The Responsive State CIO: Connecting to the Customer

2019 State CIO Survey

Contents

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Founded in 1969, the National Association of State Chief Information Officers (NASCIO) represents state chief information officers (CIOs) and information technology (IT) executives and managers from the states, territories and District of Columbia. NASCIO's mission is to foster government excellence through quality business practices, information management and technology policy. NASCIO provides state CIOs and state members with products and services designed to support the challenging role of the state CIO, stimulate the exchange of information and promote the adoption of IT best practices and innovations. From national conferences to peer networking, research and publications, briefings and government affairs, NASCIO is the premier network and resource for state CIOs. For more information, visit www.NASCIO.org.

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About the Survey

Survey purpose

The National Association of State Chief Information Officers (NASCIO), Grant Thornton LLP and CompTIA have collaborated for a tenth consecutive year to survey state government information technology (IT) leaders on current issues, trends and perspectives. The survey sponsors seek to provide these state government IT leaders with an opportunity to voice their thoughts and opinions on matters of high importance. Governors, legislators and business leaders can benefit from these knowledgeable insights about essential state IT services.
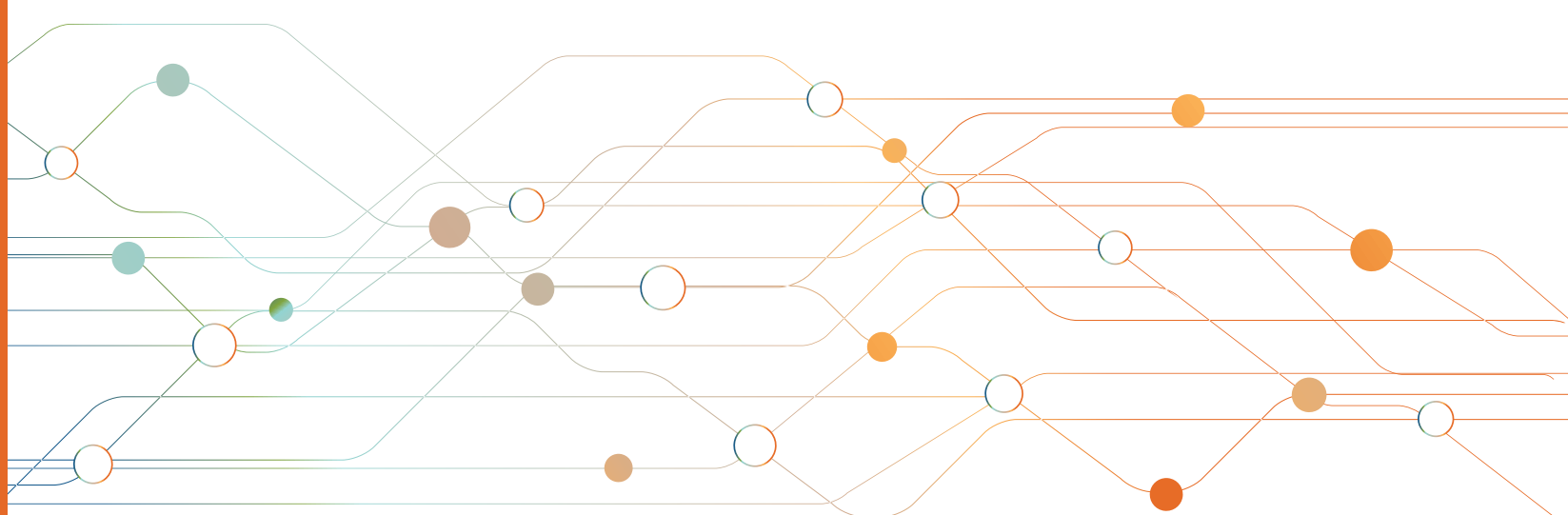
Methodology

In spring 2019, the sponsors jointly developed a series of questions reflecting both the new issues of the day as well as follow-up on some of the questions they included in prior years' surveys. The questions were presented to state chief information officers (CIOs) in an online tool, and between June and July 2019, they individually logged in and addressed the forty-four multiple-choice and open-ended questions.

Forty-nine NASCIO member states and territories completed the survey. Primary respondents were the state CIOs, although deputy CIOs and other senior state IT leaders contributed. Throughout the survey, we refer to them all as state CIOs. Thirty of the respondents also participated in the 2019 survey. However, new perspectives were introduced by 39 percent of the respondents who are different due to the normal turnover that occurs in state CIO positions. We also conducted in-person interviews with over twenty state CIOs and incorporated their "advice from the trenches" along with the quantitative and qualitative responses to the online survey.

Anonymity

This report reflects the responses and opinions of the survey respondents to the maximum extent possible. However, to preserve anonymity we do not attribute responses to specific individuals. To obtain a copy of the survey report, please see the inside back cover of this report for directions to the sponsor organizations' websites.

Executive Summary

In this tenth annual state CIO survey we received the perspective of 49 state and territory CIOs on the factors and trends driving the adoption of enterprise IT in the states. This year's survey follows an election cycle with significant turnover in the ranks of many states' most senior technology officials. A key theme that emerged from the survey was an increased focus on customers of the state CIO organization, whether they are state agency customers, local government partners or citizens taking advantage of state technology services. Customer needs and viewpoints were prevalent in many of the survey topics, whether discussing how CIO organizations structure themselves to respond to state customer needs, identifying the financial and economic models used to fund IT services or responding to citizen expectations of new and emerging technology.

Customer Relationship Management

State CIOs understand that customer service must be an overarching philosophy in all work in order to be most successful. Nearly all CIOs expressed the clear sentiment that they want to be an enabler of success to their agency customers, and to do that they must take an active role to build relationships from the senior executives down through the technology staff. Of the 48 states reporting, 36 have active CRM initiatives in place and six are in the planning stage to implement a formal program.

There is a recognition that CRM is an ongoing process, more CIOs than ever before are assigning a dedicated overall CRM leader and/or assigning CRM leads for each partner agency as part of the overall and formal CRM plan. This is complimented by the use of tools to assist with the automation of service requests. Also, there is a focus on training those that will be in CRM leadership roles so there will be consistency in approach.

IT Cost Management

For the first time in the survey, we asked a comprehensive set of questions about IT cost management. The overwhelming majority of state CIO organizations are structured in a similar fashion and operate as internal providers of information technology services to state agencies and other public entities on a chargeback, user fee or comparable basis. The agencies are "customers" that utilize data center, network, email, voice and security services under a published rate calculated by the CIO office. This complex IT business environment presents a host of challenges that must be addressed by the enterprise IT organization, the agency customers and the state budget office. The survey responses reveal half the states use a traditional activity-based costing (ABC) method, while newer approaches such as Technology Business Management (TBM) and ITIL/ITSM frameworks are gaining favor.

The current IT cost management model can be constraining and may not be flexible enough for the evolving CIO business models and the desire for innovation. However, any significant changes in the near future are unlikely. What we can expect is the expanded use of more sophisticated IT cost management methods, like TBM, that provide a structured taxonomy and are more in alignment with the state budgeting process.

Performance Management

There has been much buzz around performance management at the state level. We define it as improving the government experience and its operations through the evaluation and measurement of both agency, program and policy effectiveness. According to this year's survey results, 55 percent of states have a performance management system, and another 18 percent are in the planning phases. From a leadership and governance perspective, in the majority of states that have a performance management program, the governor and governor's cabinet are setting policy and direction. In about 30 percent of states with a performance management program, state CIOs have a say in setting policy and direction.

A majority of state CIOs view themselves in a supporting, not leading, role in enterprise performance management efforts. However, there is a strong consensus among CIOs that performance management is important to improving overall government effectiveness.
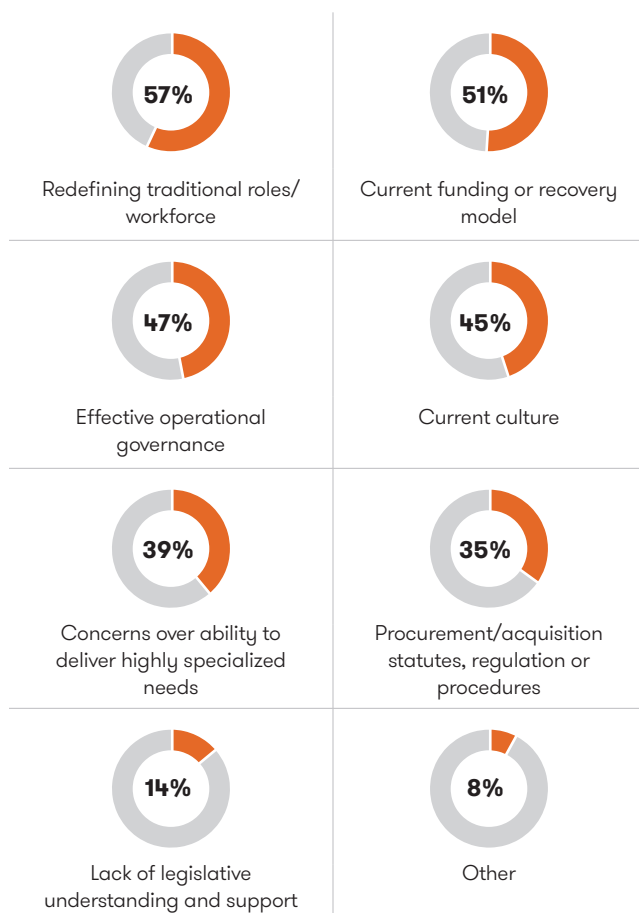
CIO business models

The shift of state CIO organizations towards a broker of services model continues. A level of maturity has been reached in business models and that maturity is reflected in how CIOs responded to a question about how CIO organizations plan to deliver or obtain IT services. Only two percent of states plan to introduce outsourcing models, down from 15 percent in 2018. This large drop can likely be explained because such models are already in place in many state IT organizations. Another interesting observation is that there was an increase (10 percent to 26 percent) in the number of states expanding state IT staff. CIOs commented on being drastically under-staffed and finally being in a place to bring on appropriate resources with these new types of managed services models in place. One CIO stated, "we continually monitor and measure the need for full time resources to meet the demand of our customers; obtaining qualified resources is difficult in the public sector."

