

2015

2015 ACUTA/NACUBO/ACUHO-1 Report

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2015

ACUTA/NACUBO/ACUHO-I

STATE OF RESNET Report



ResNet Trends & Practices
Across Higher Education



Association for College and
University Technology
Advancement



The National Association of
College and University
Business Officers



Association of College and
University Housing Officers -
International



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INTRODUCTION

The Association for College and University Technology Advancement (ACUTA), the National Association of College and University Business Officers (NACUBO) and the Association of Colleges and University Housing Officers-International (ACUHO-I), are pleased to present research findings from the 2015 ACUTA/NACUBO/ACUHO-I State of ResNet Study.

This is the fourth installment of a comprehensive five-year tracking study to measure the pulse in ResNet practices and policies in higher education in order to provide year-over-year analysis and report on the evolution of certain trends. Again this year, the study has widened, representing the largest number of respondents since the study began in 2012. It is also the second time that ACUHO-I has joined as a partner and that respondents include Housing officers as well as Information Technology and Business officers.

This research, which includes data from over 450 higher education institutions, is designed to help administrators and Business officers address such issues as the unprecedented growth in bandwidth and connectivity demands, budget restrictions, policy considerations, staffing, and support. These insights will make it possible for colleges and universities to better meet the challenges of today while fostering greater collaboration that will support strategic planning to meet the challenges of tomorrow.

“Schools have seen the competitive advantage that comes from the expansion and growth of ResNet bandwidth and Wi-Fi access on their campuses, but with this growth comes an even wider set of challenges. Schools must continue to examine new ways to enhance network performance, limit risk while stretching value.”

- Dee Childs, Chair of the ACUTA Environmental Scanning Committee and Chief Information Officer at the University of Alabama-Huntsville.



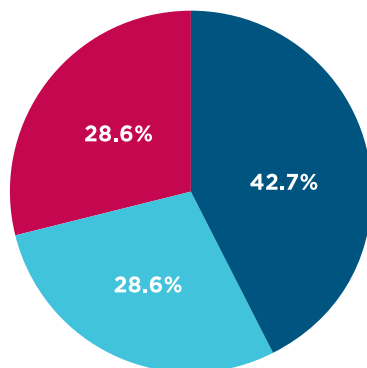
METHODOLOGY

For the fourth year, market research firm Forward Analytics was contracted to perform the ResNet industry research and to report quantitative market intelligence that can benefit higher education institutions and enhance residential computer networking for college/university students. Forward Analytics worked closely with ACUTA, ACUHO-I, and NACUBO representatives to design the 2015 survey and conducted polling in December 2014 and January 2015. Again this year, three unique questionnaires were developed to accommodate the representation of the three associations/audiences. The surveys have remained fairly consistent over the years so that data comparisons can be made.

Growing Participation

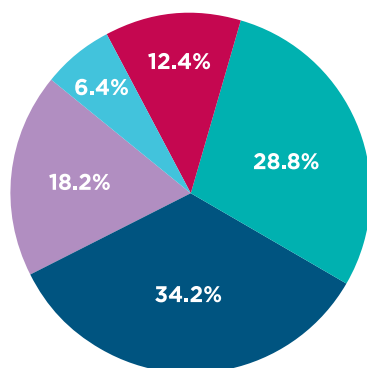
A total of 550 surveys were completed, the largest number of surveys completed since the inception of the study. This represents 465 universities or colleges (some institutions had multiple respondents). With a sample (total) population of 1700 U.S. higher education institutions, the response rate represents a statistical significance of +/-3.9% at the 95% confidence interval. With 465 unique institutional respondents, it can be said that if the survey were repeated 100 times, 95 in 100 times the research finding would vary at most +/- 3.9%. This level of sampling is deemed significant for supporting business decisions and strategic planning.

