

# THE UNIQUE CHALLENGES FACING THE IT PROFESSIONAL IN K-12 EDUCATION

2012-2013 SURVEY RESULTS

# Table of Contents

**Introduction ..... 3**

**Key Findings ..... 5**

**Information Technology Staffing ..... 7**

**Staffing Level Concerns ..... 9**

**Information Technology Assets ..... 12**

**Software and Systems ..... 17**

**IT Issues ..... 20**

**Survey Methodology and Demographics ..... 22**

**Conclusions ..... 24**

**About SchoolDude ..... 24**

**About CoSN ..... 25**



# Introduction

Dear IT Professional,

As we compiled the data for the fifth year of this benchmark survey, *The Unique Challenges Facing the IT Professional in K-12 Education*, I kept hoping for good news and positive trends. While there are some sign of hope in this recent survey, I'm disappointed to say that the situation remains similar to years past: too much stuff, not enough staff; lack of funds; and higher expectations.

In an era where BYOD, 1:1 computing and online assessment are becoming the new standard, IT in K-12 education must adapt. Despite lack of funding and staffing, IT must develop a proactive approach to handle new standards. This survey reinforces the need for change in two of the most critical areas:

- **Funding:** Money is tighter than ever and according to this year's survey, over 70 percent of respondents still have an IT budget that is not growing in proportion to IT demands. The budget is less than needed to meet expectations, support existing assets, and invest in new assets required by state mandates, such as Common Core. The majority of respondents have looked to e-Rate funds, network or server consolidation, and vendor negotiations to stretch their budgets.
- **Staffing:** According to the survey, one technician supports almost 2,000 students on a national level. As BYOD and 1:1 computing assets increase, so does the demand on technicians. Increasing full-time staff to accommodate these needs is unlikely. In fact, 14 percent of respondents are expecting to reduce staff due to budget. Outsourcing remains one of the options to meet these demands as 79 percent of respondents indicate they are using outside vendors to complete IT work. Despite using outside vendors, two-thirds of respondents remain in a reactive mode for more than half their workload.



The most positive trend we saw in this year's survey is the increase in familiarity and adoption of Software-as-a-Service (SaaS) application models. While IT assets are increasing at staggering rates in schools, moving to SaaS models can free up time, resources, costs, and infrastructure needs of the IT department's staff and funds. Look for IT operations and solutions that can proactively:

- Save you time by automating workflow processes
- Streamline your operations and infrastructure
- Manage and monitor your assets
- Help you justify your asset, budget, and staffing needs through data

These streamlined solutions can free up time for your staff to focus on: implementing new technology and integrating technology into the classroom, the top two areas respondents say is lacking due to insufficient staff. SchoolDude.com and CoSN conducted this survey to assist you with your daily fight for technology in our schools by providing quantitative data to justify issues and needs you have.

Share your situation with IT leaders and peers on our LinkedIn Group, dedicated to helping IT professionals in the education industry share, network, and engage with each other for a brighter tomorrow.

Join here: [www.schooldude.com/linkedintechgroup](http://www.schooldude.com/linkedintechgroup)

Sincerely,

*Maddie*

Maddie Mansson  
Associate Market Manager  
SchoolDude.com  
[maddie.mansson@schooldude.com](mailto:maddie.mansson@schooldude.com)

## Key Findings

K-12 Information Technology departments continue to face difficult challenges during a time of limited funding, static staff, and huge growth in support of IT assets and infrastructure in K-12 districts.

Among the key findings of this fifth annual survey:

### Information Technology Staffing and Staffing Concerns

- Mean ratio of students to technicians is 1,998:1, a five percent increase from 2010 results, but still lower than 2009 numbers. This high number still indicates continued overlook in K-12 districts to hire technicians.
- Mean ratio of students to total technical support staff rose dramatically to 1,205:1 from 532:1 in 2010.

### *70% have inadequate staffing to integrate technology into the classroom*

- As in prior years, over 70 percent indicated they have inadequate staffing to integrate technology into the classroom and implement new technology. This statistic is concerning with changes for common online assessments K-12 districts must implement by the 2014 school year.
- Eighty-five percent of respondents' IT staff either shrunk or remained the same in size, despite a rise in IT assets.
- We are seeing a rising trend with outsourced IT staffing over the last two years. Similar to last survey's findings, 79 percent of respondents are using outside vendors for IT work.
- A disconcerting 64 percent of respondents indicated that more than half of their workload is spent being reactive rather than proactive. Having only one-third of the day left to test, implement, integrate, plan and strategize for new technologies and mandates indicates a problem of lack of time and resources.

### Information Technology Assets

- The mean number of students to computers is 12, up from four since 2010, indicating a dramatic increase in students and a setback to the goal of 1:1 computing.
- The mean number of computers per technician is 732, down 11 percent since 2010.
- While 70 percent of respondents indicated the number of computers has increased in their district, staffing levels have remained the same or decreased for 91 percent, resulting in difficulty supporting the increase in assets.
- Thirty percent of respondents said more than half of their district's or school's computers are five or more years old, draining time and resources of over-burdened IT staff.

- Fifty-seven percent do have a formal refresh strategy for replacing old computers; however, responses varied widely as to how often computers are replaced.
- Audits of IT assets continue to be conducted primarily once per school year by 68 percent of respondents for internal use. However, 42 percent of respondents indicated that they never perform an audit for the school board and 24 percent never conduct audits for the state Department of Education.

#### Software and Systems

- Ninety percent were familiar or very familiar with the SaaS application model. Those very familiar increased 21 percent from 2010, showing a high adoption growth rate of SaaS in education.
- Eighty percent of schools or districts have a software-based help desk system.
- Of the 80 percent using a software-based help desk system, 67 percent purchased their solution from a vendor, five times more than those that developed one in-house, showing a move to outside vendors for schools' IT help desk management.
- Fifty-four percent of schools or districts have a software-based IT asset management system.

***Do you know SaaS? Survey says you do — 90% are familiar with SaaS applications — up 21% from 2010.***

- Of those respondents using a software-based IT asset management system, 59 percent purchased their software IT asset management solution from a vendor and 29 percent developed one in-house.

#### Information Technology Issues

- Similar to prior years, IT funding was identified as the most important issue to resolve for strategic success in 2012. This continues to be a major concern for IT departments as we see year after year.
- Respondents indicated the number one issue they were spending most of their time and financial resources on was infrastructure.
- The most common approach to overcome budgeting and funding issues was e-Rate funds (53 percent), a change from 2010 in which reduction in technology purchases was the number one response chosen. The second most common approach was network or server consolidation, followed by grants.
- Funding remains the biggest obstacle in meeting expectations. Over 70 percent indicated their budget is less than needed to support existing assets as well as invest in new assets.

# Information Technology Staffing

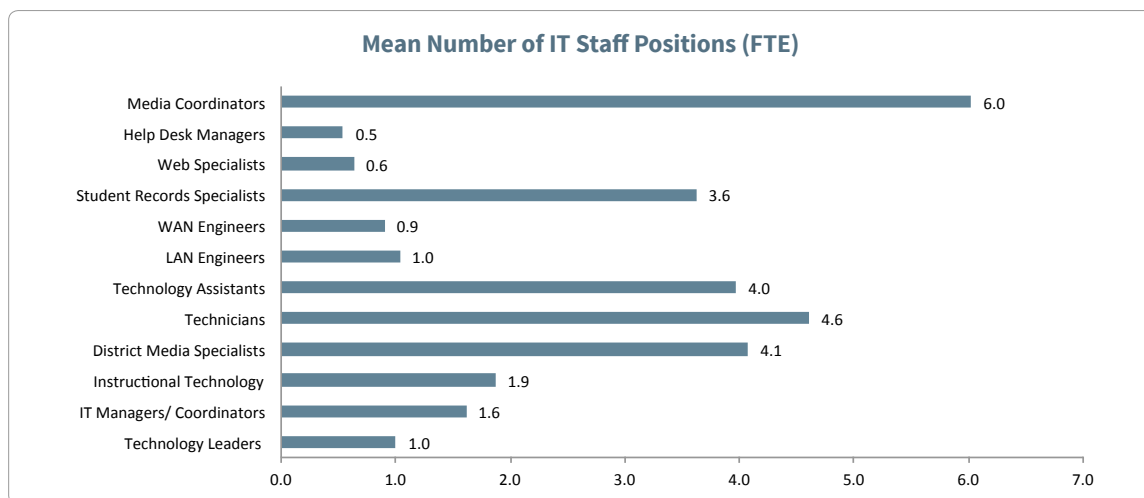
## IT Staff Positions

It's no surprise that we see media coordinators topping the list for yet another year. What is surprising about this trend, however, is the increase we've seen since 2010 when the survey was last conducted. It has gone from a staff of 4.0 Full Time Equivalent (FTE) to 6.0 FTE—a 34 percent increase. This trend may be due to the continuing rise of social media and the importance of information sharing through media in schools. Another positive note is the significant increase in the

***While IT staff is not increasing, resources are reallocated – technicians jump from 3.4 to 4.6 FTE***

number of technicians—a 1.1 jump in FTE, to an average of 4.6 FTE positions. With more assets than ever to maintain and manage, technicians are the backbone of a well-run IT department.

The help desk manager position remains at the bottom for the fourth time with just one-half of an FTE. We might be able to draw the conclusion that as more districts adapt an automated help desk software solution which can save up to 30 minutes per incident or help desk request, this function is appropriately staffed. This year's survey indicates an increase in help desk solutions by almost eight percent compared with 2010. IT end-user support remains one of the most time-consuming tasks without such streamlined solutions.



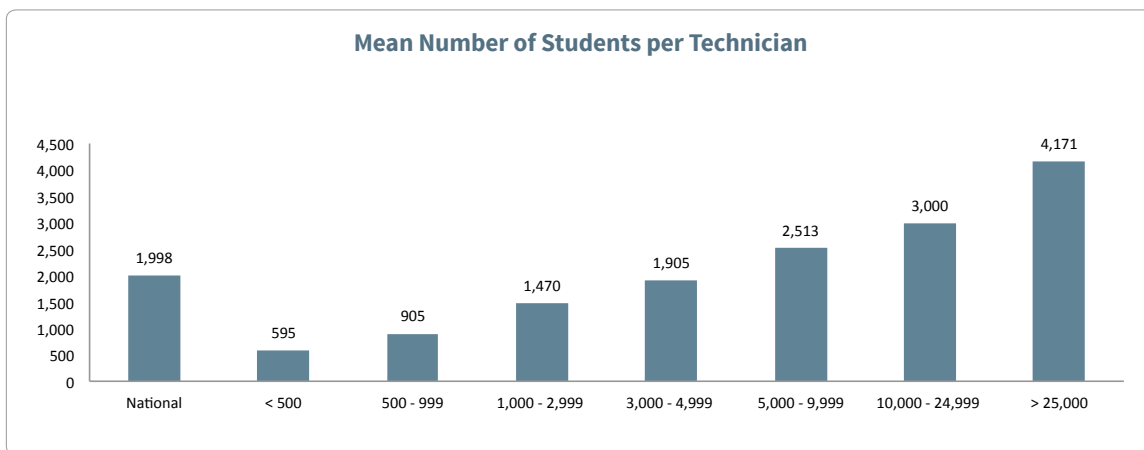
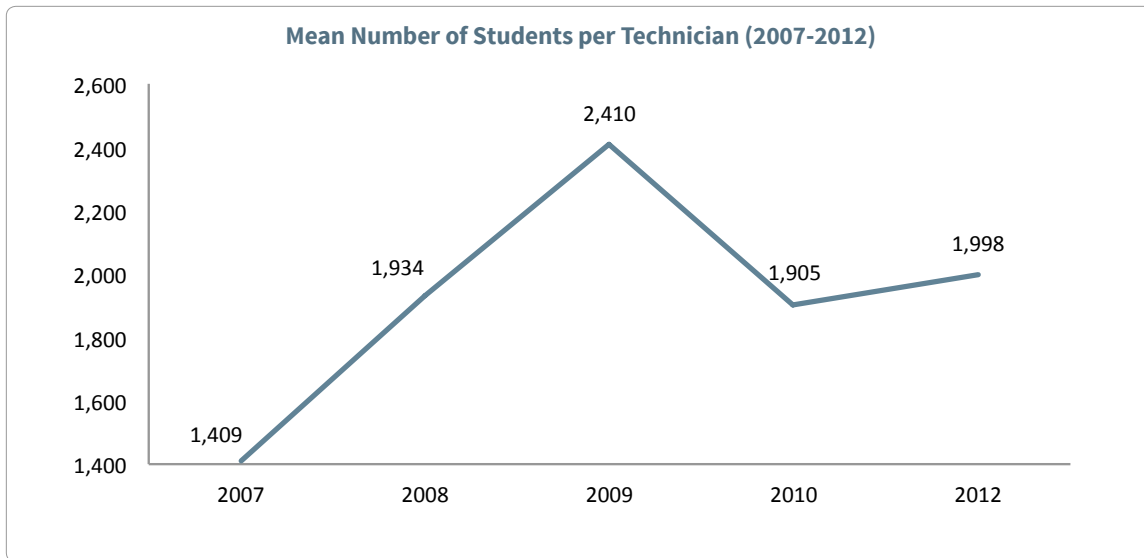
Respondents were also asked what other staff positions they had in their IT department.