When asked about challenges in moving to the CIO as broker of services model, the majority of states cited change management and the evolving role of traditional workforce. There was also a large jump in the number of CIOs that identified culture as a challenge—45 percent, up from 14 percent in 2018. Effective governance and current funding models also continue to be a challenge for state CIOs. A likely explanation for the challenges around roles/workforce, change management, culture and governance is that, with 22 new governors in 2019, there are many new state CIOs who are, expectedly, establishing and settling into their roles and organizations.

How does your state CIO organization plan to deliver or obtain IT services over the next three years?

	Introduced	Maintain	Expand	Downsize
State-owned-and-operated data center(s)	0%	35%	17%	48%
IT shared services model	4%	27%	65%	4%
Outsourcing services model	2%	41%	50%	7%
"As-a-service" models (e.g. SaaS, PaaS, IaaS, etc.)	2%	6%	92%	0%
Managed services model	9%	28%	61%	2%
State IT staff	0%	67%	26%	7%

What are the top three obstacles, or challenges, for your state CIO organization to acting as a broker for IT services?

57%
Redefining traditional roles/ workforce

51%
Current funding or recovery model

47%
Effective operational governance

45%
Current culture

39%
Concerns over ability to deliver highly specialized needs

35%
Procurement/acquisition statutes, regulation or procedures

14%
Lack of legislative understanding and support

8%
Other

What skills/roles are the most important in a brokered services model?

53%
Security

49%
Customer Relationship Management (CRM)

43%
Contract Management

41%
Vendor Management

25%
Next Generation Enterprise Architecture

25%
Enterprise Portfolio Management

Additional insights:

18%	Multisource Integrator (MSI)
12%	Data Management
12%	Cost Accounting
8%	Market Research (business, technology, procurement, contracting)
4%	Innovation Laboratory
4%	Other (infrastructure, innovation)
2%	Next Generation Network Architecture

The CIO as a broker concept not only is a different way for state CIOs to conduct business, but it also puts an emphasis on certain skills/roles that are important to the success of this model. When asked about the skills that are most important in a brokered services model, CIOs chose security (53 percent), followed closely by customer relationship management (CRM) at 49 percent. Contract and vendor management also rank as highly important while next generation network architecture and innovation laboratory were at the bottom of the list.
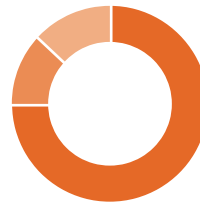
Customer relationship management

In last year's State CIO Survey, we asked CIOs how they advance their agenda and drive results and what critical success factors and dimensions are needed to do so. The third most popular answer was agency customer service and relationship management. State CIOs understand that customer service must be an overarching philosophy in all work in order to be most successful. Variations of the same question were asked this year and the results certainly show that the importance of customer relationship management (CRM) has grown in practice. For this report, we use the term "CRM" to describe the relationship between the CIO and their partner agency customers.

Throughout the in-person interviews CIOs spoke with intensity about their agendas and how they see the maturing role of the CIO in each of their states and nationally. While they spoke with focus on many topics, they spoke with passion and excitement regarding their activities to build their relationships with their customer agencies. Many of the CIOs discussed how they have been in agency technology roles and now that they are their state's CIO, they want to work with and get to know the technology teams in the agencies—something they had wished for in the past.

Nearly all CIOs expressed the clear sentiment that they want to be an enabler of success to their agency customers, and to do that they must take an active role to build relationships from the senior executives down through the technology staff. One CIO in particular made a point that while they do have complete authority on technology policy and purchasing, "it simply doesn't make sense not to build the best working relationships with my agency partners. Dictators are rarely successful in reaching their goals and never last."

Of the 48 states reporting, 36 have active CRM initiatives in place and six are in the planning stage to implement a formal program. Only six reported having no plan to develop a CRM initiative, and, of those six, two said their relationships were very solid and productive. These CIOs felt that trying to formalize this practice would have negative impacts on the relationships they have established over time, but said they would advocate that their successors implement a more formal structure.

Do you have a formal customer relationship management (CRM) function within the CIO's office to manage interactions with customer agencies for whom you provide services?

75% | Yes
13% | No
13% | Planning

The manners in which the relationships are built and maintained are all based around constant and effective communications. Email makes up a significant amount of the day-to-day communications, however only one CIO felt that email was the most effective way for all communication.

For the majority of states much of the communication is in-person directly by the CIO, but it is also supported by individuals and teams dedicated to maintaining the communications and further developing the relationships, partnerships and trust. The in-person communication is at all levels of the partner agencies from the agency head, through the line technology staff. The survey and in-person interviews were consistent in demonstrating that communication must be regular and high touch to be effective and must bring value to both parties. The survey shows that planning and training is important, but execution is the focus. One CIO echoed the discussions of many:

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>
> "We need to get over the planning and strategy of how to communicate, and just pick up the phone or get out of my chair and go see the person. Nothing takes the place of looking someone in the eye with a warm and sincere handshake to iron out differences or just to get to know and understand each other…"
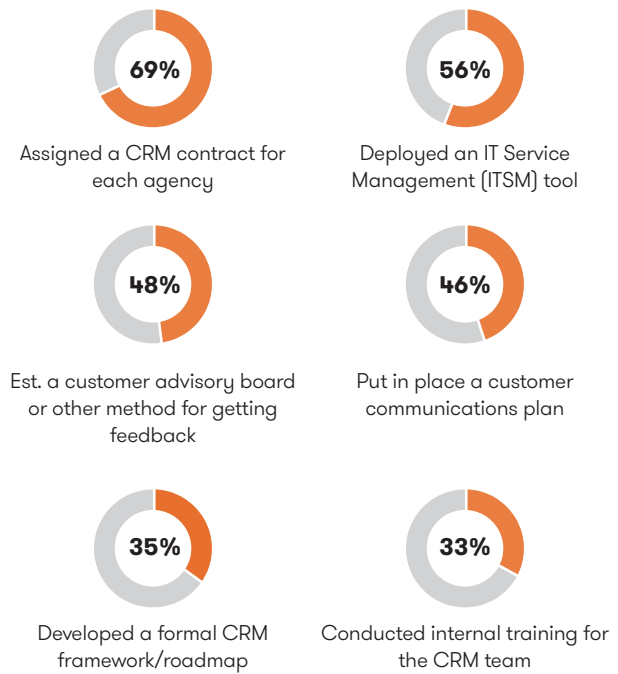>
> **- State CIO**

What do you consider to be the most effective means that your CIO organization uses to interact with your customer agencies?

90%
Individual in-person meetings at agency offices

88%
Group meetings with collections of agency representatives

59%
Email

43%
Telephone

43%
Individual in-person meetings at a non-work location (e.g., coffee, lunch, etc.)

35%
Web/video conferencing

Other | **6%**

There is a recognition that CRM is an ongoing process, more CIOs than ever before are assigning a dedicated overall CRM leader and/or assigning CRM leads for each partner agency as part of the overall and formal CRM plan. This is complimented by the use of tools to assist with the auto-mation of service requests. Also, there is a focus on training those that will be in CRM leadership roles so there will be consistency in approach.

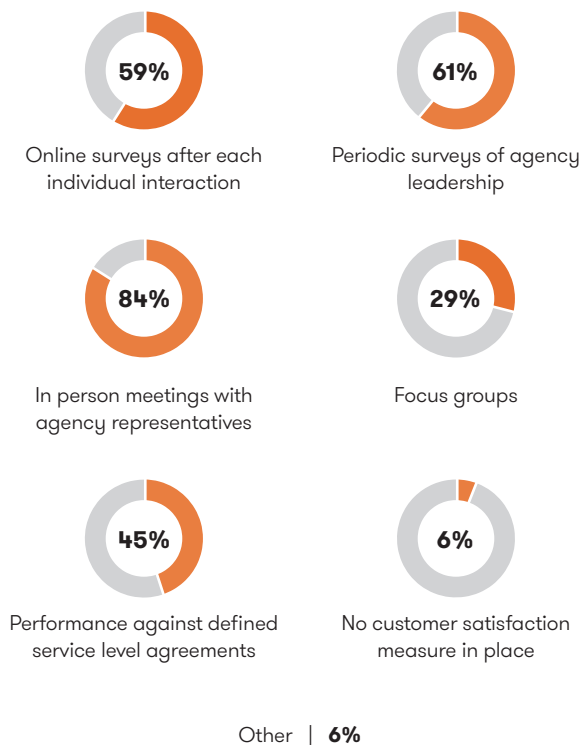**What strategies has your CRM function used to improve customer relationships?**

69%
Assigned a CRM contract for each agency

56%
Deployed an IT Service Management (ITSM) tool

48%
Est. a customer advisory board or other method for getting feedback

46%
Put in place a customer communications plan

35%
Developed a formal CRM framework/roadmap

33%
Conducted internal training for the CRM team

Additional insights:

33%	Hired a chief customer officer or similar position
29%	Developed defined performance measures for CRM
8%	Does not apply

During the in-person interviews many CIOs shared that it has been a long-held practice to conduct satisfaction surveys in their states. However, nearly all reported that they are looking at the results in a different manner, following up on negative situations and questioning when they feel the results are showing a satisfaction level they believe may be too high. There is a common focus to drive better results and higher customer partner agency satisfaction.
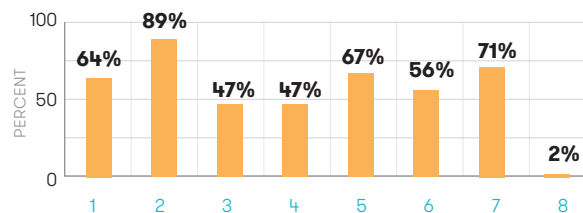
Multiple approaches are being implemented to gather results as well ranging from one on one discussions, agency group interviews as well as traditional online surveys.

