployment was also a significant area for respondents, as was data management (specifically in the areas of analytics and big data).



CIOs are in a unique position to assist with integration of various IT disciplines. As technology expands so does the specialization of the IT industry. This results in staff that is highly skilled, but knowledgeable only in an individual IT discipline. When the majority of the IT workforce falls into this structure there are often gaps between disciplines that arise in security, usability, and efficiency. A skilled CIO can bring these disciplines together and assist with communication and collaboration to minimize the gaps and create an effective and engaged IT workforce.”

*Timothy Wyatt,  
Deputy Director of IT,  
York County, Virginia*

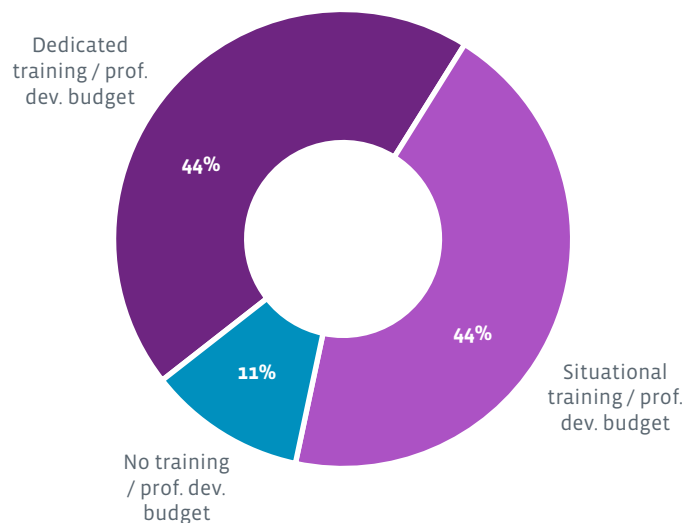
Technical topics were not the only important aspects of workforce training, however. Survey respondents acknowledged a need for better cross-training to understand government operations, more leadership training for managers, and more soft skills training for IT employees in general.

While none would deny the need for training, there were no across-the-board indications of budget availability for training and professional development. Indeed, budget was found to be lagging in many cases.

Forty-four percent (44%) of respondents indicated that they had budget for dedicated training and professional development, a number echoed by those whose organizations had only situational training and professional development.

More than one in ten of survey respondents (11%) acknowledged they had no budget for training.

#### Training and professional development budget status





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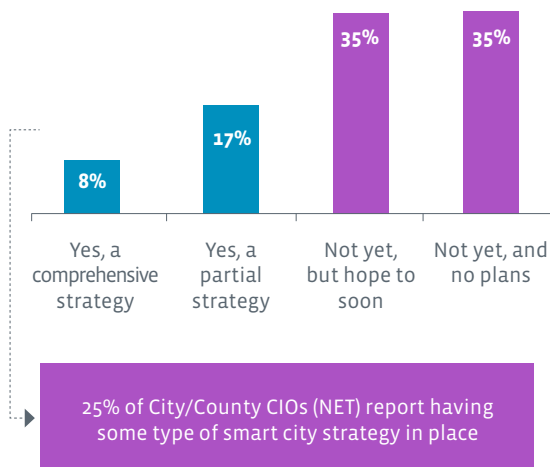
## Smart City/County Initiatives and Emerging Technologies

The push for smart cities/counties and the emerging technologies to support them is not among the most pressing initiatives for government leadership, the business community or citizens, in the estimation of survey respondents.

Only 10% believed smart cities/counties to be met with “significant” enthusiasm. A combined 90% believed the initiative to be met either with moderate or even limited enthusiasm – more than half of those surveyed suggested interest was limited.

Consequently, only one-quarter (25%) of city and county CIOs reports having some type of smart city/county strategy in place. Responses were split at 35% among those that do not have a strategy but hope to develop one soon, and those that have no immediate plans for smart city/county initiatives. Only 8% cited that a comprehensive strategy.