The list of responses includes the following:

- Programmer
- Program Assistant
- Help Desk Assistant
- Tech Aide
- Secretary
- Computer Operator
- A/V Technician
- Business Analyst
- Data Utilization Manager
- Server Technician
- Data Technician
- Application Specialist
- Network Administrator
- E-Rate Coordinator
- IT Operations Manager

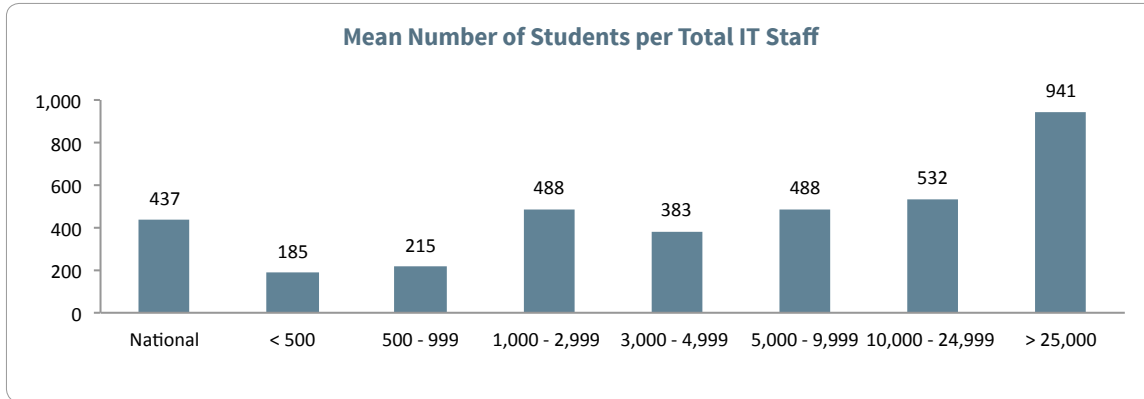
**Students and Staff**

The mean number of students per technician is 1,998:1, a five percent increase from 2010 and the highest it's been since 2009. The increase is discouraging, though not surprising. This ratio is typically lower for small districts and increases for larger schools and districts, which was the case once again this year.





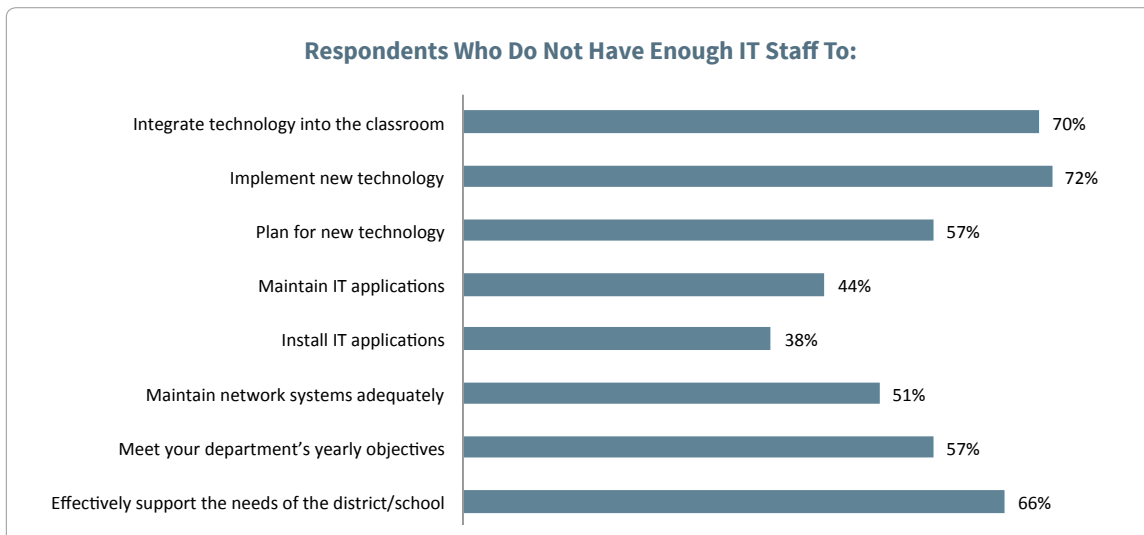
Looking at average students to total IT staff, this ratio only rose slightly from 2010 to 437:1 from 428:1. However, it should be noted that this is the first year we see an increase in this ratio from the prior year.

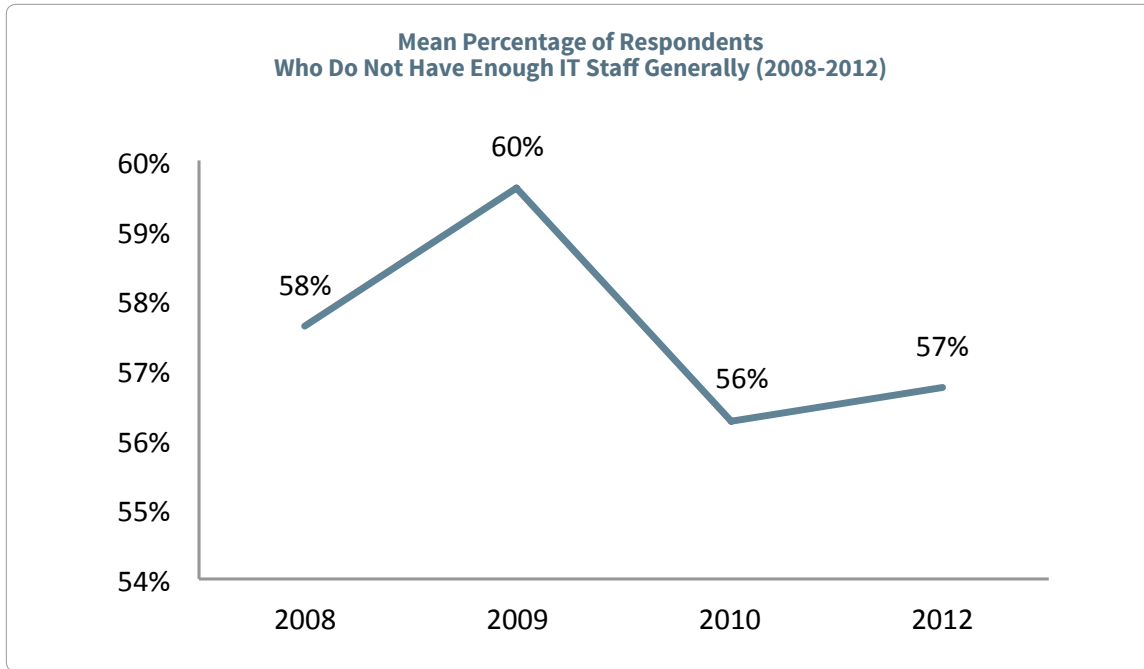


## Staffing Level Concerns

### Work Performance

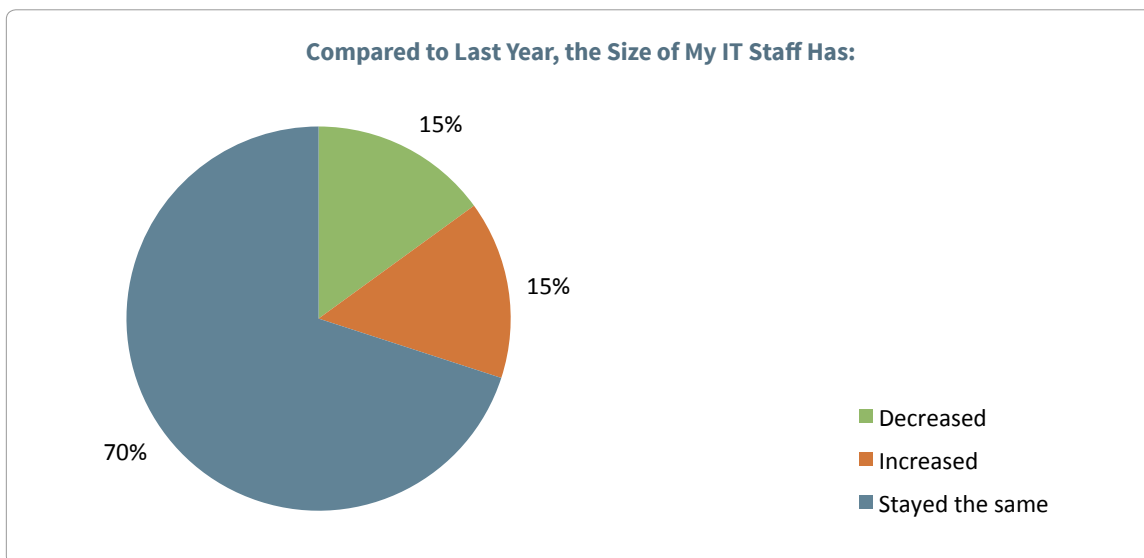
An alarming 72 percent of respondents felt they didn't have enough IT staff to implement new technology. Additionally, the percentage of respondents who felt they didn't have enough staff to integrate technology into the classroom remained at about 70 percent, similar to results over the last few years. These percentages are alarming and could be problematic with upcoming Tech Readiness needs to support online assessments for all students. The percentage of those believing they don't have enough staff to effectively support the needs of the school district also remained at a high level: 66 percent.



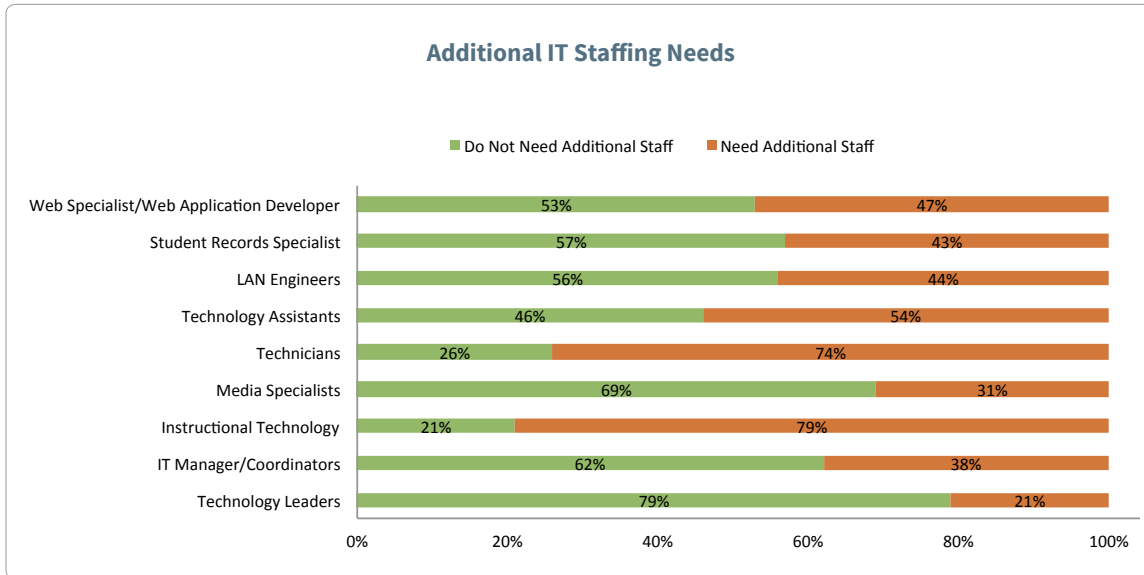


**Lack of Staff**

The size of respondents' IT staff remained the same or decreased for 85 percent of respondents. Compared with 2010, the number of respondents who saw a decrease in staff has dropped from 25 percent to 15 percent.