How do you measure the satisfaction of your agency customers with the services provided by your CIO organization?

59%
Online surveys after each individual interaction

61%
Periodic surveys of agency leadership

84%
In person meetings with agency representatives

29%
Focus groups

45%
Performance against defined service level agreements

6%
No customer satisfaction measure in place

Other | **6%**

There was recognition by CIOs in both survey responses and in-person interviews that building a CRM model was important but measuring customer satisfaction and results and adjusting when needed is more meaningful. All CIOs expressed that to be successful and build trust with their customer agencies, they must act upon the results. The survey reveals that nearly 100 percent of the CIOs create and execute action plans as a result of feedback.

If you measure the satisfaction of your agency customers, how do you use this information?

1	Provide additional training and education to staff	5	Identify new services and/or changes to existing services
2	Create action plans to respond to feedback	6	Identify changes to CIO organization structure, roles or responsibility
3	Inform performance evaluations for CIO organization's staff	7	Identify changes to CIO organization processes
4	Inform budget and investment plans for the CIO organization	8	Other

One new CIO was very reflective on why there was a new emphasis on building relationships with his customer partner agencies. He said that he was a student of history and could give many examples of success and failure that could typically be attributed to the level of proactive, honest and open communications and real partnership among stakeholders. He was clear that what we are seeing is an evolution of thinking and not a negative reflection on how things have been done in the past. He made the comparison to the 1960 presidential election campaign when then candidate John F. Kennedy presented a new vision. Kennedy recognized the strength of the economy and national sentiment but simply said, we can do better and we can build faster on the success of those who came before. And with that message, he won the election and there was indeed the passing of the torch to a new generation of leaders.

IT cost management

For the first time in the survey, we asked a comprehensive set of questions about IT cost management. The overwhelming majority of state CIO organizations are structured in a similar fashion and operate as internal providers of information technology services to state agencies and other public entities on a chargeback, user fee or comparable basis. The agencies are "customers" that utilize data center, network, email, voice and security services under a published rate calculated by the CIO office. This complex IT business environment presents a host of challenges that must be addressed by the enterprise IT organization, the agency customers and the state budget office. How the CIO organization measures the cost of these IT services and establishes rates is a crucial element of this process. The survey responses reveal half the states use a traditional activity-based costing (ABC) method, while newer approaches such as Technology Business Management (TBM) and ITIL/ITSM frameworks are gaining favor.
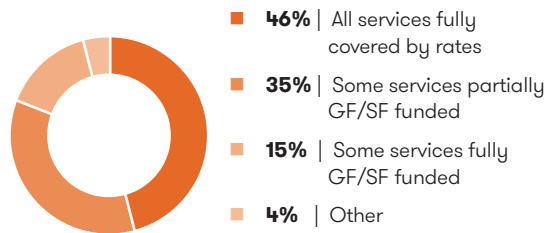
What framework does the CIO use to measure the cost of IT?

- **50%** | Activity based costing/management
- **19%** | Technology Business Management
- **12%** | ITIL/ITSM
- **13%** | Other
- **6%** | None

For the majority of the state CIO organizations that must recover their costs through customer billing, establishing the rates for services is a complex exercise. Chargeback rates are calculated for full cost recovery of all costs associated with the delivery of a product or service to a customer agency. Because agencies may be using federal funding to support program delivery, the state must follow federal financial management mandates and appropriately allocate both direct and indirect costs. The rates must be reviewed and refined on a regular basis. Understanding how the rates are calculated (and the actual rate itself) can often create tension with agency customers.

Are you required to recover all of your CIO organization's costs through rates charged to customers, or are some of your services partially or fully funded through general fund (GF) or special fund (SF) revenue?

- **46%** | All services fully covered by rates
- **35%** | Some services partially GF/SF funded
- **15%** | Some services fully GF/SF funded
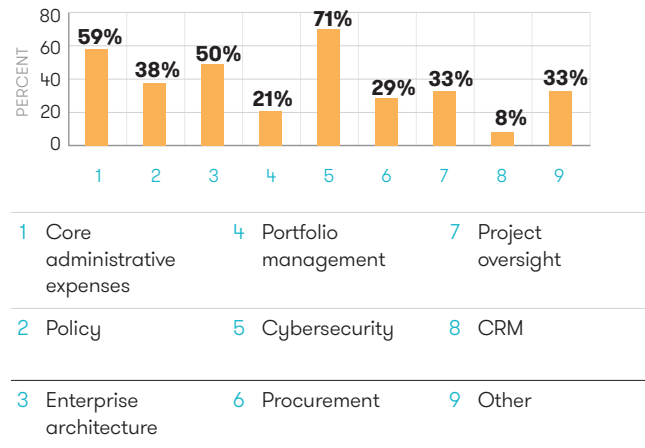- **4%** | Other

For some CIOs, the full chargeback model where all services are fully covered by rates allows them to operate like a business and understand the true cost of delivery. However, this model offers little flexibility for CIOs to invest in IT modernization, new service offerings or innovative solutions. As states continue to consolidate, service portfolios expand and the use of outsourcing grows, CIOs will need to address how they will fully fund the organization if they are migrating to a service brokerage model.

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> "...failure to create an ongoing funding source for system/application improvements and innovation has a chilling effect on modernization and implementation of new opportunities."
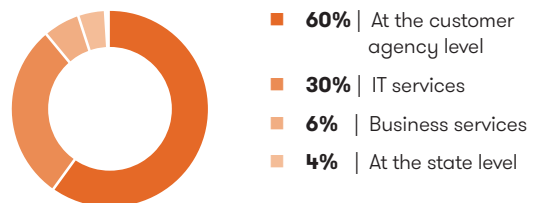>
> **-State CIO**

With a full or partial cost recovery model, CIOs must include a variety of overhead costs that are necessary to support the CIO office and enterprise responsibilities that may be mandated by statute. These are services that are important for enterprise IT governance and aren't tied to any one project or program. More than a third of the CIOs have been able to receive some general fund dollars to support these demands. This certainly helps relieve some of the pressure to include these costs in a fully burdened rate model and results in a cleaner rate for customer consumption. For example, enterprise architecture and policy, project management and portfolio management all benefit the collective enterprise. Today, the most pressing issue is enterprise funding necessary for cybersecurity and risk management. Seventy-one percent of the respondents are receiving funds to support cybersecurity services and activities from general or special fund sources.

If some of your CIO organization's services are partially of fully funded through GF/SF revenue, what types of services are funded?

#	Category	#	Category	#	Category
1	Core administrative expenses	4	Portfolio management	7	Project oversight
2	Policy	5	Cybersecurity	8	CRM
3	Enterprise architecture	6	Procurement	9	Other

For the state CIO organizations in a cost recovery model, the dominant approach is to provide a full breakdown of the costs to the internal customer agency. It has become more important to demonstrate the direct business value of IT to internal customers while at the same time hoping they appreciate and understand there are overhead costs associated with enterprise services that must be included in the rates.

If your organization operates in a cost recovery model, does your agency provide customer agencies a full breakdown of the cost of business and IT services being provided and paid for by the customer agency?

- **60%** | At the customer agency level
- **30%** | IT services
- **6%** | Business services
- **4%** | At the state level

Next we asked an open-ended question about the impact that transparency in costs and rates has on the relationship with customers. The predominant sentiment is that transparency is essential, builds trust, improves satisfaction and supports a positive relationship with customers. One CIO said that transparency has a "tremendous impact...takes the sting out of criticism to the legislature." Another CIO stated, "it is an innovation driver creating insight into how the state is spending IT dollars."

However, not all CIOs are convinced that transparency is a silver bullet. One CIO commented, "it may not be helping. The challenge is providing sufficient insight into the complexities of delivering a service to justify costs, while not overwhelming the customer with technology specifics."

Understanding why and how internal service rates are constructed is an important element of the current state CIO operating model. Sixty-four percent of the respondents who have rates use a traditional charge per unit or usage approach.

If your organization operates in a cost recovery model, how are your rates constructed?

- **64%** | Detailed establishment of cost and charge per unit or usage

- **13%** | Even distribution of cost based on size model

- **17%** | A chargeback to transaction

- **4%** | Manual monitoring and activity-based cost model

- **2%** | Technology Business Management

The vast majority of CIOs are concerned about costs, and concerned enough to re-examine costs on some periodic basis – annually, bi-annually, or "as needed" to evaluate and make any necessary adjustments. From a customer perspective and to promote efficient cost allocation models, CIOs must ensure rates are reasonably matched to the actual costs. This is a necessary exercise to make sure the CIO's office is not carrying the burden for real increases. The customer pressure on the CIO office is to reduce rates and make them competitive with the marketplace. It is important that agencies understand the relationship between rates and cost. Otherwise, they will expect rates to be constant, which is not reality.

For the states that set rates for services, by far the majority establish these rates based on a true-cost build up. For the purpose of this question we mean the full cost of operations and maintenance of the equipment, software, utilities, personnel, physical plant and administrative overhead associated with managing the data center or equivalent. Over 84 percent either completely or partially use a true-cost approach.