The respondents have the following characteristics:



Size of Institution

- 42.7%** | **Small** (fewer than 5,000 students)
- 28.6%** | **Medium** (5,000 to 15,000 students)
- 28.6%** | **Large** (15,000+ students)



Number of On-campus Students

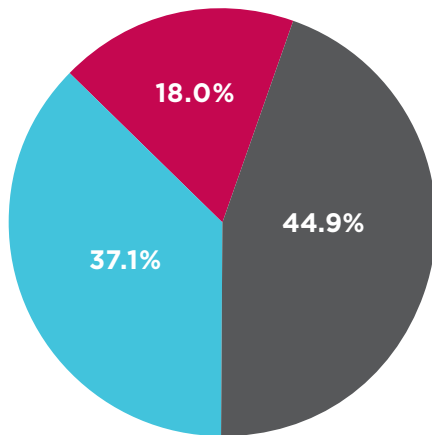
- 34.2%** | **Under 500**
- 28.8%** | **501 to 1,000**
- 18.2%** | **1,001 to 2,000**
- 12.4%** | **2,001 to 5,000**
- 6.4%** | **More than 5,000**

METHODOLOGY

(continued)

More than 60% of the respondents have between 1,001 – 5,000 on-campus students (beds), and slightly more than 18% of the respondents have 5,000+ on-campus students. For colleges and universities, having students live on campus provides a number of benefits, both in revenue and classroom performance.

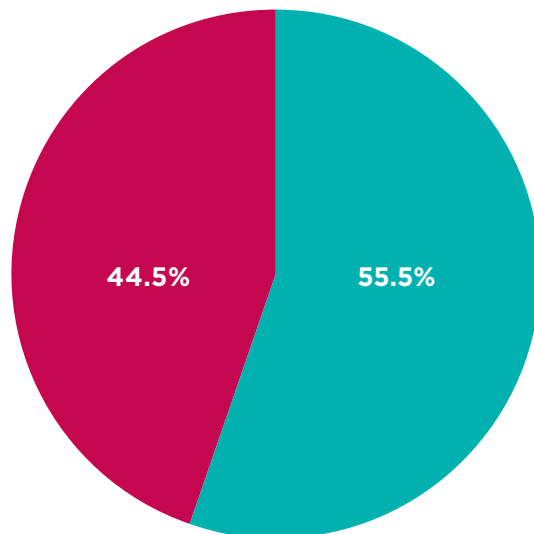
Job Responsibility



44.9% | IT
37.1% | Business
18.0% | Housing

Of the 550 total responses, 204 respondents indicated their primary job was related to business and 99 to housing, while 247 respondents primarily handled IT.

Public vs. Private



55.5% | Public
44.5% | Private

Among the institutions represented in the survey, slightly more than half were public universities or colleges.



EXECUTIVE SUMMARY

Higher education institutions have always strived to be on the cutting edge of technology, seeking to provide faculty and students with the most powerful and efficient access to information. But the explosive increase in the number of Internet connected devices and their associated high-bandwidth applications have put CTOs, Business officers, and Housing officers in the crosshairs of managing infrastructure, technology, lifestyle, and costs. To remain competitive, universities are forced to provide students with a high-performing, uninterrupted mobile network that fits their on-the-go lifestyle.

The following study explores the current state of ResNet - Internet, cable television and phone services available to residents living in on-campus residence halls. The 2015 ResNet Trends and Practices report looks at the current state of ResNet from the perspective of IT, Business and Housing officers and details how universities and colleges are reacting to the diverse and ever-evolving challenges for ResNet services. The report delves into the following topics: Bandwidth Management, Wireless Coverage and Capacity, Service and Support, Planning and Measuring, Funding and Technology Costs, and the growing trend of Outsourcing.

More schools finding ways to meet ever-increasing bandwidth demands

- More than half of universities and colleges dedicate 1Gb or more to the ResNet, a figure that is more than double that reported in the inaugural study in 2012.
- Bandwidth-management practices have increased across the board, with the most popular methods being limiting by protocol and blocking activities, such as p2p sharing, music downloading, etc.
- Schools are still struggling with never-ending bandwidth consumption. Fifty-five percent of institutions that provide their own bandwidth also limit and/or shape bandwidth, compared to only 21% of those who have outsourced their ResNet.
- One in five schools give students the option to purchase additional bandwidth.
- Use of outsourcing continues to increase. Presently 38% of schools are outsourcing or considering outsourcing some or all ResNet services, nearly doubling from 22% in 2013. More than one quarter (29.2%) of institutions currently outsource or are considering outsourcing their residential Internet. More institutions are considering outside entities to provide cable, phone and help-desk service, as well.
- Desktops and laptops have taken the top spot over from tablets as the largest consumer of bandwidth—for the first time since the study began, warning of even greater bandwidth demands.