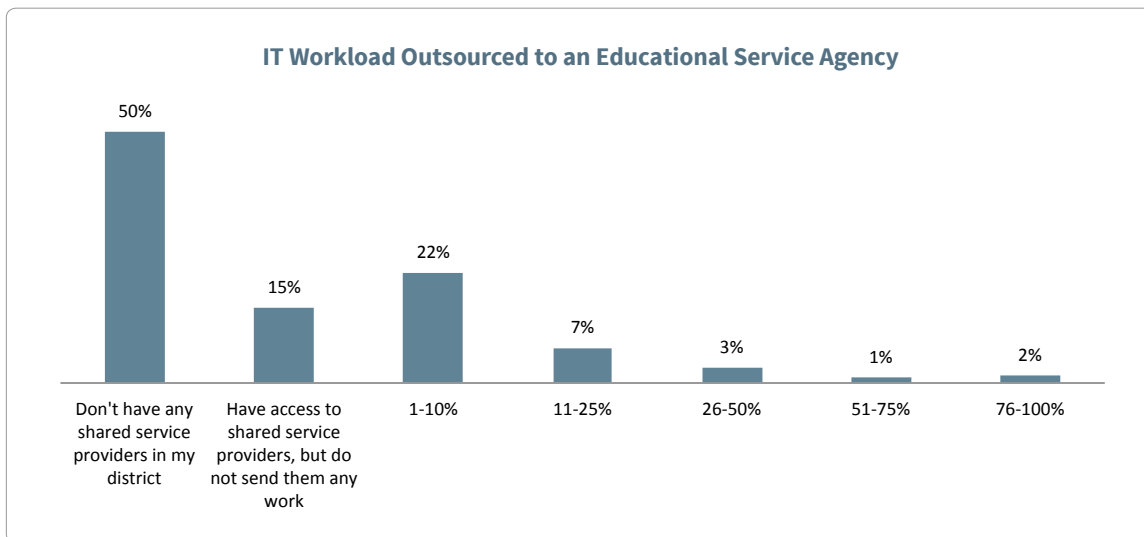


Seventy-four percent and 79 percent of respondents indicated that technicians and instructional technologists, respectively, continue to be the strongest areas of need in IT staffing. This result is again not surprising due to the lack of sufficient technicians in K-12. Other IT positions in high need for expansion were technology assistants and web specialists.

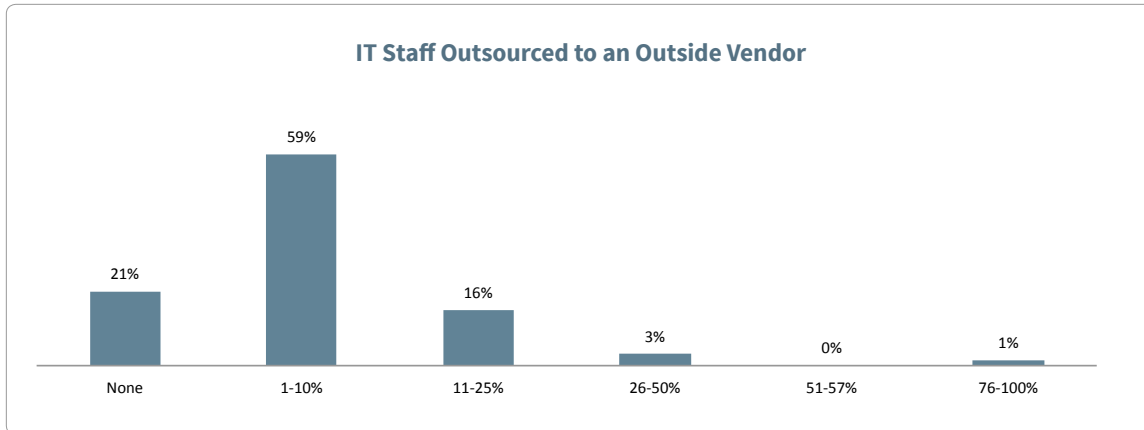


### Outsourcing Staff

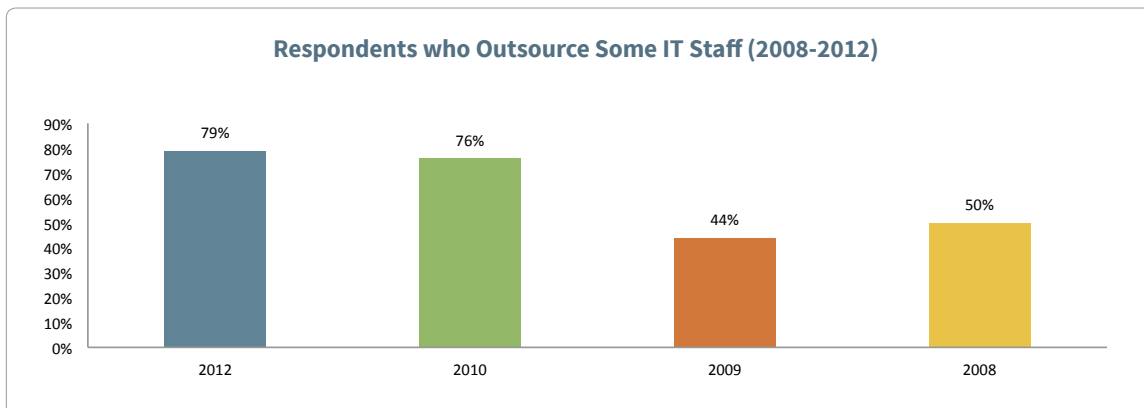
About two-thirds of respondents either do not have access to Educational Service Agencies (ESA) in their district or do not use their services, an increase from 2010. Of those using shared service providers, less than three percent use them for more than 50 percent of their IT workload.



We continue to see outside vendors being used as one way to address lack of sufficient IT staff. Seventy-nine percent indicated they were using outside vendors for IT work, up from 76 percent in 2010, which marked the first time respondents indicated that use of outside vendors had increased. Of those outsourcing, the majority (75 percent) are using outside vendors for less than ten percent of total IT work.



As budgets have decreased and staffing has been reduced, a need for outsourcing IT staff is growing. Since 2007, the need for outsourcing IT staff has increased from 44 percent to 79 percent in 2012. This would indicate it is no longer possible for IT departments to operate under its current level.

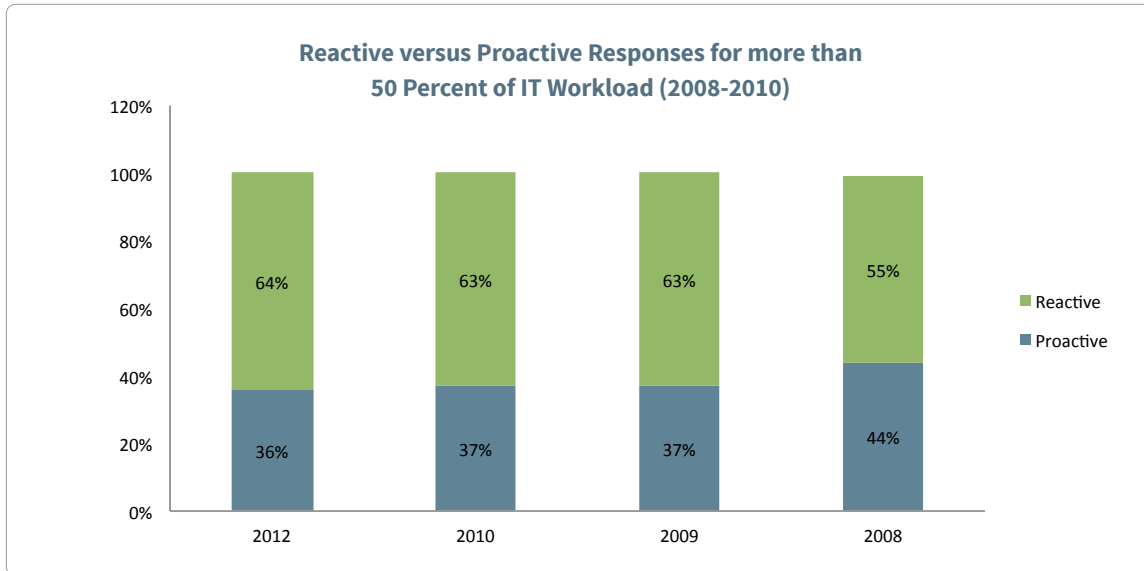


**Proactive versus Reactive Workload**

Working in a reactive mode is nothing more than remaining in the status quo. IT departments spend their time responding to requests versus proactively

***64% spend more than 50% of their day being reactive***

maintaining and managing assets. With 64 percent of respondents spending more than half their workload on simply being reactive, the time left to plan, test and implement new information technology assets is minimal. While the survey doesn't go into detail about the actual reactive work, it is noteworthy to mention that there are several software solutions to aid in reducing reactive work, including incident request and asset management solutions.