Does your organization re-examine the costs for rates for services on a regular basis?

- **47%** | Yes, completely
- **37%** | Yes, partially
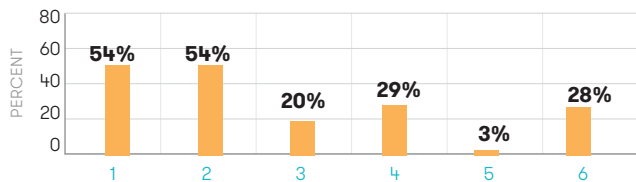- **8%** | We do not set rates
- **8%** | No

The current IT cost management model can be constraining and may not be flexible enough for the evolving CIO business models and the desire for innovation. However, any significant changes in the near future are unlikely. What we can expect is the expanded use of more sophisticated IT cost management methods, like TBM, that provide a structured taxonomy and are more in alignment with the state budgeting process.

Performance management

There has been much buzz around performance management at the state level. We define it as improving the government experience and its operations through the evaluation and measurement of both agency, program and policy effectiveness. We have added a section on the state CIO's role in performance management in this year's survey. According to the results, 55 percent of states have a performance management system, and another 18 percent are in the planning phases.

From a leadership and governance perspective, in the majority of states that have a performance management program, the governor and governor's cabinet are setting policy and direction. In about 30 percent of states with a performance management program, state CIOs have a say in setting policy and direction.
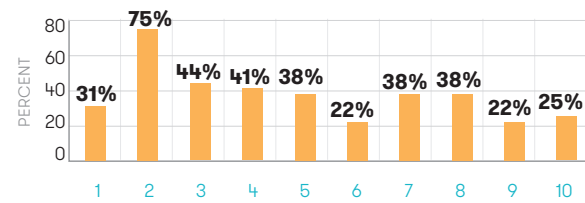
If your state has a formal enterprise-wide performance management program, who sets policy and direction?

54%	54%	20%	29%	3%	28%
1	2	3	4	5	6

1	Governor	4	State CIO
2	Governor's cabinet	5	State Chief Data Officer (CDO)
3	State Chief Operating Officer (COO)	6	Oversight board or commission

When asked about the current role of the CIO organization in the statewide performance management program, the only answer that a majority of respondents chose was supporting the appropriate governance body at 75 percent. What was surprising was how few state CIOs are involved in creating the platform for performance management—only 42 percent of respondents are hosting a statewide dashboard, and only 38 percent are playing a role in data collection, analytics and performance measures.
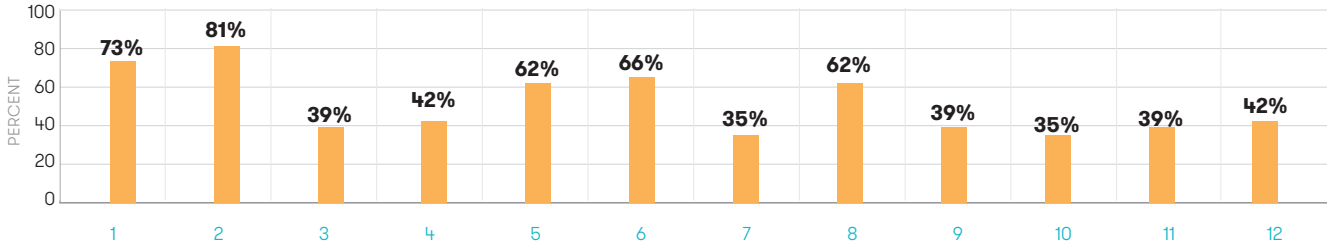
What is the current role of your CIO organization in your statewide performance management program?

31%	75%	44%	41%	38%	22%	38%	38%	22%	25%
1	2	3	4	5	6	7	8	9	10

1	Providing leadership role in establishing policy	6	Creating necessary supporting analytics discipline
2	Supporting appropriate governance body	7	Implementing and continually evolving a statewide performance dashboard
3	Creating a statewide dashboard	8	Working with agency to identify meaningful performance measures
4	Creating necessary supporting data management discipline	9	Training of state employees in the necessary skills to conduct performance evaluations
5	Data collection	10	Ensuring necessary feedback loops exists to adjust program measures over time

A majority of state CIOs view themselves in a supporting, not leading, role in enterprise performance management efforts. However, there is a strong consensus among CIOs that performance management is important to improving overall government effectiveness. When asked about the attributes of their performance management program, responses focused on a clear relationship to improving government effectiveness. The top responses were: working with agencies to define meaningful and measurable metrics for evaluating agency program effectiveness (81 percent), defining metrics traceable to the governor's goals (73 percent), informs and challenges state enterprise wide and agency level budgets and funding (66 percent), informs and challenges state enterprise wide and agency level strategic plans (62 percent) and actively promotes a performance management mindset across the state enterprise (62 percent).

Our established performance management program includes the following:

Bar chart showing PERCENT (y-axis, 0–100) for items 1–12:

Item	Percent
1	73%
2	81%
3	39%
4	42%
5	62%
6	66%
7	35%
8	62%
9	39%
10	35%
11	39%
12	42%

1 Includes the definition of metrics that are traceable back to the governor's goals

2 Works with agencies to define meaningful data and relevant metrics for evaluating agency program effectiveness

3 Requires all projects, contracts, and procurements include defined metrics for measuring effectiveness

4 Employs utilities and tools for selecting and analyzing data for enterprise-wide and agency specific metrics

5 Informs and challenges state enterprise-wide and agency level strategic plans

6 Informs and challenges state enterprise-wide and agency level budgets and funding

7 Provides ongoing coaching, mentoring, and consulting to agencies in developing meaningful metrics

8 Actively promotes a performance management mindset across the state enterprise

9 Includes active participation from stakeholders in the governance of the program

10 Ensures relevancy to citizens and outcomes

11 Statewide performance dashboards that are continually updated with new capabilities

12 Lean problem solving and other evidence-based methods

Workforce

Over the last five years, the overall state government employee level has remained essentially flat. There is some evidence that state CIOs will be expanding and maintaining state IT staff as revealed in questions we asked in the business models section of this survey. Twenty-six percent of state CIOs reported expanding IT staff, up from 10 percent when we asked in 2018 (2 percent in 2015). Additionally, in 2018, 22 percent of CIOs said they were going to downsize state IT staff whereas only 7 percent are downsizing in 2019. However, challenges remain.

The lack of modernization in state IT job titles and classification continues to be the change that CIOs say could be the most impactful in reforming the state IT workforce. It also ranked the highest when we asked this question in 2017 and 2016. While many states continue to have challenges modernizing job titles and classifications, one state, California, was able to successfully consolidate 36 different IT job titles into 9 in early 2018. At the time of the reclassification, California CIO Amy Tong said the effort "recognizes the modern skill set for IT."

Rounding out the responses to the biggest challenges in reforming the state IT workforce were training and development to build new skills (25 percent); streamlining the hiring process and reducing time to hire (14 percent); removing IT positions from the civil service system (14 percent); modernizing office culture (10 percent); and eliminating state unions representing IT (4 percent).
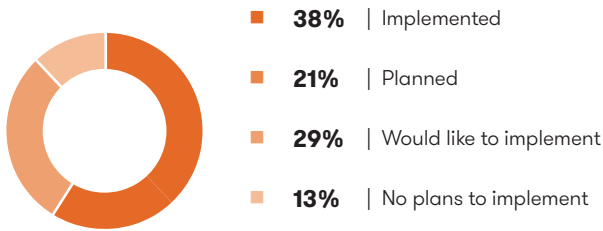
Next in this section we asked about strategies and tactics used in attracting and retaining a highly qualified IT workforce. As was the case in 2017, the top response from state CIOs was promoting non-salary benefits like greater stability and diversity of experience. Anecdotally, many state CIOs have reported that detailing the unique experiences one can attain by working in a state capital has helped them recruit qualified candidates. State CIOs also reported that a call to public service (67 percent) and building talent networks (44 percent) were the other top strategies and tactics they are using to attract and retain a qualified workforce. From the open-ended comments on this question, state CIOs told us that the following also helped them with their workforce challenges: internships and topic specific communications with local governments and universities; the ability to support multiple agencies; a formal work from home policy; and a compensation and classification process that can be easily revisited and revised.

What single personnel reform could be implemented that would be the most impactful in reforming your state IT workforce?