EXECUTIVE SUMMARY_(continued)

Better wireless coverage is starting to be the norm

- More than 65% of schools now provide robust wireless connectivity throughout more than 80% of their campus, a 20% increase since 2013.
- Academic and administrative areas continue to receive the most robust coverage compared to common areas, dining halls, and residential rooms.

Broad range of support options, but 24/7 support still gets left behind

- Institutions provide residents with options for support that are as numerous and diverse as the network-enabled devices.
- Only live chat and text messaging saw increases last year.
- Fewer than 15% of schools provide 24/7 support, a number that has increased only slightly over the last three years.
- Outsourcing may be one of the ways to get better support. Sixty-eight percent of schools that have outsourced their ResNet have 24/7 support compared with 9% of schools with in-house networks.

More planning, but better information still needed

- Over the last three years, there has been a 26% increase in schools with ResNet strategic plans, growing from 34% to 60%.
- About 75% of Business officers and 80% of Housing officers meet regularly with IT, while 80% of IT officers meet with their Housing/Residence Life counterparts.
- Approximately 58% of Business and Housing officers do not have access to benchmark data.

More schools forced to address increasing costs of ResNet services

- Seventy percent of institutions expect the cost of ResNet to increase over the next two years.
- On the positive side, schools that saw a funding increase jumped from 38% in 2014 to 54% in 2015.
- Three out of five universities are balancing bandwidth costs through shaping or by combining their ResNet services with other campus IT services (69%).
- Nearly half of institutions have increased or are considering an increase in student/user fees.



FINDINGS

Bandwidth Management

Key Takeaways:

- Schools continue to increase ResNet bandwidth – for the first time, more than half of schools offer 1Gb or more to meet the demands of students.
- Fewer schools are capping bandwidth, but more are instituting other bandwidth-management practices.
- Desktops and laptops have taken over the top spot (compared to tablets) and are now expected to be the largest consumers of bandwidth in the foreseeable future.
- Fifty-five percent of schools that have in-house Internet are implementing bandwidth-management practices, such as shaping by protocol, compared with just 21% of those that have outsourced ResNet.