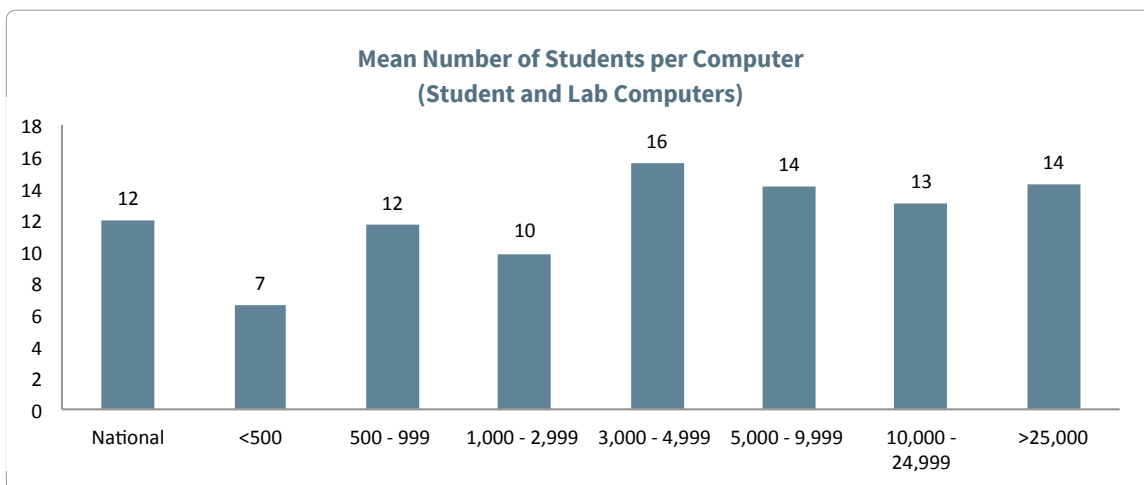


## Information Technology Assets

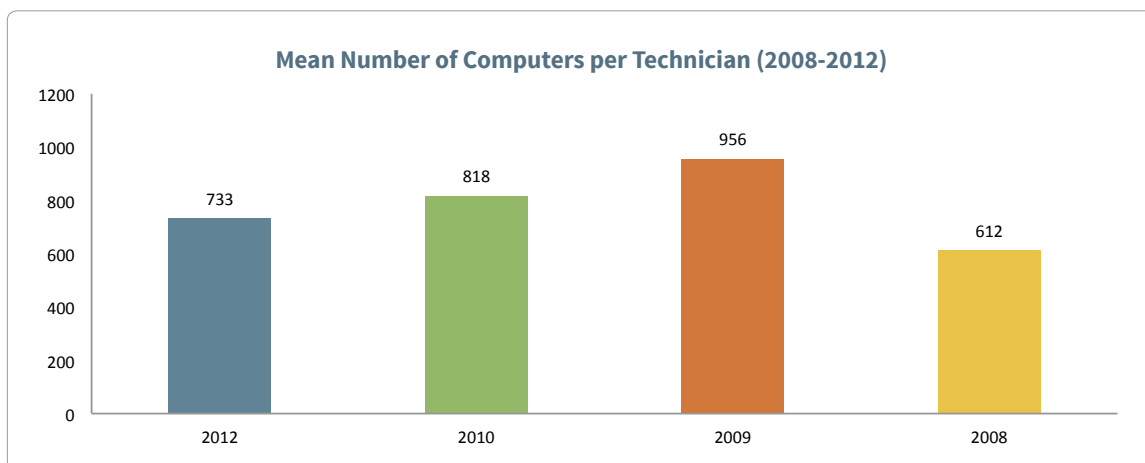
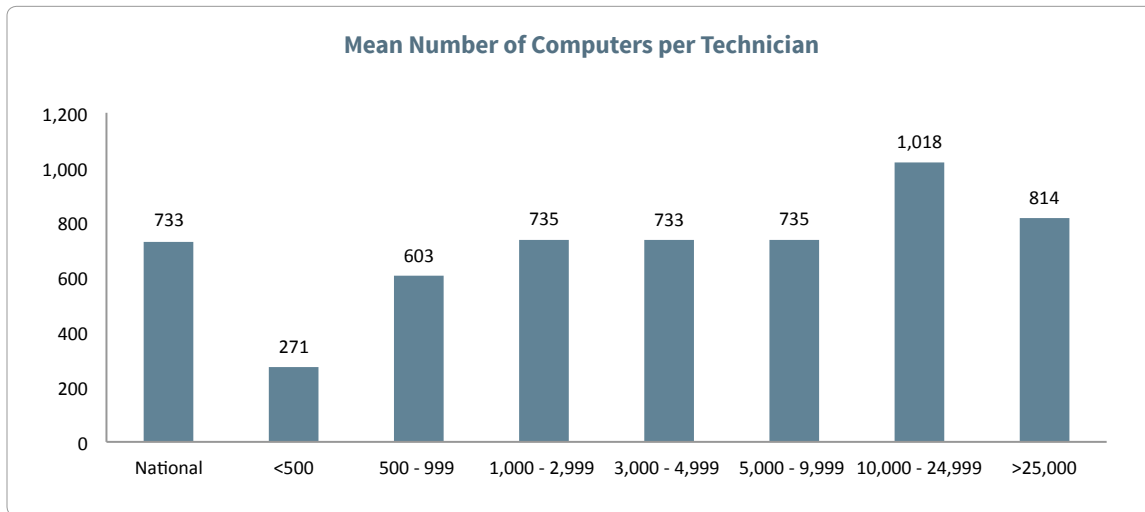
### Computers

IT departments continually have “too much stuff, not enough staff.” This saying holds true this year as well. The gap between IT staffing and IT assets continues to widen considerably.

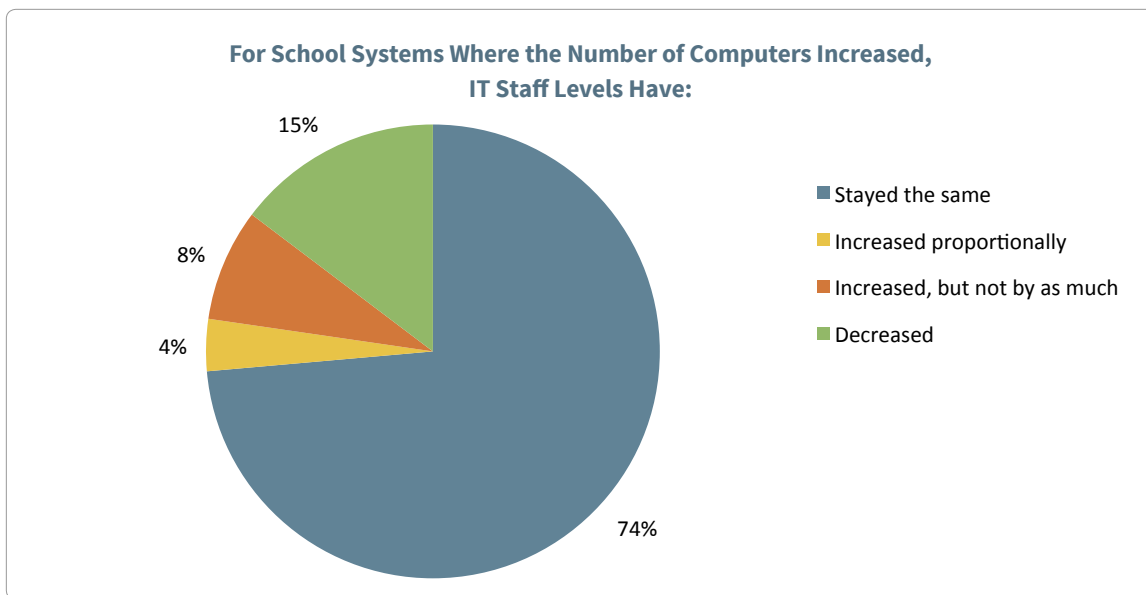
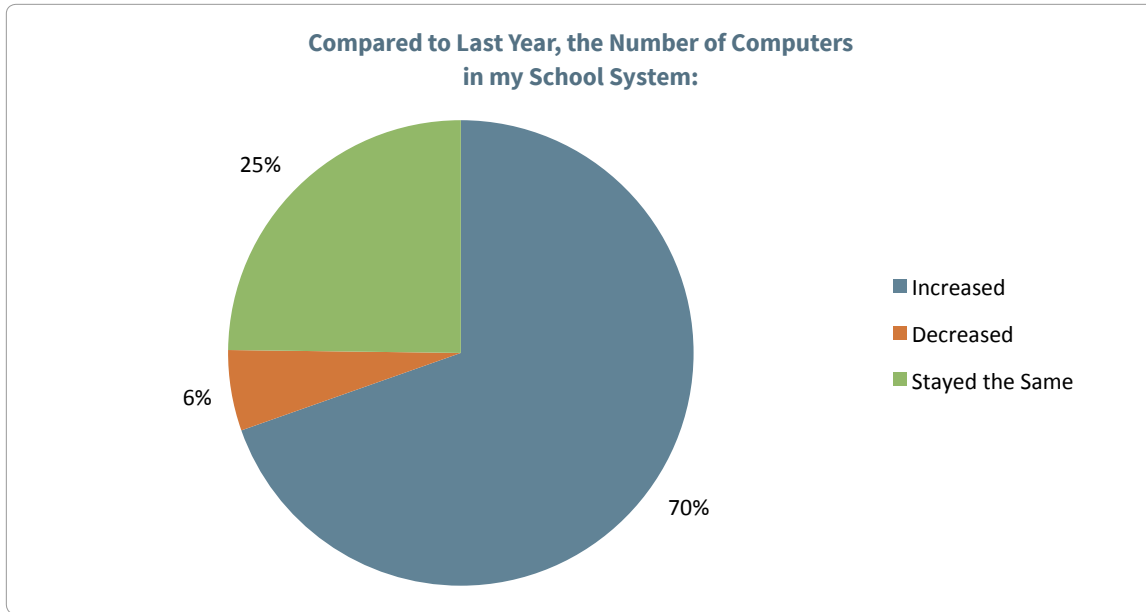
This year’s survey indicates the mean number of students to computers is 12:1, up from 4:1 in 2010. This is a staggering increase from previous years, and is moving schools further away from the goal of 1:1 computing. This ratio did not vary considerably based on school or district size.



The ratio of computers to technicians did decline slightly from 2010, 732:1, down from 818:1. This downward trend since 2009 is positive.

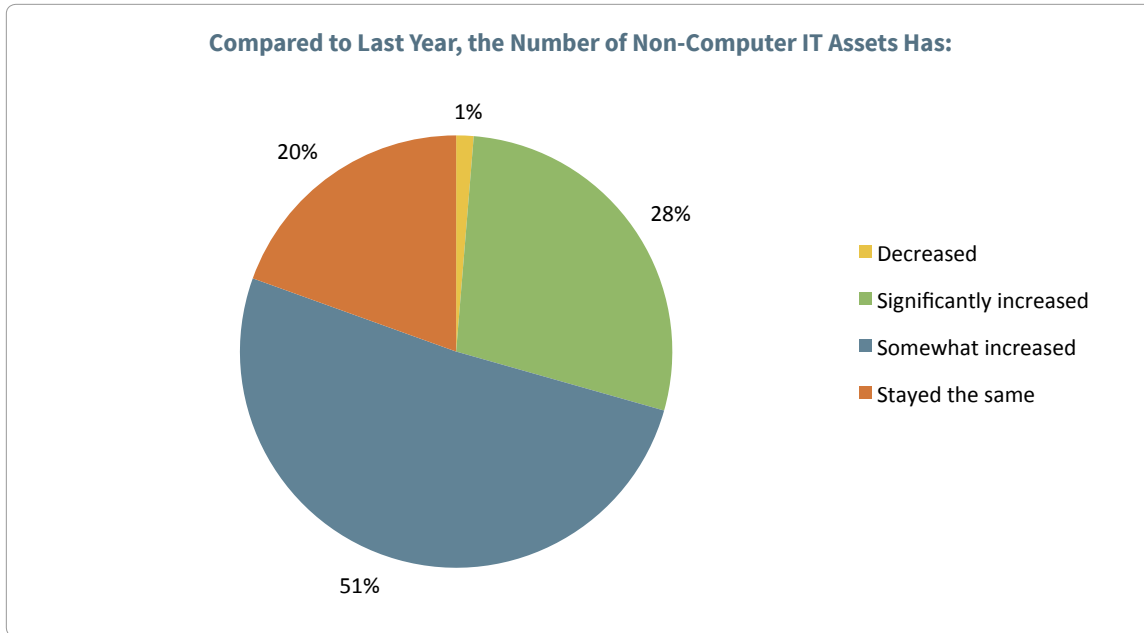


Respondents have once again indicated “IT stuff” is growing. Seventy percent indicated the number of computers in their schools or districts as compared to last year have increased. Of those districts with an increase in assets, a whopping 91 percent indicated IT staffing levels have either remained the same or decreased, while only one percent has increased staffing proportionately to increasing assets. Again, K-12 IT departments are seeing “too much stuff, not enough staff” to support their IT asset growth.

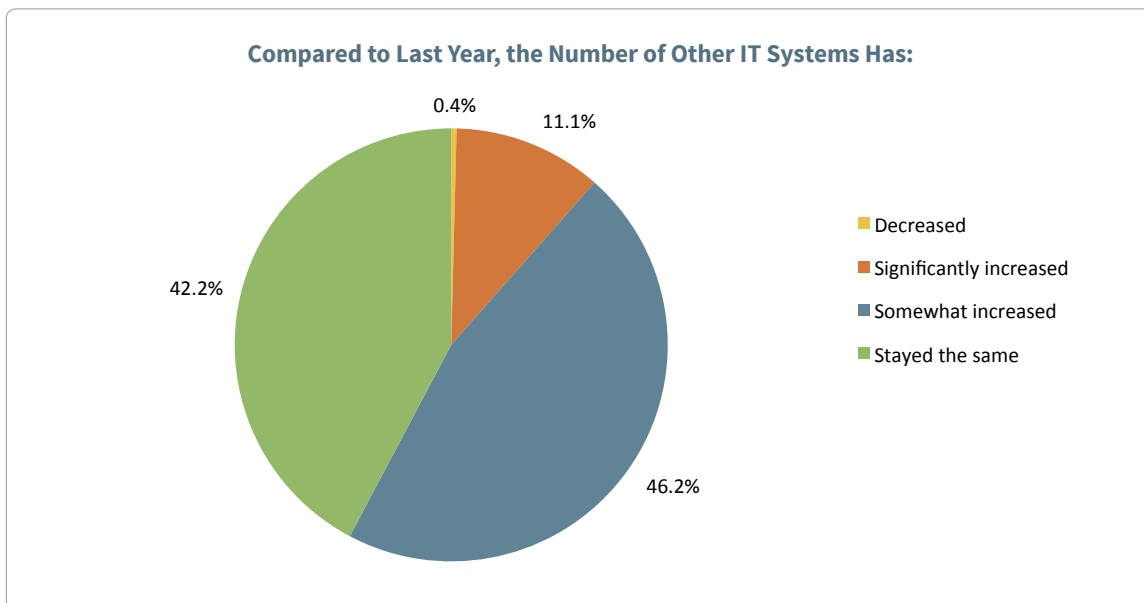


**Non-computers**

The survey also asked respondents about the increase in non-computer IT assets such as interactive whiteboards, storage devices, etc. Twenty-eight percent of respondents indicated these non-computer assets have significantly increased as compared to last year; however, this is lower than 2010 in which 47 percent of respondents indicated the number of non-computer IT assets had increased significantly.