	2019	2017
Modernizing IT job titles and classifications	33%	31%
Training and development to build new skills	25%	N/A
Streamlining the hiring process and reducing time to hire	14%	10%
Removing IT positions from the civil service system	14%	14%
Modernizing office culture (i.e. flexible work schedules, telecommuting, etc.)	10%	14%
Eliminating state unions representing IT	4%	12%

What strategies and tactics has your state used in attracting and retaining a highly qualified IT workforce?
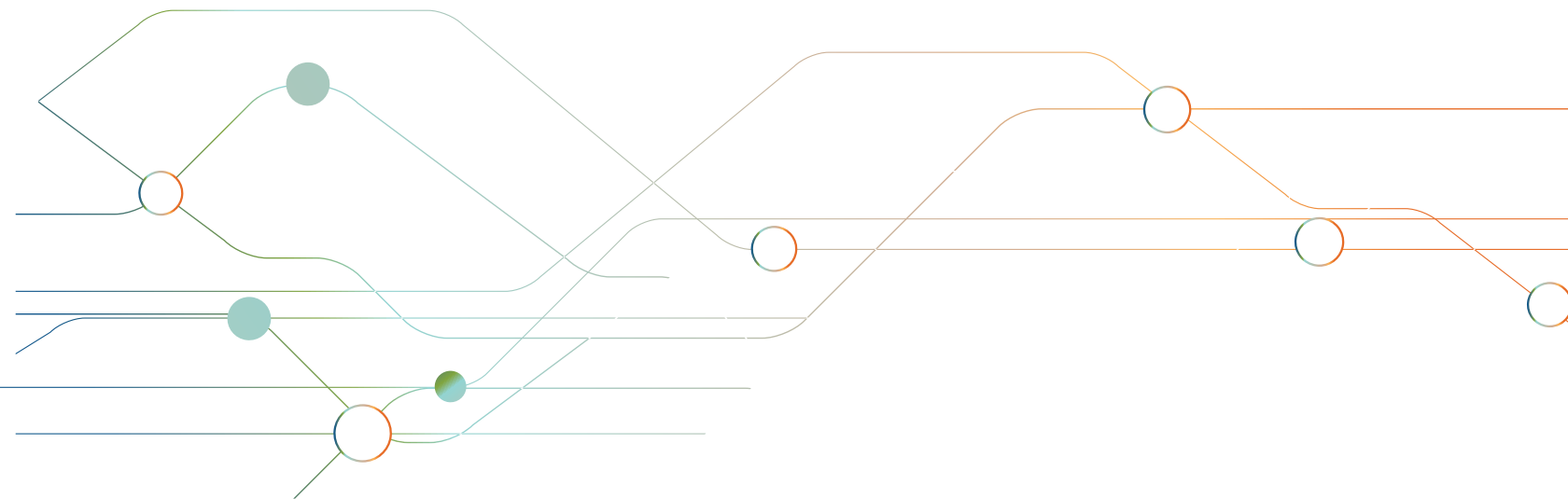
	2019	2017
Promoting non-salary benefits like greater stability and diversity of experience	73%	71%
Call to public service	67%	62%
Building "talent networks"	44%	29%
Sponsoring community awareness events (i.e. hackathons, robot build events, speaking at STEM schools)	33%	38%
Emphasizing location (i.e. working in state capital)	29%	29%
Public/private partnerships	25%	43%

Finally, in this section we asked about strategies and processes state CIOs have in place to recruit and retain a diverse and inclusive workforce. Over half of state CIOs (59 percent) reported that strategies were in place or planned. Another 29 percent reported that they would like to implement strategies and processes to recruit and retain a diverse and inclusive workforce and only 13 percent reported no plans to implement.

Do you have strategies and processes in place to recruit and retain a diverse and inclusive workforce?

- **38%** | Implemented
- **21%** | Planned
- **29%** | Would like to implement
- **13%** | No plans to implement

As for the specific strategies and tactics state CIOs are using, diversity assessments and executive mandates were cited as well as an inclusive and collaborative approach. One CIO stated, "the culture of inclusion is driven by senior management and includes the whole organization. All systems and processes are addressed starting with recruitment and leading into employee engagement, performance evaluation, retention and promotion." As far as planned strategies and tactics, development opportunities specifically for diverse high-potential talent at all levels to promote inclusion and retention; employee resource networks at all levels to promote inclusion and retention; and renewed and targeted "employer of choice" campaigns to promote recruitment and retention were reported. Finally, CIOs noted that this is something that can be a challenge and cited room for improvement. One CIO said, "this effort is ongoing for our state; we have a vast need for experienced resources that in many cases are difficult to find."
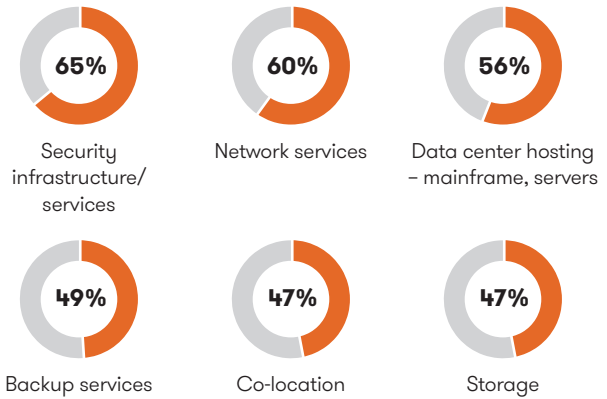
State and local collaboration

For the first time since 2016 on the State CIO Survey, we asked CIOs about their interaction with local governments. The majority of responses indicate that most states interact with their local counterparts, and most are also providing some services to localities. Lack of authority and lack of funding are generally the two most cited reasons why states aren't providing services to local governments, but let's dive into the services that are being provided.

First, we asked, specifically, what services states are providing to local governments and most every service has remained consistent or increased since we last asked in 2016. The top response (65 percent) was security infrastructure/ services. This is an 11 percent increase from when we asked in 2016, which is not surprising given the increase in security threats directed at local governments. This is also in alignment with what we know, anecdotally, that states are providing security-as-a-service type of programs to local governments—for example, managed security services, election security, phishing training, cyber response teams and ransomware response, among others. Rounding out the top five services most provided to localities are network services (60 percent); data center hosting (56 percent); backup services (49 percent); and storage (47 percent). The least performed services were mobile apps (18 percent); records management (20 percent); and Enterprise Resource Planning (ERP) (20 percent).

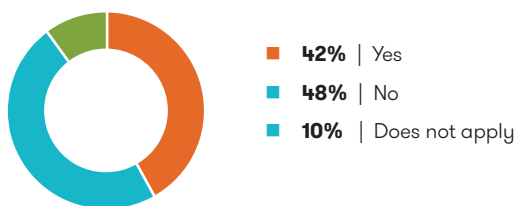## What services do you provide to local governments?

65%	60%	56%
Security infrastructure/ services	Network services	Data center hosting – mainframe, servers

49%	47%	47%
Backup services	Co-location	Storage

Additional insights:

42%	Business continuity/disaster recovery
42%	Geographic Information Systems (GIS)
40%	Website hosting
40%	Email/Office productivity
38%	Mainframe services
36%	Digital government services/portal
36%	Database hosting/maintenance
36%	Telephony/VoIP
33%	Cloud solutions/hosting
33%	Video/web conferencing
29%	Applications development/support
27%	Cellular phone service
27%	Identity and Access Management
24%	Digital archiving and preservation
24%	Imaging/file retention
24%	IT training
22%	Business Intelligence/Data Analytics
20%	ERP
20%	Records management
18%	Mobile apps
18%	Other

States have provided access to IT contracts to local jurisdictions for many years. So, we asked about the acquisition process for contract vehicles that are available to local governments and if local governments are consulted about their needs prior to issuing a solicitation. Forty-two percent of CIOs responded that they do consult local governments while 48 percent responded that local governments are not consulted (10 percent said the question does not apply).

In your acquisition process for contract vehicles that would be available to local governments, do you consult with local governments about their needs prior to issuing a solicitation?

- **42%** | Yes
- **48%** | No
- **10%** | Does not apply

To gain further insight into how states are interacting with local governments, we also asked if states had a formal awareness and marketing program to promote state offerings to local governments. While only 31 percent said yes (and 69 percent said no), there was great insight gleaned from the comments provided on this question.

Do you have a formal awareness and marketing program to promote state offerings to local governments?

- **31%** | Yes
- **69%** | No

One CIO said, "we see huge opportunities to partner with local governments and will plan to head in that direction in the future." Another CIO plans on expanding services to locals, saying, "it's in our plans to develop this over the next fiscal year in hopes of expanding hosting services to local governments." Still, challenges remain in funding and jurisdictional battles. One CIO expressed frustration saying, "we are trying to market our security services to local government. It is a slow process." And there are states who have little to no interaction with locals. One CIO commented, "we have no direct outreach to the local government entities in the state. We do interact with some local authorities, but this is ad hoc at best."

Collaboration with local governments is something that will likely increase in the coming years. Local governments don't have access to financial and workforce resources that states do, and states have an opportunity to provide critical services. However, states must work towards including local governments in pre-solicitation discussions when appropriate, making offerings available to local governments and raising awareness about state contract offerings.

Cybersecurity

As it has for the last several years, cybersecurity again made the top of the list of state CIO priorities for 2019. This priority has been reaffirmed in recent executive orders, new legislation and evidence that the state chief information security officer (CISO) role has become more mature and well-defined. When we asked state CIOs to characterize the current status of the cybersecurity program and environment in their state, we received several comments, with one state CIO saying, "our CISO's office has been expanded in size and focus." This is also consistent with data from the Deloitte-NASCIO 2018 Cybersecurity Study where 90 percent of state CISOs reported that their scope of authority has been extended beyond their own agency to align with all executive agencies in state government. Let's also take a look at the specific data points.

While many of the responses to our question about the current status of a state's cybersecurity program remained fairly consistent with responses from 2018, there are important differences to be noted. There is a slight rise in the number of states implementing continuous vulnerability monitoring (86 percent in 2019; 81 percent in 2018) and also in states using analytical tools or AI and machine learning to manage their cybersecurity program (49 percent in 2019; 44 percent in 2018). But even more than the year over year differences are some stark contrasts from just a few years ago. For example, in 2015, the first time we asked, only 20 percent of states had obtained cybersecurity insurance. This number has more than doubled four years later in 2019 with 42 percent of states reporting they have cybersecurity insurance policies in place.

Please characterize the current status of the cybersecurity program and environment in state government.