Snapshot of Bandwidth Management

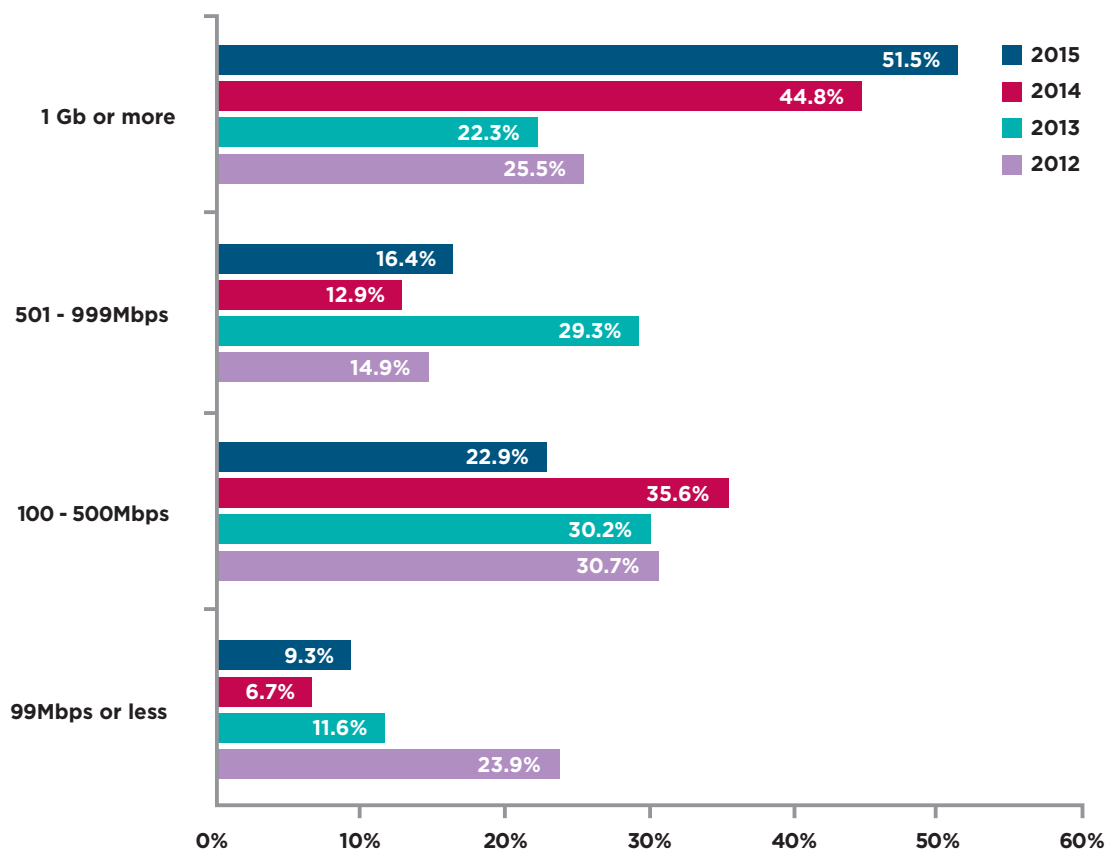
Schools that make investments in high-quality residential networks and services find that students perform better and the student experience is enriched. This puts pressure on schools to meet these student residents' demands for a high-quality residential networking system. Nearly 90% of Housing, Business and IT officers find an "at home" quality network connection to be important when attracting and retaining on-campus students. Yet, 34% of Housing officers and 19% of IT officers are concerned about the ability of their provider to meet the future demands of residential networking.

With the "Bring Your Own Everything" phenomenon growing by leaps and bounds, more schools than ever are making provisions for a wide array of applications and devices. In fact, seven out of ten colleges and universities surveyed allow an unlimited number of devices to be connected to the residential network. Universities and colleges are seeing an opportunity to better serve their primary customers, and as a result have been increasing their bandwidth year over year. This year's data shows that, for the first time, over half of all institutions now offer 1Gb or more. Despite ever-growing demand, four out of five schools do not give students the option to pay for additional bandwidth.

In summary, the tension deepens between universities' desire to serve students by increasing bandwidth to support the tenets of BYOE, and the reality that demand is increasing at a far greater rate, resulting in increased bandwidth-management practices and limitations on installation of network devices by students.

FINDINGS *(continued)*

Bandwidth Dedicated to ResNet



Growing Bandwidth-Management Practices

A plethora of devices consume bandwidth and increase institutional costs. While this year saw a decline in capping individual Internet bandwidth usage for campus residents, all other bandwidth-management practices are on the rise. The most common bandwidth-management practice is shaping and limiting bandwidth by protocol or blocking activities such as p2p sharing, music downloading, etc.

Fifty-five percent of schools that have in-house Internet are implementing bandwidth-management practices, such as shaping by protocol, compared with just 21% of those that have outsourced their ResNet.

FINDINGS *(continued)*

Bandwidth-Management Practices			
	2013	2014	2015
Shaping and limiting bandwidth by protocol	72.4%	66.7%	77.3%
Blocking activities such as p2p sharing, music downloading, etc.	N/A	52.0%	68.1%
Capping network-wide throughput available to streaming video	22.9%	18.6%	25.9%
Implementation of cache servers	22.9%	21.1%	25.9%
Providing minimum guaranteed service levels by user	12.9%	15.2%	20.8%

Other practices in place on campuses include

- Limiting Internet speed (therefore ability to stream video) on guest Wi-Fi connections.
- Sharing available bandwidth evenly between all consumers on a dynamic basis.
- Rate limiting upload at campus border.