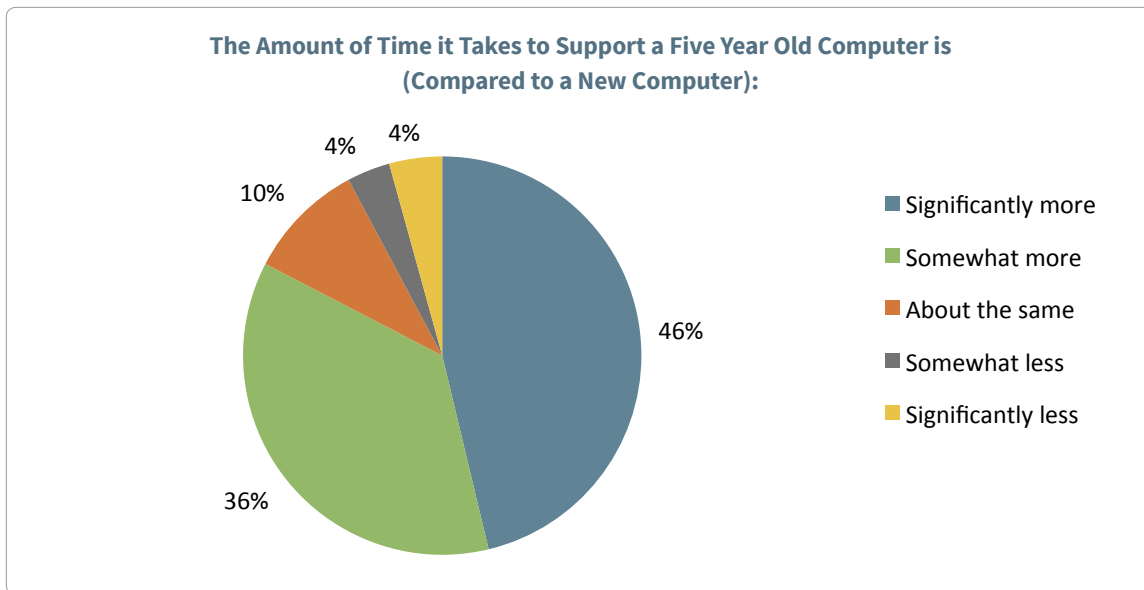
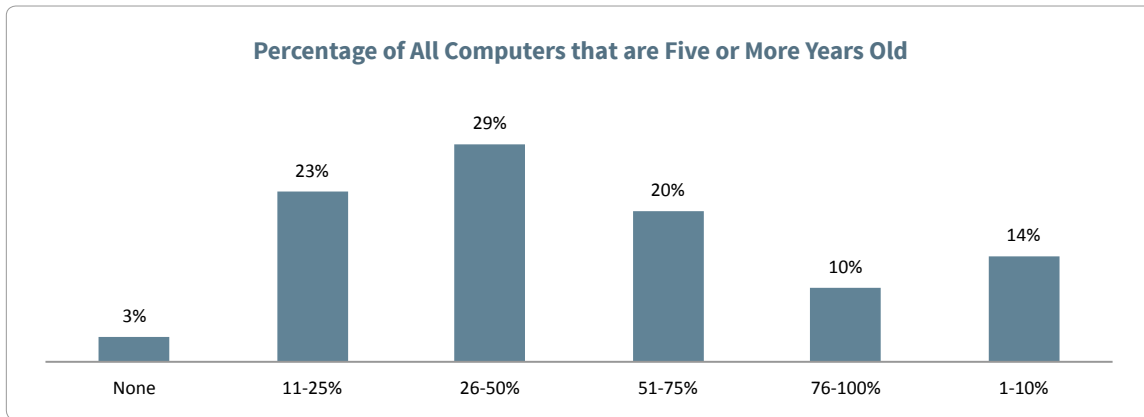
Compared to last year, the number of other systems such as security system, transportation systems, etc. has either significantly increased or increased for 57 percent of respondents, similar to 2010 survey results.



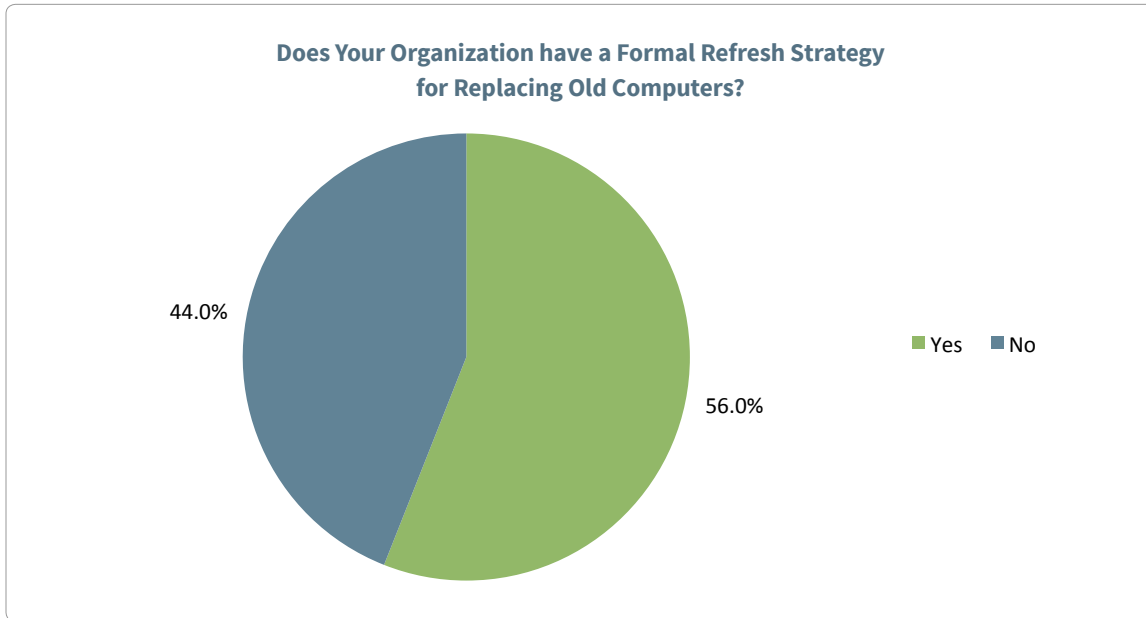


**K-12 Refresh Strategy of IT Assets**

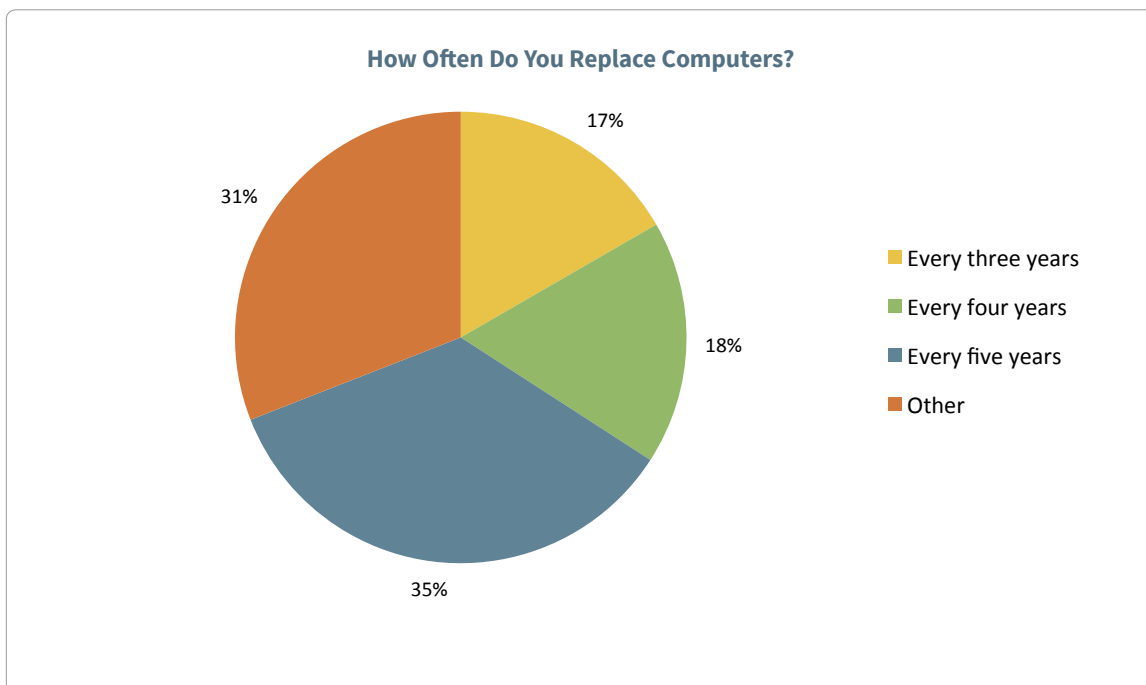
This year’s survey showed similar results to 2010 for age of computers in K-12 districts. About 30 percent of respondents indicated that more than half of their computers were five or more years old, a six percent increase from 2010. Seventy-six percent believed it took more time or significantly more time to support a five-year old computer, indicating these older systems are draining resources and time from IT departments.



Fifty-six percent of K-12 districts and schools surveyed have a formal refresh strategy for replacing old computers, similar to 2010 in which 57 percent indicated they have a formal strategy for replacement.



The survey also dived into how often computers are replaced, and responses varied. The plurality of responses, 35 percent, indicated their district or schools replace computers every five years.



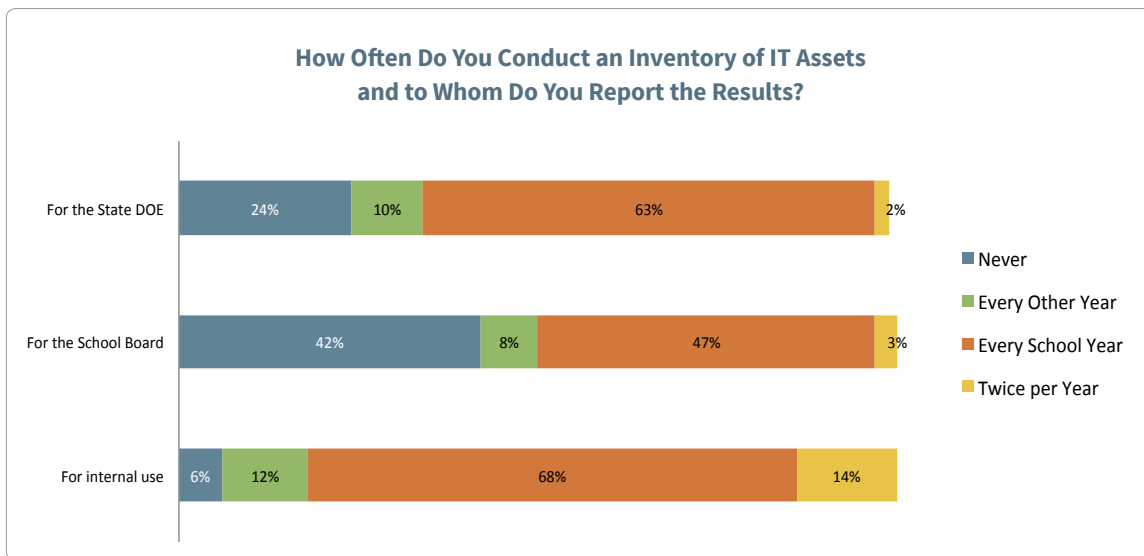
**“Other” responses included:**

- Every two to three years
- Every six to seven years
- Every ten years
- As funding allows
- When needed
- Twenty percent of computers replaced each year
- Ten computers replaced per year

**Audits**

From Tech Readiness requirements to managing software licenses, hardware, and other computer assets; and from capital planning to inventory, audits are important. Knowing what assets you have, how they’re used, and who is using them is critical to efficient and cost-effective asset management, especially when budgets are tight.

Not surprisingly, most respondents conduct audits for internal purposes only, with 68 percent indicating they conduct annual audits and 14 percent indicating they audit their assets twice per year. In addition, 63 percent conduct audits for the State Department of Education (DOE) annually as well, while only 43 percent conduct audits for their school boards annually.