### City/County Technology Budget Expectations



Among the reasons cited for not pursuing smart city/county initiatives included that respondents had other more pressing issues – certainly the increased emphasis on cybersecurity has taken precedence over other activities for many in the survey. Further, because IT budgets have been predicted in many cases to rise by only 1% to 5% in the next two years, respondents also cited lack of resources as a limiting factor in strategic development. More than one-third (36%) felt that the business case or potential ROI on smart city/county investments was unclear, and just under one-quarter (24%) lacked the internal expertise required.

The city and county CIOs that do, in fact, have smart city/county strategies in place are focusing their efforts in areas that can benefit the public good most broadly. Enhanced e-government services were overwhelmingly the highest priority, followed by civic engagement and smart government.



York County rolled out Virtual Reality at our Senior Center which has been a huge hit. It allows them to explore museums located across the whole, explore Egyptian tombs, scuba dive, or rock climb. Most of these activities are no longer possible for them to accomplish in the real world due to mobility or financial limitations, but with a quick visit to the York County senior center they could be doing them in minutes.”

*Timothy Wyatt,  
Deputy Director of IT,  
York County, Virginia*

With this focus on enhanced services, smart video monitoring, predictive analytics on crime, smart disaster monitoring and response, and improvements to traffic congestion topped the list of initiatives of highest priority to respondents. Programs that were cited of low priority included autonomous public transportation, and smart parking alerts or meters to improve parking efficiency.

Smart street lighting for public safety was the only issue with equal distribution of opinions on priority – split one-third each as being of low, secondary or high priority.

And smart cities/counties were not the only programs with emerging technologies being considered by local governments. Among additional technologies being considered were drones, 5G telecommunications, the Internet of Things, artificial intelligence and technologies to automate processes.

### What makes a City or County Smart?



- Smart Transportation
- Smarter Digital Infrastructure
- Citizen Engagement and Digital Citizen Services
- Smart and Big Data
- Data Visualization
- Public Safty
- Healthcare Services
- Leadership and Vision
- Citizen Satisfaction

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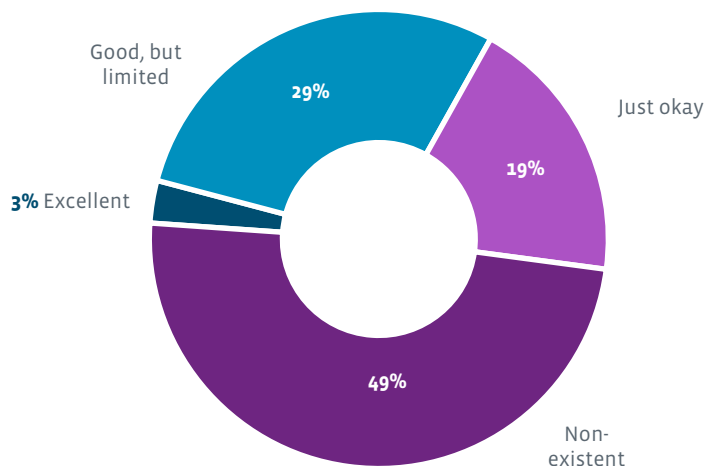
## Inter- and Intra-Governmental Relationships

Survey respondents were split at 68% city government and 32% county government employees. Of those, 43% identified themselves as of medium size (50,000 to 249,999 residents), and 38% were characterized as small, or fewer than 50,000 residents. Large governments (up to 1 million residents) were represented by 12% of respondents. Of the survey respondents, 8% reported themselves as serving 1 million residents or more.

Respondents were clearly able to see value in collaboration between city and county CIOs and their state counterparts, and could identify many potential opportunities to do so. The reality, however, seems that in most cases there are no relationships in place to facilitate such collaboration.

Asked to rate their jurisdiction's relationship with the state CIO, nearly half (49%) characterized the relationship as "non-existent." Just over one-quarter (29%) said the relationship was good but limited, and almost one in five (19%) said it was "just okay." Only 3% of respondents characterized the relationship as excellent.