FINDINGS *(continued)*

Future Bandwidth Consumers

In previous years of the study, tablets (iPad, Android) were forecasted as the largest bandwidth consumer in the years to come. In 2015, however, desktop and laptop computers have taken over the top spot, and are now gateways to many disruptive applications, which may require even more bandwidth than ever before. Through these devices, students have found a larger canvas for complex games, CAD and 3D modeling software, computer animation, or simply storing photos and videos.

We also see increases in video systems, smartphones, game boxes, and smart TVs that are contributing to bandwidth demand.

Largest Bandwidth-Consuming Devices			
	2013	2014	2015
Tablets (iPad, Android)	83.5%	73.4%	67.9%
Desktop and laptop computers	75.0%	69.3%	76.5%
Video systems (DVD/Blu-Ray Players, Apple TV, Roku, SlinGBox)	63.6%	49.3%	53.7%
Smartphones (iPhone, Blackberry, Android)	63.2%	64.2%	66.8%
Game boxes (PS3, Wii, XBOX, XBOX 360, etc.)	60.7%	46.7%	52.2%
Smart TVs	51.7%	37.2%	38.8%
iPod/iPod Touches	33.5%	20.5%	16.5%
e-Book Readers (Kindle, Nook)	27.8%	13.0%	9.4%
Wireless Printers	14.1%	5.8%	8.7%

In order to provide students with flexible and easy access to the ResNet, slightly more than one-quarter of institutions allow campus residents to install personal network support, like switches or mini-hubs, but fewer than 20% allow residents to install wired or wireless routers. Seventeen percent of schools permit the installation of servers. In contrast, 64.8% of universities prohibit the installation of network devices in campus residences. These figures are comparable to the previous three annual ResNet Trends and Practices studies. Fifty-three percent of campuses that outsource their Internet receive minimum level service guarantees, compared with 20% that provide the service in-house.

FINDINGS *(continued)*

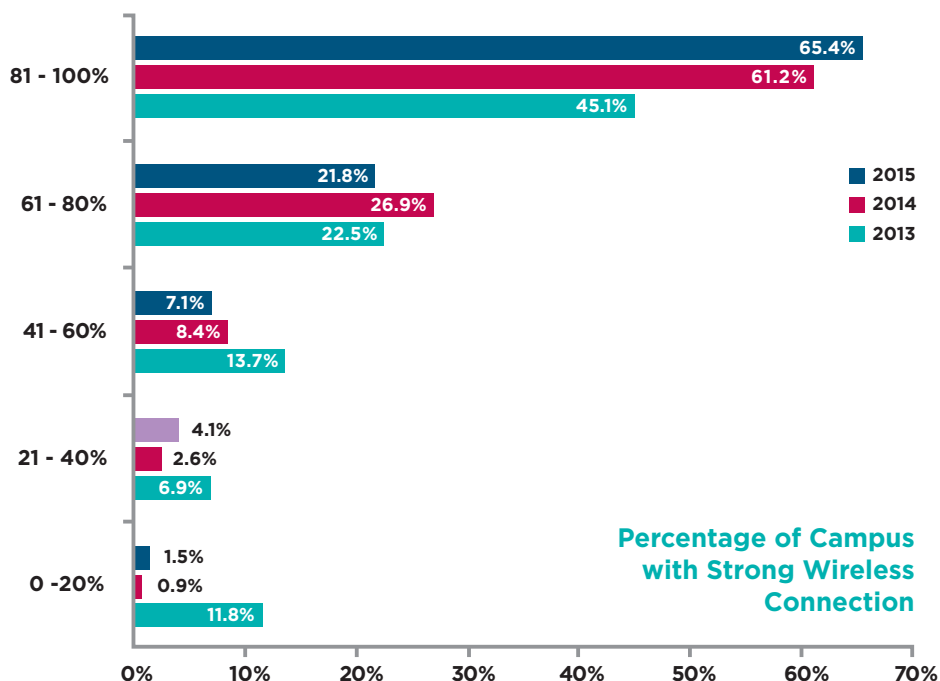
Wireless Coverage and Capacity

Key Takeaways:

- The number of campuses offering robust wireless connectivity continues to rise—and now stands at more than 65% of schools surveyed.
- Academic and administrative areas continue to receive more robust coverage compared to areas where students congregate, such as common areas, dining halls, residential rooms, etc.
- Nearly half of all institutions believe their cellular reception is satisfactory; and have no plans for augmentation.