While the numbers above are positive, there are still some organizations that don’t conduct audits. When comparing the numbers of respondents (18 percent) who conduct audits every other year or less with the number of respondents (11 percent) that do not have a software-based asset management system in place, one could conclude that it is simply too overwhelming to perform cost-effective audits without using a software-based asset management system. This is demonstrated by the survey results in which six of the 18 percent simply do not conduct audits at all. Preparing for Tech Readiness, BYOB and capital planning will not be an easy task without such a solution in place.

***50% conduct audits for their school board less than once per year; 18% do not conduct annual audits for internal use***

## Software and Systems

### SaaS Awareness

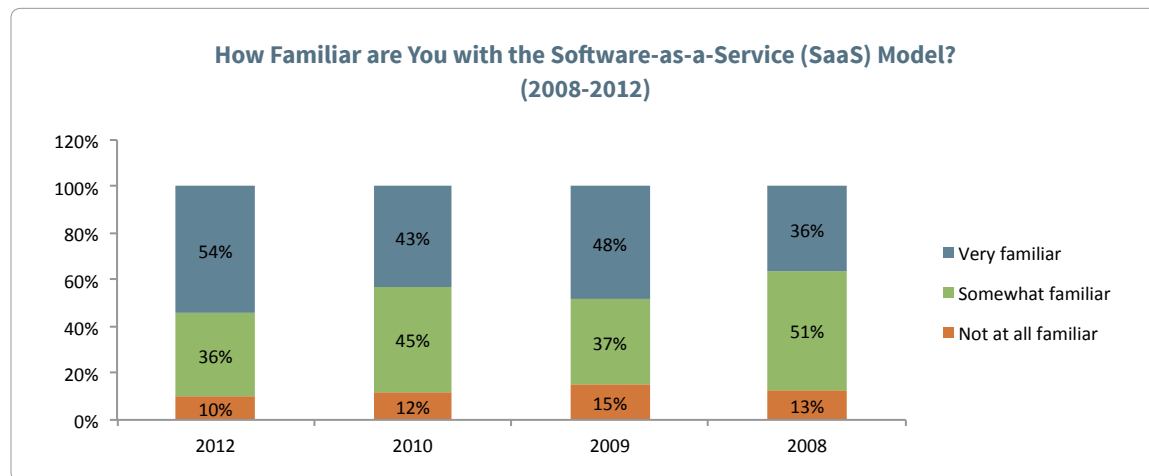
Software and systems showed the most optimistic numbers and results for the third year running. The familiarity with, and adoption of, Software as a Service (SaaS) applications continue to grow. Additionally, more districts have purchased SaaS software to support IT needs. Though the majority of these IT needs are still developed in-house, turning to SaaS vendors may prove to be one area for time savings and cost savings in IT departments.

Software as a Service (SaaS) is a computer application delivered as a service rather than being physically installed on school servers or individual desktops. As users access the software via Web browsers, SaaS frees IT staff from installation, upgrade, and software maintenance, which speaks directly to the staff shortage issue. Other significant advantages to the technology include time savings (lower demands on staff, faster implementation cycles), risk reduction with less complex implementations, scalability and an overall lower Total Cost of Ownership (TCO).

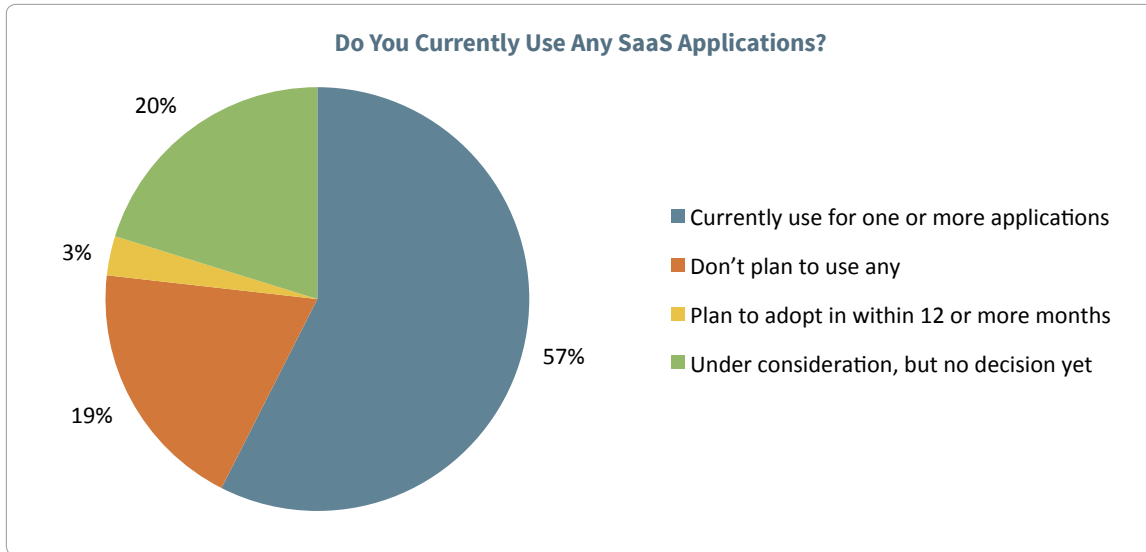
When asked how familiar you are with SaaS, 90 percent were familiar or very familiar with this model. The percentage indicating they were very familiar (54 percent) is 11 percent higher than those very familiar with SaaS in 2010 and 18 percent higher than in 2008.

### SaaS Benefits:

1. Time Savings
2. Faster Start-up
3. Scalability
4. Lower TCO

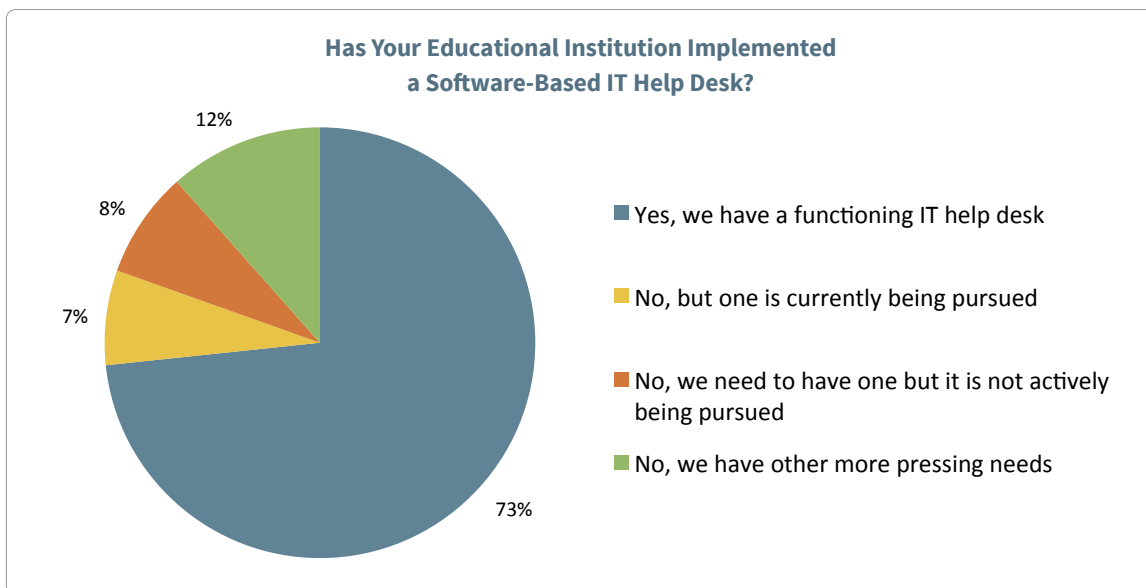


Responses indicate the SaaS delivery model is becoming the norm in K-12. Of those surveyed, 57 percent currently use at least one SaaS-based application.



#### Software-Based Help Desk Solutions

Up seven percent from 2010, 80 percent of respondents either have a functioning software-based help desk or are currently pursuing one. This growth confirms the value an automated help desk solution can provide the IT department.

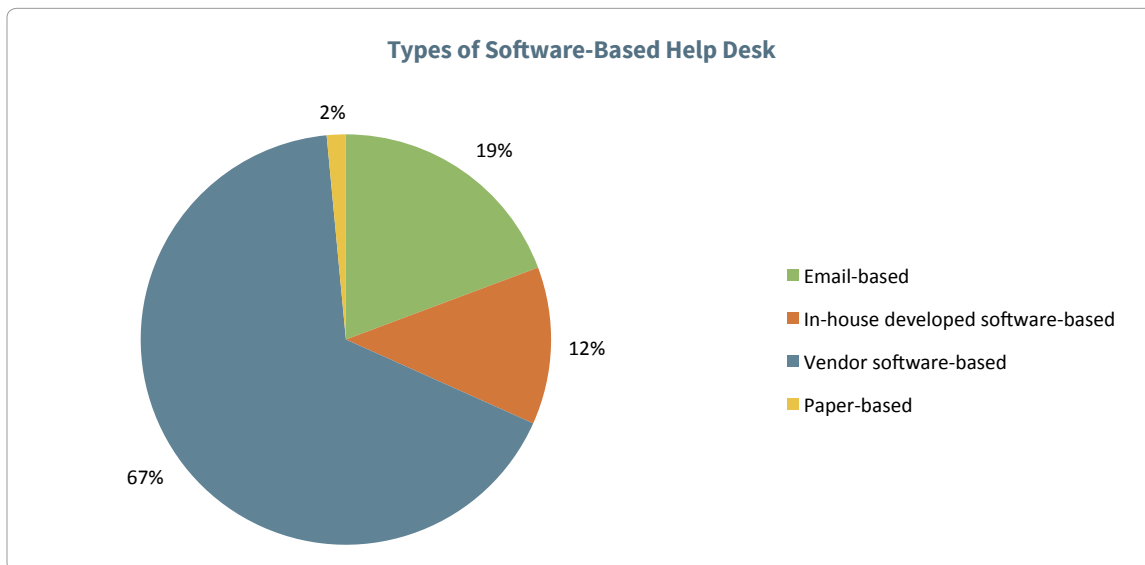


Eighty percent are using a software-based help desk solution. Why? It's simple. With budgets not increasing and staff levels not growing as the survey indicates, an automated help desk solution can improve customer service and stretch both time and money with effective resource scheduling. It also gives you the ability to quickly track asset information, including related tickets. Set up properly,

***80% use help desk software, improving customer service and stretching time and money***

automated help desk solutions can save you up to 30 minutes per request or incident. That's valuable time back into your workday.