	2019	2018
Developed security awareness training for workers and contractors	92%	98%
Adopted a cybersecurity framework, based on national standards and guidelines	90%	94%
Acquired and implemented continuous vulnerability monitoring capabilities	86%	81%
Created a culture of information security in your state government	80%	79%
Established trusted partnerships for information sharing and response	82%	92%
Adopted a cybersecurity strategic plan	74%	85%
Developed a cybersecurity disruption response plan	61%	69%
Documented the effectiveness of your cybersecurity program with metrics and testing	55%	63%
Used analytical tools, AI, machine learning, etc. to manage cyber security program	49%	44%
Obtained cybersecurity insurance	47%	42%

Next we asked about the current role of the state CIO organization in administering the statewide cybersecurity program and every response to this question saw an up-tick from 2018. Interestingly, however, when we asked the same question in 2017, 98 percent of state CIOs were leading or participating in policy setting and just 92 percent said the same in 2019. However, in just two years there was a large increase in state CIOs who said they are responsible for execution (80 percent in 2019; 64 percent in 2017).
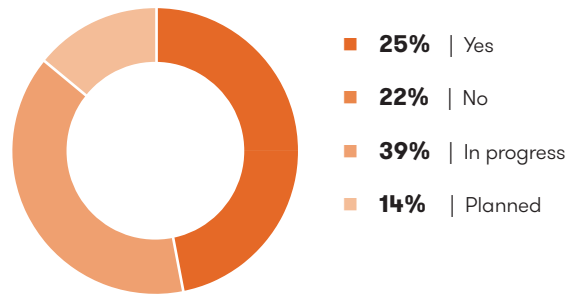
What is the current role of your state CIO organization in administering the statewide cybersecurity program?

	2019	2018
Leading or participating in policy setting	92%	88%
Responsible for setting overall direction	92%	88%
Responsible for execution	80%	76%
Responsible for oversight	90%	86%

Has your state adopted a whole-of-state approach to cybersecurity with collaboration among state agencies, local governments, utilities, private companies, universities, healthcare and others?

- **25%** | Yes
- **22%** | No
- **39%** | In progress
- **14%** | Planned

For the first time in the state CIO survey we asked about state adoption of a whole-of-state approach to cybersecurity. For the purposes of this survey, we define whole-of-state as collaboration among state agencies, local governments, utilities, private companies, universities, healthcare and others. Only 25 percent of states report they have taken a whole-of-state approach but 39 percent say they are in progress with another 14 percent saying it is planned. Only 22 percent of states report that are not taking a whole-of-state approach.

However, this is one area where we think the positive responses will only grow in years to come. Take, for example, North Dakota where, in early 2019, the governor signed into law legislation that unified the state's cybersecurity model and gave the state's CIO office authority to define cybersecurity for all state public entities including state agencies, cities, counties, school districts and higher education. At the time of the passing of the legislation, North Dakota CIO Shawn Riley said, "the collaborative effort on this legislation clearly reflects a whole-of-government approach by North Dakota's leaders, enabling the state to effectively address millions of monthly attacks and identify potential gaps in cybersecurity."
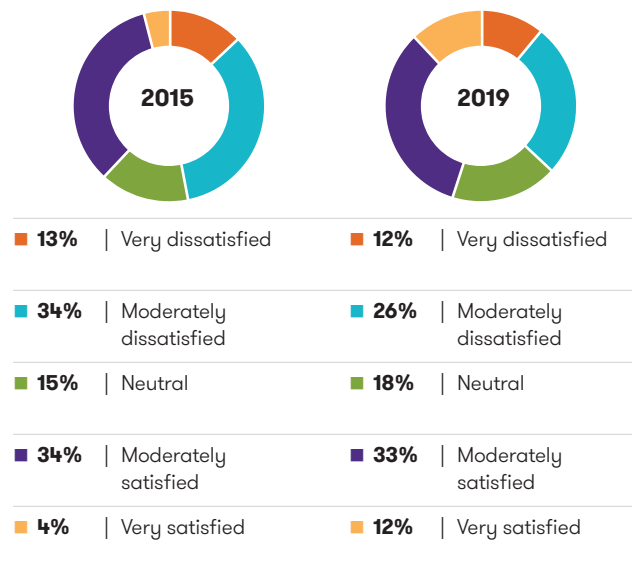
Acquisition

Acquisition has been a top area of concern for state CIOs in almost every year of the state CIO survey. CIOs have often questioned the ability of their state's procurement entities and processes to effectively procure and contract for complex IT solutions and services under procurement laws designed in bygone eras. Additionally, CIOs consider lengthy acquisition cycles problematic as technology innovations make timely purchasing imperative. The shift to a services-centric acquisition approach for IT has added to the disruption.

It is for these reasons that NASCIO embarked upon a procurement reform and transformation campaign in 2016 and now refers to the process as acquisition. This terminology better conveys the entire process from idea conception to contract award and execution. The resources that NASCIO has produced, oftentimes with partner organizations, are available on NASCIO's website (www.nascio.org).

It was in 2015 that we last asked CIOs an overarching question on how satisfied they were with the current system of IT procurement in their state. As the results show, there has been some improvement in overall CIO satisfaction with

the state of IT procurement. In particular, the percentage of CIOs very satisfied with IT procurement has significantly increased. The percentage of CIOs very dissatisfied with IT procurement has however remained the same. This may reflect differences in how well the IT procurement policies and practices in different states have adapted in recent years to changes in the IT marketplace and to CIO needs.
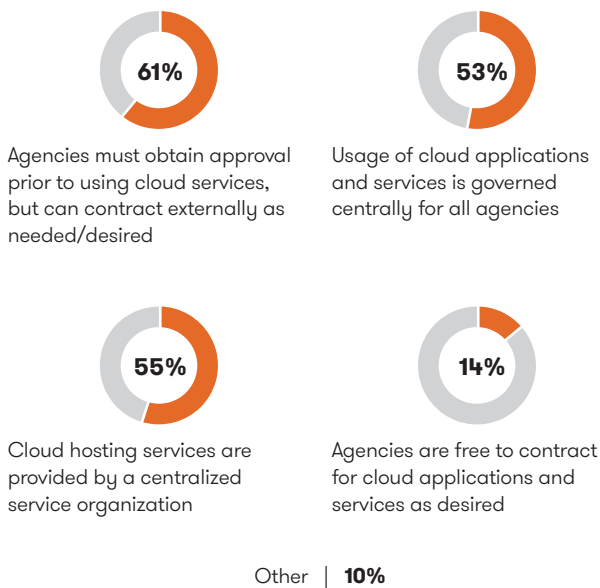
How satisfied are you with the current system of IT procurement in your state?

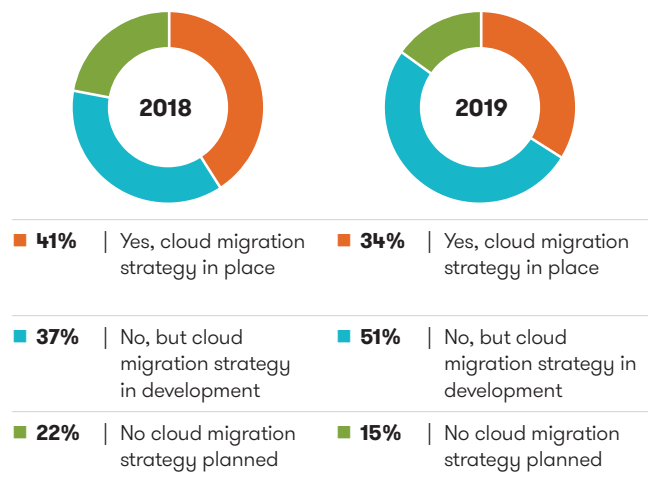| 2015		2019	
13%	Very dissatisfied	**12%**	Very dissatisfied
34%	Moderately dissatisfied	**26%**	Moderately dissatisfied
15%	Neutral	**18%**	Neutral
34%	Moderately satisfied	**33%**	Moderately satisfied
4%	Very satisfied	**12%**	Very satisfied

Cloud services

With cloud contracts becoming more established, states are turning to the mechanics of migration to cloud environments and putting effective governance of cloud contracting in place. When we asked about states' approaches to cloud governance, more than half of states are providing and governing cloud hosting centrally but more than half also allow for external contracting for cloud services once central approval is obtained.
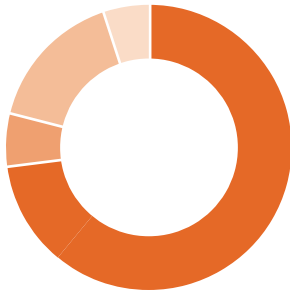
Migration strategies actually showed some regression this year as we saw a drop in states with cloud migration strategies in place (from 41 percent in 2018 to 34 percent in 2019). This may indicate a delay in implementation of cloud migration strategies as the number of migration strategies in development increased from 37 percent in 2018 to 51 percent in 2019. It is important to note that just under 40 percent of respondents are new CIOs answering the survey this year for the first time, and many are likely working to put their own cloud migration strategies into place. Anecdotally, states are indicating that undertaking a migration strategy has proven to be more complicated, costly and time consuming than initially expected.

What is your state's approach to cloud governance?

61%

Agencies must obtain approval prior to using cloud services, but can contract externally as needed/desired

53%

Usage of cloud applications and services is governed centrally for all agencies

55%

Cloud hosting services are provided by a centralized service organization

14%

Agencies are free to contract for cloud applications and services as desired

Other | **10%**

Does your organization have a strategy to migrate legacy applications to the cloud?

2018

2019

■ **41%** | Yes, cloud migration strategy in place

■ **34%** | Yes, cloud migration strategy in place

■ **37%** | No, but cloud migration strategy in development

■ **51%** | No, but cloud migration strategy in development

■ **22%** | No cloud migration strategy planned

■ **15%** | No cloud migration strategy planned

Centralized support and guidance seem to be a trend among cloud migration strategies with 86 percent of states either providing or planning to provide some type of cloud migration support.

Does your organization provide support and guidance for individual agencies to transition to cloud hosted or software-as-a-service (SaaS)?