### Rating of jurisdiction's relationship with the state CIO





Partnerships with diverse sets of stakeholders across jurisdictions, public and private entities, educational institutions, medical and healthcare facilities etc. in the form of Broadband Action Teams resulted in the award of several significant grants. At one such presentation, the panelists shared their appreciation for the collaborative approach taken by rural stakeholders in ensuring a cohesive planning approach to further enable chances of successful outcomes that benefit both citizens and economic development of the overall region.”

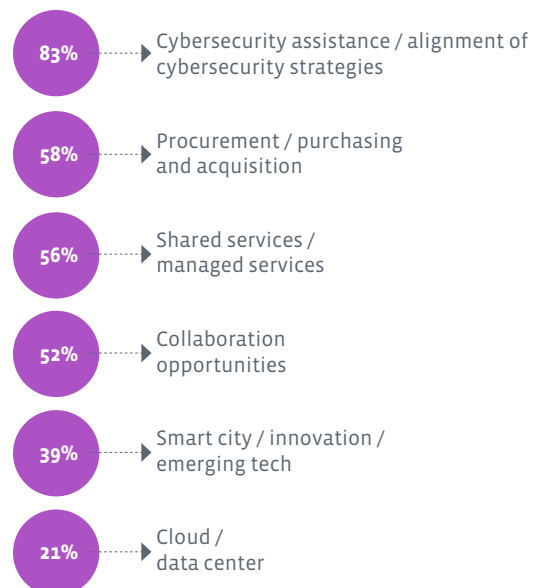
*Sanjay Saggere,  
CIO, Colville Tribes*

None of this is to say that collaboration opportunities could not be identified. Top collaboration opportunities cited by respondents included cybersecurity assistance and alignment of cybersecurity strategies (83%), and procurement/purchasing and acquisition (53%). Shared services, collaboration opportunities and smart city or innovation was also among the identified opportunities, along with cooperation in cloud and data centers.

Regardless of these identified opportunities, the incidence of cross-jurisdictional technology projects was rare, according to 47% of respondents. Occasional cooperation occurred in 30% of reported cases, while only one in five (19%) of responses indicated frequent cooperation.

Cross-jurisdictional technology projects mentioned by respondents ranged from fiber infrastructure to cybersecurity and data sharing. Regional broadband, managed IT services, and shared procurement were also ranked among top collaborative projects, along with GIS, CIO best practices, disaster recovery and public safety radio systems.

#### Top cited collaboration opportunities



# Methodology

The quantitative component of this study consisted of an online survey fielded to a sample of U.S. CIOs, CTOs, and related staff with technology responsibility within local and county government. A total of 102 respondents participated in some facet of the survey. As with any survey, sampling error is one source of possible error. With non-sampling error, precautionary steps were taken in all phases of the survey design, collection and processing of the data to minimize its influence. To supplement the quantitative survey data, qualitative insights in the form of interviews and commentary were included from a segment of U.S. CIOs, CTOs, and related staff with technology responsibility within local and county government. CompTIA is a member of the market research industry's Insights Association and adheres to its internationally respected Code of Standards. Any questions regarding the study should be directed to CompTIA Research and Market Intelligence staff at [research@comptia.org](mailto:research@comptia.org).



# Conclusion

Cybersecurity continues to remain as the number one concern of local government CIOs and will likely remain so throughout this decade as nefarious and criminal exploitations grow more aggressive and sophisticated.

The COVID-19 pandemic will most likely accelerate the trend towards cross-jurisdictional and local-state government collaboration. Despite the growing fear regarding the possibility of diminishing resources in the near future, CIOs will continue to work towards applying emerging technologies such as AI, blockchain, the cloud, and autonomous vehicles.

Training and professional development activities will most likely grow as public managers see the need for qualified technology managers perhaps as never before. Technology itself will continue to evolve at a dizzying pace and local governments will be required to invest in their technology workforce to manage these systems. Much of this new training will be conducted virtually.

Governments of all sizes realize now, as never before, the critical role that technology plays in delivering services to the public. Technology touches everything that we do. And there is every reason to hope that this acknowledgement will translate into more support from our elected and appointed leaders.



## **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](http://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, CompTIA 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. Visit [www.comptia.org](http://www.comptia.org)