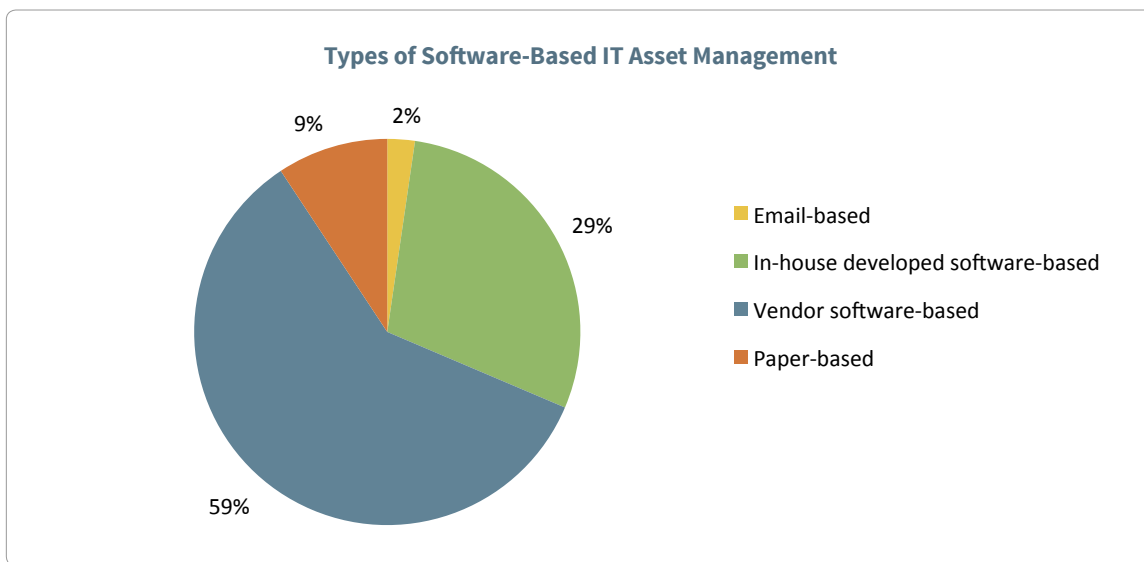
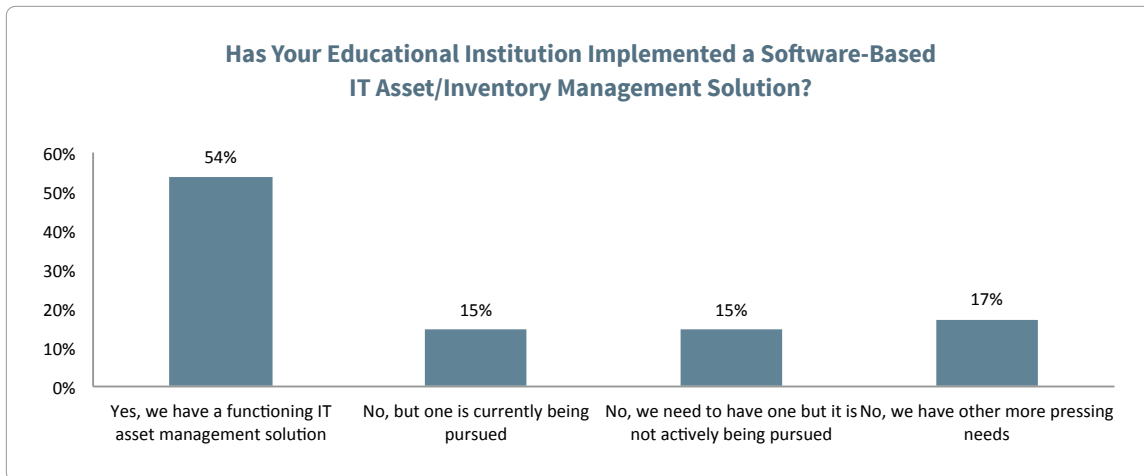
Of those with a help desk system in place, 67 percent purchase their software-based solutions, while only 12 percent use a system developed in-house. This is similar to 2010 results, showing K-12 districts are purchasing software solutions from vendors at a 5:1 ratio from developing in-house.



### Software-Based Asset Management Solutions

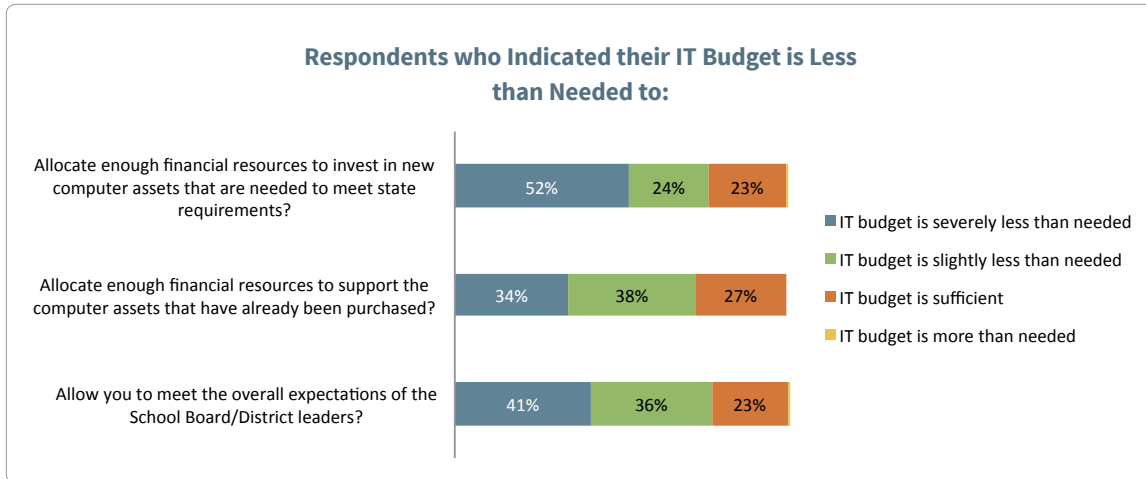
In addition to help desk management, managing IT assets continues to be important in schools. It has become more complicated and is important for technology readiness schools must prepare for. The survey once again dug into IT asset management to learn the trends in K-12 education.

Fifty-four percent of respondents indicated they have a software-based IT asset management system, and 15 percent are pursuing one (either developing or purchasing). For those with an IT asset management software solution, results were nearly identical to 2010. Fifty-nine percent were purchased while 29 percent were developed in-house, a smaller gap than those who purchase IT help desk software versus develop help desk software in-house.

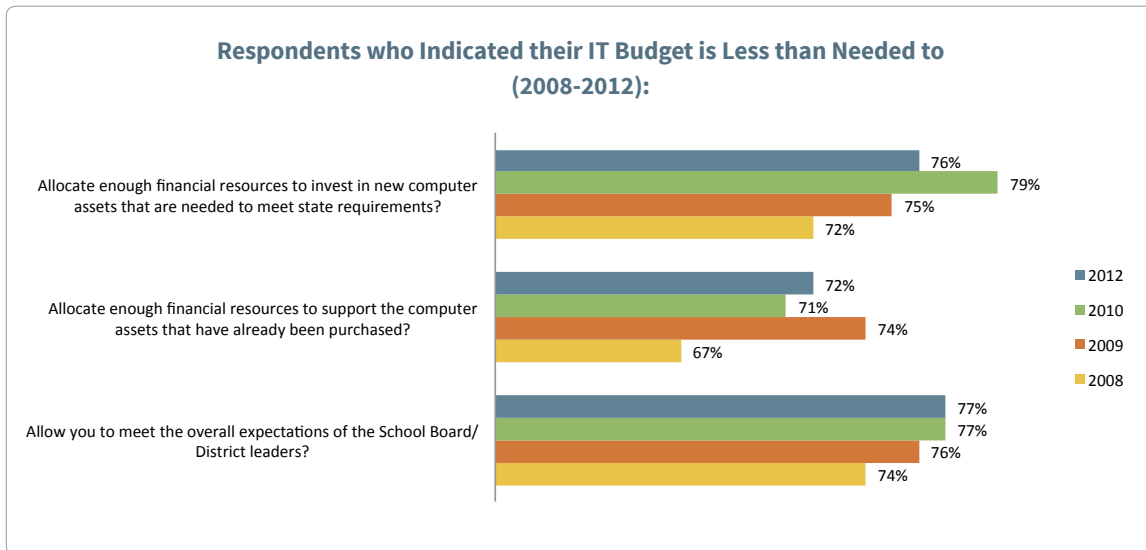


## Issues Facing IT Today and Tomorrow

As in prior surveys, IT funding was identified as the most important issue to resolve for strategic success in IT applications in the schools. IT funding was also seen as the number one issue that may become more significant in the coming year. According to the survey, over 50 percent of respondents indicated that they are not able to meet state requirements and 41 percent of those surveyed feel they are unable to meet the overall expectations of their school boards or district leaders. Not being able to meet state requirements can have significant consequences for school districts not prepared for common core online assessments and Tech Readiness for the 2014 school year. The following results depict respondents' reaction to their IT budget and if it can meet their needs.



As the table below shows, the percentages of respondents with a budget less than needed to fulfill requirements has remained fairly static over the past five years.

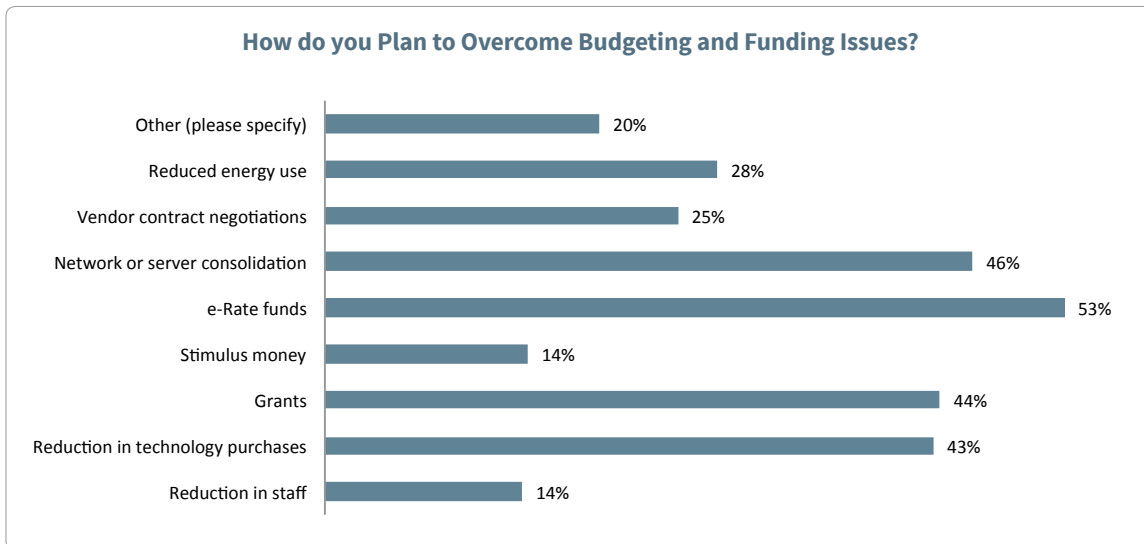


When looking at the top three issues across several areas, funding and infrastructure remain the number one concerns. With more devices and assets, infrastructure demands keep increasing, adding time and resources to an already strained department. It seems an increased focus on faculty support and training has occurred since the previous survey, which is not surprising. With common core standards, online assessments, BYOD and 1:1 computing, information technology is now taking over the classroom. In order to be fully successful, teachers and faculty must understand new technologies, know how to use them, and adapt them to the learning environment.



Top 3 IT Issues	# 1	#2	#3
Which issues are most important for your School/ District to resolve for strategic success?	Funding IT	Infrastructure	Faculty Development, Support & Training
Which issues have the potential to become more significant in the coming year?	Funding IT	Infrastructure	Faculty Development, Support & Training
Which issues are you spending most of your time addressing?	Infrastructure	Faculty Development, Support & Training	Strategic Planning
On which IT issues is your school spending the most financial resources?	Infrastructure	Web Systems and Services	Faculty Development, Support & Training

Respondents were asked how they plan to overcome budgeting and funding issues in IT. The top answer this year was e-Rate funds (53 percent), an FCC program that provides discounts to schools to obtain affordable telecommunications and Internet access. E-Rate funds were followed by network or server consolidation (46 percent). Interestingly, this is a change from 2010 in which reduction in technology purchases was the top way to overcome budgeting issues. Only 14 percent indicated reducing staff as a means to address budgeting, down 11 percent from 2010.