- **61%** | Yes, provides guidance and support for contracting and transition of applications or services

- **12%** | Yes, provides support or guidance for restructuring IT organizations to adjust to the SaaS model from a traditional legacy hosting model

- **6%** | Yes, provides other support

- **16%** | No, but plans are in place to provide support

- **4%** | No cloud migration support planned or provided

Some surprises arose when we asked states about top priorities for migration to the cloud. As expected, email and collaboration ranked first, as is consistent with migration plans expressed in previous years. Open data has traditionally polled as a high priority but was ranked 11th this year among priorities. Project and Portfolio Management has also traditionally ranked high but is listed at 15th this year. This could be because a lot of work in these areas is already done so the priority falls in relation to what work lies ahead.

What categories of services are your top priorities for migration to the cloud? (select up to five)
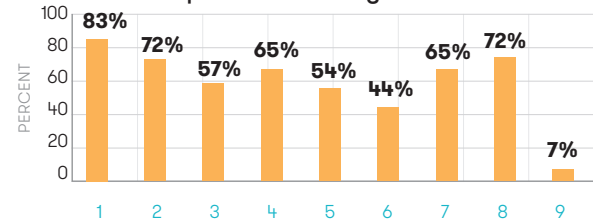
Item	Overall Rank
Email and collaboration	1
Disaster recovery	2
Office productivity software (e.g. word processing)	3
Enterprise Resource Planning (e.g., finance, budget, procurement)	4
Program/business applications (e.g. licensing, unemployment insurance, workers compensation etc.)	5
Citizen relationship management	6
HR/payroll/time and attendance	7
Storage	8
Identity Management	9
Security services/monitoring	10
Open data	11
Business intelligence	12
Digital archives	13
Geographic Information Systems	14
Project and Portfolio Management	15
Learning Management Systems	16
Other (please list):	17
Electronic records	18
Imaging	19

Data management and analytics

Data has been described as the lifeblood of state government. This year's CIO survey included questions to investigate the role of the CIO organization in enterprise data management and how their organizations service the analytics needs of customers. The responses indicate that CIOs view their role as an advocate and facilitator for the importance of data and governance. From promoting data as a strategic asset, to investing in tools and technologies, the trends indicate that CIOs continue to focus on supporting customer organizations to enable and mature data management and analytics practices.

Over half of the CIOs are supporting enterprise data management efforts by having in place/creating a chief data officer (CDO) role, demonstrating the importance of data to the enterprise. When asked about the current or planned role of the state CIO organization in enterprise data management, four out of five CIOs responded that taking the lead and advocating for data as a strategic asset was important to their role as CIO. Over 70 percent of responses also listed having or developing an enterprise data strategy and investing in tools and technologies as part of their role as a CIO organization.
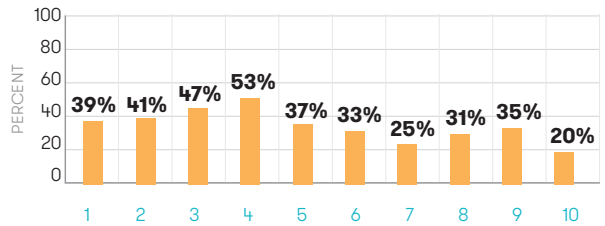
What is the current or planned role of the state CIO organization in enterprise data management?

#		#	
1	Take the lead and advocate for data as a strategic asset	6	Host a data stewards' network
2	Have in place/develop an enterprise data strategy	7	Issue data governance policies
3	Have in place/create a formally documented data architecture	8	Invest in technologies and tools
4	Convene the stakeholders for data governance decisions	9	Other
5	Have in place/create a chief data officer role		

This year's results indicate the CIO's role within data management and analytics has begun to broaden towards an explicit focus on enabling analytics. This trend is evident as a sizeable portion of CIOs are supporting the establishment of analytic capability in the customer base through training and tool provisioning, and in more direct ways by providing analytic services directly or through a center of excellence. When asked how they support the analytics needs of their customers, CIOs responded with diverse indications with over half of respondents stating that they provide tools for their customer base. This is consistent with previous years' surveys and further supports the CIO's view of their overall role in enterprise data management. Outside of providing or procuring tools and solutions, the responses for this year's survey signal a range of approaches for supporting customer analytics needs. One in five responses reported not providing analytics services for customers at all while over one third of responses indicate they provide training services.

How do you service the data analytics needs of your customer base?

Bar chart — PERCENT (y-axis from 0 to 100):

Category	Percent
1	39%
2	41%
3	47%
4	53%
5	37%
6	33%
7	25%
8	31%
9	35%
10	20%

1 Define enterprise policy

2 Promote the use of insight enabling analytics

3 Procure solutions for use by customers

4 Provide tools

5 Provide training

6 Perform analytics services on behalf of customers

7 Establish a center of excellence

8 Ad hoc

9 Release of data sets for public use

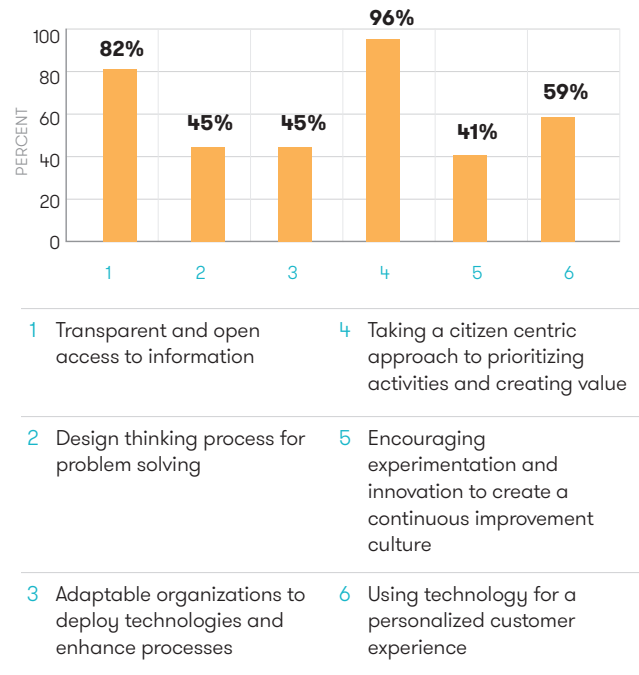10 We don't provide data analytics services for our customers

Digital government

The theme in the 2019 survey responses is: going digital to improve the citizen experience. The favored digital technologies are about making it easier for the citizen to do business with government.

The results in this year's survey showed a continued maturation of how CIOs are developing an effective digital transformation strategy. Based on the responses, improving the customer experience is the driving force behind most states' digital strategy. This is more than simply the state government providing online services. State leaders aspire to have seamless consumer transactions, increased social interaction and a common online identity, among others. An effective statewide digital strategy and roll-out requires a collaborative, multi-agency effort which should include agency directors, deputy directors and other program leaders.
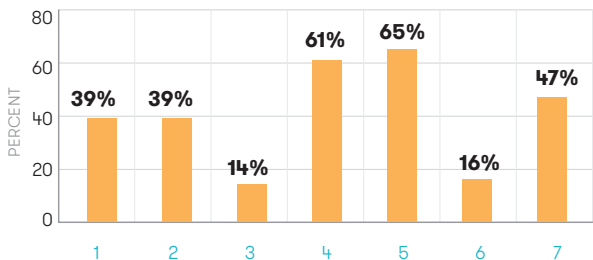
This year's survey added new questions to get a better understanding of the approach, purpose and motivations for digital deployments. The intent was to explore the desired outcomes of digital transformation and find out where state CIOs saw the biggest opportunity. The most important question was, which digital thinking concepts are most purposeful to your deployment of a digital strategy. Overwhelmingly, the top responses are all related to improving the citizen experience: 96 percent of respondents chose taking a citizen centric approach and 82 percent selected transparent and open access to information. This can be interpreted as digital transformation is looked upon purely as bringing benefits to external users, not simply improving the productivity of state government employees.

Which digital thinking concepts are most purposeful to your deployment of a digital strategy?

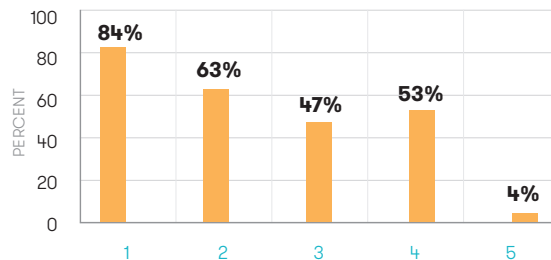| #		#	
1	Transparent and open access to information	4	Taking a citizen centric approach to prioritizing activities and creating value
2	Design thinking process for problem solving	5	Encouraging experimentation and innovation to create a continuous improvement culture
3	Adaptable organizations to deploy technologies and enhance processes	6	Using technology for a personalized customer experience

On another question, respondents were asked specifically what three technologies they viewed as providing the best value for enhancing the user experience. Sticking with the theme of easier and more practical interaction with state government, respondents chose a "single door" for multi-agency service (65 percent) and more online citizen services (61 percent), over solutions such as enhanced agency websites (39 percent), more social and mobile applications (39 percent) and automating back office operations (16 percent).

What digital technologies provide the best value for enhancing the user experience?

1 Enhanced agency websites

2 Social and mobile citizen engagement applications

3 Virtual chatbots

4 More online citizen services

5 "Single door" entry point for multiple agency portals

6 Automation of back-office functions

7 Identity services/digital credentials

What is the current role of your state CIO organization in administering statewide digital government services?

1 Leading or participating in policy setting

2 Responsible for setting overall direction

3 Responsible for execution

4 Responsible for oversight

5 Not state CIO responsibility

When asked about the current role of the state CIO organization in administering statewide digital government services, 84 percent said they are leading or participating in policy setting. This is consistent with responses from 2018 while CIOs who are responsible for setting overall direction fell to 63 percent from 71 percent in 2018. Rounding out the responses are responsible for oversight (53 percent) and responsible for execution (47 percent) with only 4 percent indicating that administering statewide digital government services is not a state CIO responsibility. Despite these changes, attitudes were fairly similar from last year's survey – overall, the state CIO is viewed as the person most able to provide an enterprise view of modernization needs, help set standards and facilitate an effective approach, but, according to the responses, the state CIO is not the one to "push" a single digital strategy.

Emerging Technology

This year's survey responses on emerging technology continued many of the trends from the 2018 survey, and it also added valuable insights into why CIOs are deploying advanced technology. As in 2018, CIOs view artificial intelligence / robotic process automation (AI/RPA) as the most impactful emerging technology in the next 3 to 5 years (65 percent).The Internet of Things (IoT) was again ranked in second place (20 percent) while the other options—connected/autonomous vehicles, blockchain and quantum computing—each received a very small percentage of responses. To put this change in context, in the 2017 CIO survey, 29 percent selected AI/RPA, while IoT took first place at 43 percent.

CIOs were asked about the top drivers for the use of automation software. If we define a customer to mean anyone who receives the output of a process, whether it be a citizen or government employee, then selecting solutions to better serve customers is the overwhelming choice. Eighty-three percent chose improving citizen services and 65 percent selected improving service for government employees. This suggests CIOs are more focused on using technology to create business value and solve business problems.

What are the strategic or operational issues that are driving the interest in the use of automation software?

#	
1	Improve staff morale by eliminating low-value, repetitive tasks, and allowing staff to focus on strategic projects
2	Remove defects, reduce time, and improve the quality of services for internal state agency processes
3	Improve citizen services with faster and more accurate response time
4	Increase volumes of data and documents read and processed
5	Institute and enforce business processes for an agency or department-wide
6	Lower overall total costs of business
7	Eliminate need for staffing for routine work

What emerging IT area will be most impactful in the next 3-5 years?

■	**65%**	AI (machine learning, RPA, chatbots)
■	**20%**	Internet of Things (IoT)
■	**6%**	Connected/Autonomous Vehicles
■	**4%**	Other
■	**2%**	Blockchain
■	**2%**	Quantum Computing

The 2019 survey repeated last year's question on deploying automation technologies. This year's responses are consistent with 2018 – 50 percent indicating efforts were either complete, in-progress or planned (44 percent in 2018). Twenty-nine percent of this year's respondents said they had no plans or were unsure, compared to 26 percent last year.

Are you planning to deploy automation software, either for robotic process automation (RPA) or machine learning, in the next 2-3 years?

■	**25%**	Yes, already complete or in-progress
■	**25%**	Yes, planned
■	**22%**	Yes, considering
■	**18%**	No
■	**8%**	Unsure

We added a new question regarding the top three considerations for deploying automated solutions. It should come as no surprise that concerns on how to ethically treat and protect citizen data was one of the top responses (56 percent). What caught our attention was that an overwhelming 72 percent of CIOs are focused on selecting the right business case. Only a minority of respondents selected answers on technical process and readiness. The vast majority are thinking through where the AI can be deployed successfully. One challenge to successful deployment is data. Forty-four percent of the CIOs believe the volume and quality of data is a top of mind consideration for effective AI deployment. Based on the answers, state CIOs are willing to automate, but they want to make sure there is a solid business case and return on investment.

What are the "top of mind" considerations for deploying automation solutions such as RPA, machine learning or chatbots? (choose top three)

1 Volume and quality of data for an effective deployment

2 Ensuring data privacy and security

3 Identifying the "right" business case for automation

4 The costs and achieving a return on investment

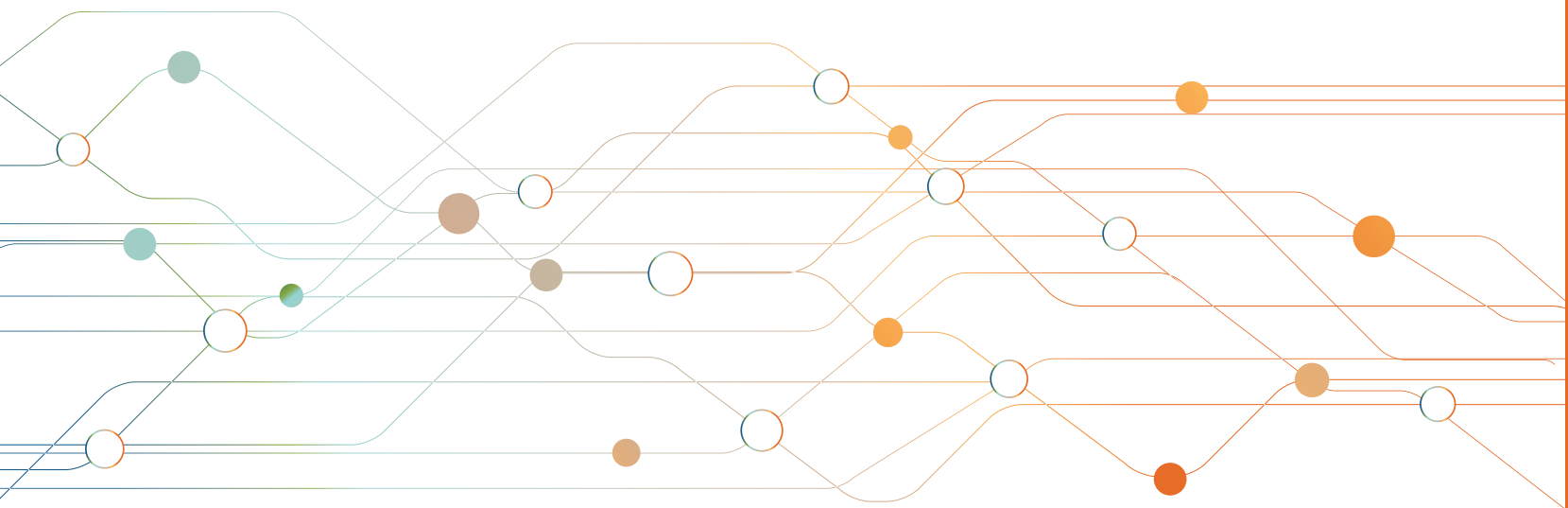5 Having the infrastructure and processing capability to support processing needs

6 Working through a fragmented management of who owns automation services

7 State employee knowledge and skills

8 Other

Conclusion

In the decade since we have been surveying state CIOs, shifts in technology, in CIO business models and in customer expectations, have progressively led CIOs' organizations to become more and more customer oriented. This transition has only been strengthened by the evolution of the CIO function from back-office infrastructure provider to strategic partner and driver of technology-enabled innovation. These trends show no signs of abating, and successful CIOs will continue to be responsive to customer demands and proactive on anticipating customer needs. Further, there is a continued interest and motivation to move into a new CIO operating model that rationalizes agency demands with the various methods for employing enabling technology capabilities. Clearly, the role of the state CIO is changing to become a significant policy level leader.

List of states participating in the survey

State of Alaska
John Boucher
Acting Chief Information Officer

State of Arizona
Morgan Reed
State Chief Information Officer

State of Arkansas
Yessica Jones
Chief Technology Officer and
Director

State of California
Amy Tong
Chief Information Officer and
Director

State of Colorado
Theresa Szczurek, PhD
Chief Information Officer and
Executive Director

State of Connecticut
Mark Raymond
Chief Information Officer

State of Delaware
James Collins
Chief Information Officer

State of Florida
Heath Beach
Deputy Chief Information Officer

State of Georgia
Calvin Rhodes
State Chief Information Officer
and Executive Director

State of Hawaii
Doug Murdock
Chief Information Officer

State of Idaho
Greg Zickau
Chief Information Officer

State of Illinois
Ron Guerrier
Chief Information Officer and
Acting Secretary

State of Indiana
Dewand Neely
Chief Information Officer and
Director

State of Iowa
Jeff Franklin
Deputy Chief Information Officer
and Chief Information Security
Officer

State of Kansas
Lee Allen
Chief Information Technology
Officer

Commonwealth of Kentucky
Chuck Grindle, PhD
Chief Information Officer

State of Louisiana
Richard Howze
State Chief Information Officer

State of Maine
Fred Brittain
Chief Information Officer

State of Maryland
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State of Minnesota
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State of Montana
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State of Nebraska
Ed Toner
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State of Nevada
Michael Dietrich
Chief Information Officer

State of New Hampshire
Denis Goulet
Commissioner

State of New Jersey
Christopher Rein
Chief Technology Officer

State of New Mexico
Vincent Martinez
Cabinet Secretary

State of New York
Robert Samson
Chief Information Officer

State of North Carolina
Eric Boyette
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Officer

State of North Dakota
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Chief Information Officer

State of Ohio
Ervan Rodgers
Chief Information Officer and
Assistant Director

State of Oklahoma
Bo Reese
Chief Information Officer

State of Oregon
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Chief Information Officer

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Information Officer

State of Rhode Island
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Chief Information Officer/Chief
Digital Officer

State of South Dakota
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State of Tennessee
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State of Texas
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Deputy Executive Director

State of Utah
Mike Hussey
Chief Information Officer

State of Vermont
John Quinn
Chief Information Officer and
Agency Secretary

Commonwealth of Virginia
Nelson Moe
Chief Information Officer

U.S. Virgin Islands
Rupert Ross
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Officer

State of Washington
Jim Weaver
Director and Chief Information
Officer

State of West Virginia
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Chief Technology Officer

State of Wisconsin
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Acknowledgments

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To obtain copies of this report go to any of the websites listed below.