**“Other” responses included:**

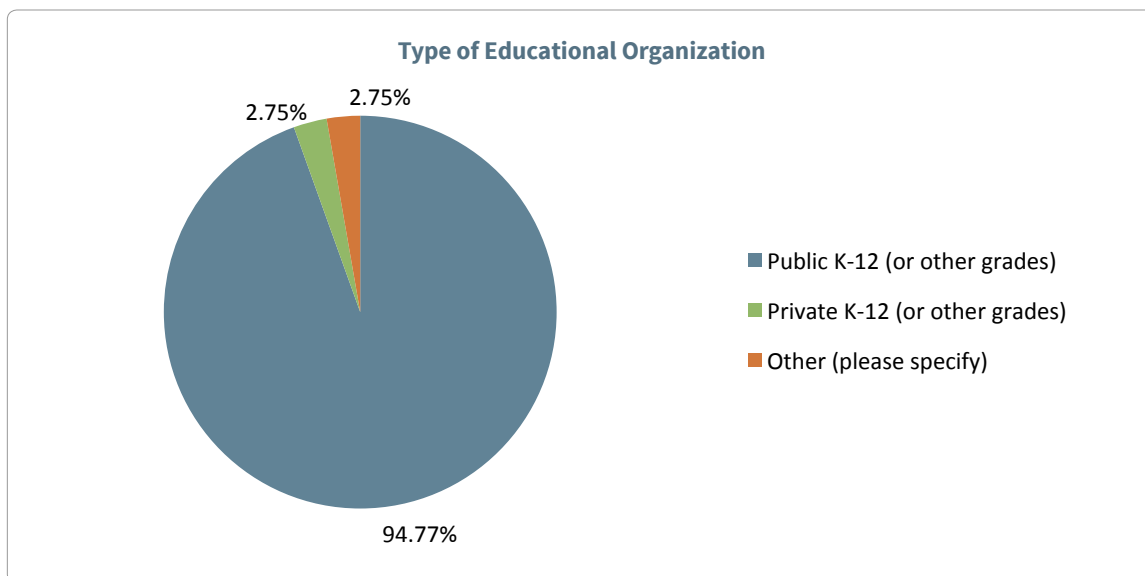
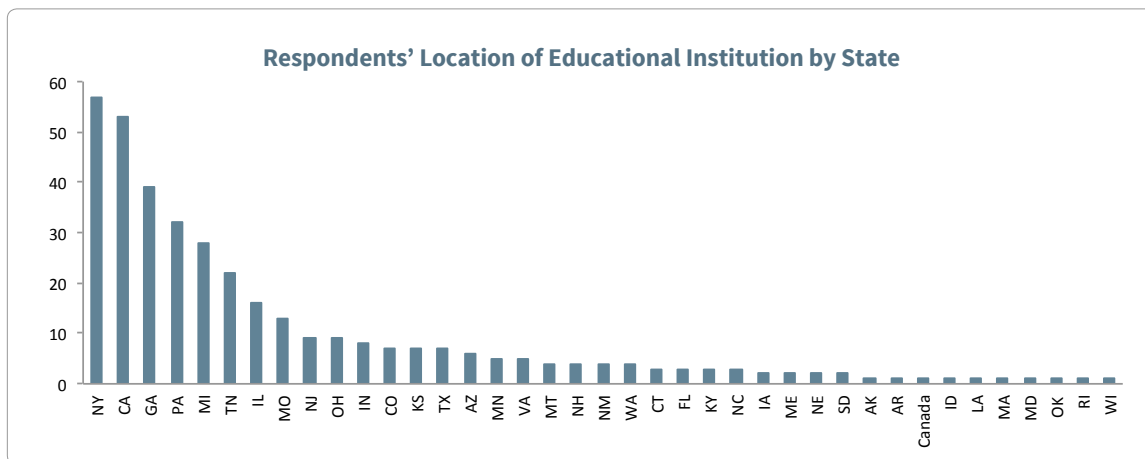
- Shift to cloud services
- SaaS
- Donations
- Virtualization, including VDI
- Bonds
- Freeware
- Re-allocating funds
- Low cost devices

# Survey Methodology and Demographics

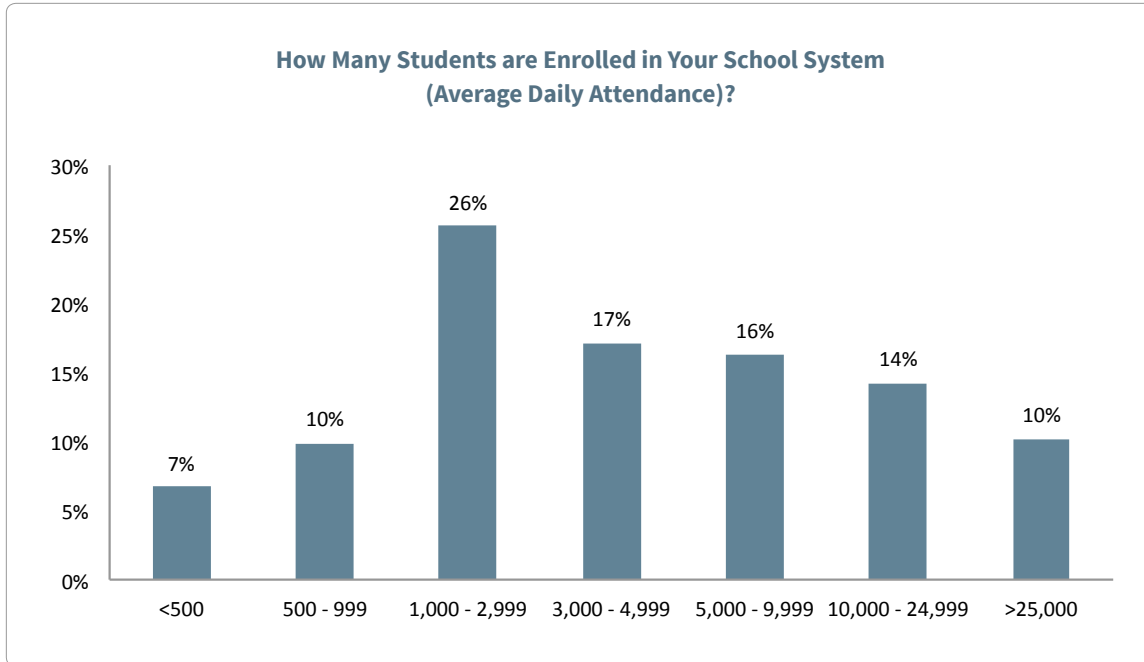
SchoolDude, in partnership with CoSN, conducted its fifth annual survey of IT professionals in K-12 education from December 2012 through January 2013. The online questionnaire targeted top district-level IT leaders for public and private K-12 schools. There were 373 respondents (respondents defined as completing the survey without leaving all questions blank).

On average, each question had about a 60 percent completion rate given some respondents did not complete every question or exited the survey before completion. Statistical calculations were derived by eliminating responses that were significantly different from the distribution (i.e. outliers), left blank, or when appropriate, equaled zero.

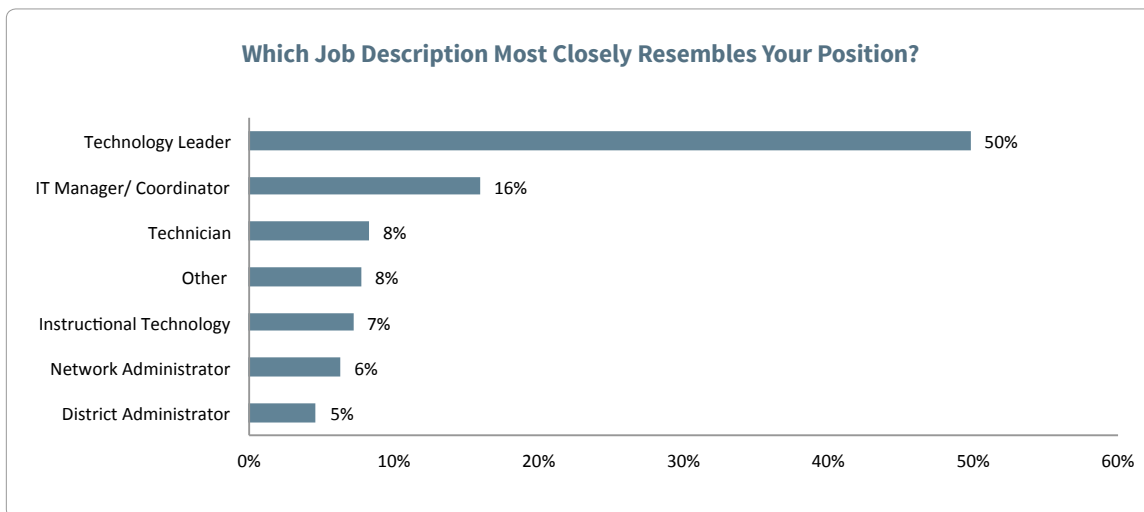
Respondents came from 39 states, including some Canadian provinces. Additionally, nearly 95 percent of respondents were from Public K-12 institutions.



This year’s survey had a more evenly distributed distribution among small and large schools than 2010; however, 43 percent of districts still had fewer than 3,000 students enrolled.



As previously mentioned, this survey targeted IT leaders in schools. Sixty-six percent identified themselves as either Technology Leader (50 percent) or IT Manager (16 percent), matching the target audience.



## Conclusions

Since we began these annual surveys in the 2007-2008 school year, the main challenges have remained for the most part unchanged –growing IT assets with static or declining IT staff and less than adequate IT funding to meet additional expectations and infrastructure.

This certainly can be frustrating to see similar results with little resources and help; however, the growth of technology in schools is a huge positive, and the interest in continuing this growth that we are seeing from education, government, and other constituents is a move in the right direction.

As continuing programs are developed to assist public and private education fund their IT programs and new web-based technologies relieve IT staff of maintaining additional systems and streamline processes that suck resources, IT departments and K-12 education can take a breath of relief as they look toward the future.

## About SchoolDude

SchoolDude is the #1 provider of Software-as-a-Service (SaaS) solutions for facility, IT, and business operations—designed exclusively for education! We help over 5,000 educational institutions (school districts, colleges and universities, and private schools) save money, manage support services, and make a difference.

In 2012, 515 educational institutions selected SchoolDude to more effectively streamline work orders, IT incidents, preventive maintenance, event scheduling, utility analysis and more.

While we have long been known for our facility operations solutions, what is not as well known is that SchoolDude is one of the top vendors serving the senior-level IT decision maker. To help solve the challenge of “too much stuff...and not enough staff,” we launched our IT suite of products—ITAMDirect (hardware and software inventory management), ITDirect (incident and help desk management) and ITWireless (wireless incident management). Beginning in 2005, these IT products provided breakthrough pricing and performance unique to the education industry.

***SchoolDude's accomplishments serving the CIO/CTO/IT Director include:***

- *The rapid adoption of our three IT management solutions by thousands of IT departments*
- *Achieving market-leader status, becoming the #1 education-specific company serving educational institutions with the SaaS, on-demand model*

- *Our launch of ITAMDirect, providing a breakthrough in price/performance for managing hardware and software assets. With just a simple installation of an agent on a MAC or PC, instant and rich information on hardware and software assets is available. Over 70 educational organizations adopted ITAMDirect in 2012 and institutions are actively tracking over two million incidents and 500,000 assets with ITAMDirect.*
- *Our comprehensive, integrated suite of products that serve multiple departments—leveraging IT costs and training across the entire educational institution*

We have been recognized by Inc., Deloitte, and the Triangle Business Journal as one of the fastest growing private companies. We have also been awarded the Best Places to Work Award every year since 2006 and we were the 2009 Stevie Award winner for Front-Line Customer Service Team of the Year.

***Learn how SchoolDude's IT operations management solutions:***

- *Save up to 30 minutes on every incident*
- *Streamline software license compliance, management and reporting by 30 percent*
- *Reduce the need for field audits of IT assets by 50 percent or more*

## About CoSN

Founded in 1992, the Consortium for School Networking (CoSN) is the premier professional association for school district technology leaders. CoSN is committed to providing the leadership, community and advocacy tools essential for the success of these leaders.

Mission: Empowering K-12 school district technology leaders to use technology strategically to improve teaching and learning.

**CoSN Core Beliefs:**

- *The primary challenge we face in using technology effectively is human.*
- *Technology is a critical tool to personalize learning and overcome barriers of time and space for each learner.*
- *Equitable and ubiquitous access to technology is a necessity.*
- *The effective use of technology for the systemic transformation of learning cannot occur without strong organization, leadership and vision.*
- *Technological fluency allows our children to be prepared for the world of today and tomorrow.*

- *Technology enables innovation in our educational systems, resulting in greater efficiencies and productivity.*
- *To maximize the benefits of technology solutions, the district technology leader should be part of the executive leadership team (CTO, CIO, etc.) of the education organization.*
- *Global connections are vital to transforming the education process and improving learning.*

**CoSN Leadership Initiatives:**

- *Budgeting with Total Cost of Ownership*
- *Calculating the Value of Investment*
- *Cyber Security for the Digital District*
- *Data-driven Decision Making*
- *Emerging Technologies*
- *Empowering the 21st Century Superintendent*
- *Framework of Essential Skills of the K-12 CTO/Preparation for CTO Certification*
- *Leadership for Mobile Learning*
- *Green Computing for K-12 Schools*
- *IT Crisis Preparedness*
- *Mastering the Moment: A Guide to Technology Leadership in the Economic Crisis*
- *Open Technologies in K-12*
- *Small School District Leadership*
- *Participatory Learning: Web 2.0 in Schools – Policy and Leadership*
- *Connected Online Communities of Practices*