Snapshot of Current Wireless Coverage

With the growing BYOE movement and more and more students becoming mobile, administrators are responding to demands for “anywhere, anytime” access. 2015 data measures 65.4% of campuses providing robust wireless coverage (of four bars or more) throughout more than 80% of their campus, a 20% increase from 2013. More than half of all Business officers say they support coverage for the entire campus rather than limit coverage to the extent of available funds only for the most densely-populated areas.



FINDINGS *(continued)*

While our research shows an increase in the percentage of schools offering robust wireless coverage on their on-campus student areas, not all residential spaces enjoy seamless coverage. Mirroring 2014 results, the areas where students spend the most time—common areas, dining halls, and residential rooms—are still not getting as robust coverage as the academic and administrative areas. 2015 data show a very small decline in the percentage of institutions offering robust coverage in all areas.

Percentage of Campuses offering Robust Wireless Coverage in 81-100% of Residential Areas		
	2014	2015
Academic spaces in residences, including classrooms and study areas	73.0%	71.4%
Residential computer labs	73.0%	72.1%
Administrative areas (front desks, area offices, residential staff offices, etc.)	71.2%	66.9%
Common areas and community spaces	69.9%	66.1%
Dining facilities	69.3%	66.9%
Residential rooms, suites, or apartments	59.0%	58.7%
Outside areas adjacent to residential spaces (courtyards, parks, breezeways, etc.)	20.5%	16.5%

Wired Ethernet Ports

Despite the increase in wireless coverage, only 19.9% of institutions will remove existing wired Ethernet access ports in residential buildings. Another 18.7% are unsure if they will remove Ethernet access ports. These figures are only slightly higher than 2014. This represents an overall growth since 2012, when a mere 5.2% of institutions had plans for removal.

Presently, the majority of institutions include wired Ethernet access ports in new residential construction by offering one port per student (57.7%), one port per room (17.8%) and/or providing ports upon request (5.4%). Nine percent of institutions did not include Ethernet ports in residential construction completed over the past three years.



FINDINGS *(continued)*

Cellular Reception

In areas where traditional connectivity is difficult to implement or sustain, 52% of institutions are considering an array of services to augment residential cellular reception on campus, a decline from 56.4% in 2014 and 76% in 2013. Thirty-one percent of institutions plan to deploy in-building DAS, 15.2% outdoor DAS, and 23.4% outdoor cellular sites/towers. Other considerations are small cell technology, or Femtocells (12.7%), and in-building cellular connection (9.0%).

Forty-eight percent of institutions have no plans for cellular augmentation because the cellular reception on the campus is satisfactory, too expensive, or there is a perception that the carrier is responsible for providing satisfactory cellular coverage.

ResNet Service and Support

Key Takeaways:

- More than 85% of schools do not provide 24/7 support, although more schools that have outsourced their ResNet enjoy 24/7 support.
- Even with the increase in online and social media support, the majority of schools continue to provide on-site, walk-in and call center support.
- Sixty-eight percent of schools that have outsourced their ResNet have 24/7 support compared with 9% of schools with in-house networks.

Snapshot of Support Services

As in previous years, Central IT (Networking, Security, etc.) continues to be responsible for maintaining the physical infrastructure and providing end-user support. About one in five schools use Student Affairs to provide support. 2015 data shows a small shift in responsibilities with a 5% increase in schools that use Student Affairs for physical infrastructure and 3% increase that use Student Affairs for end-user support.

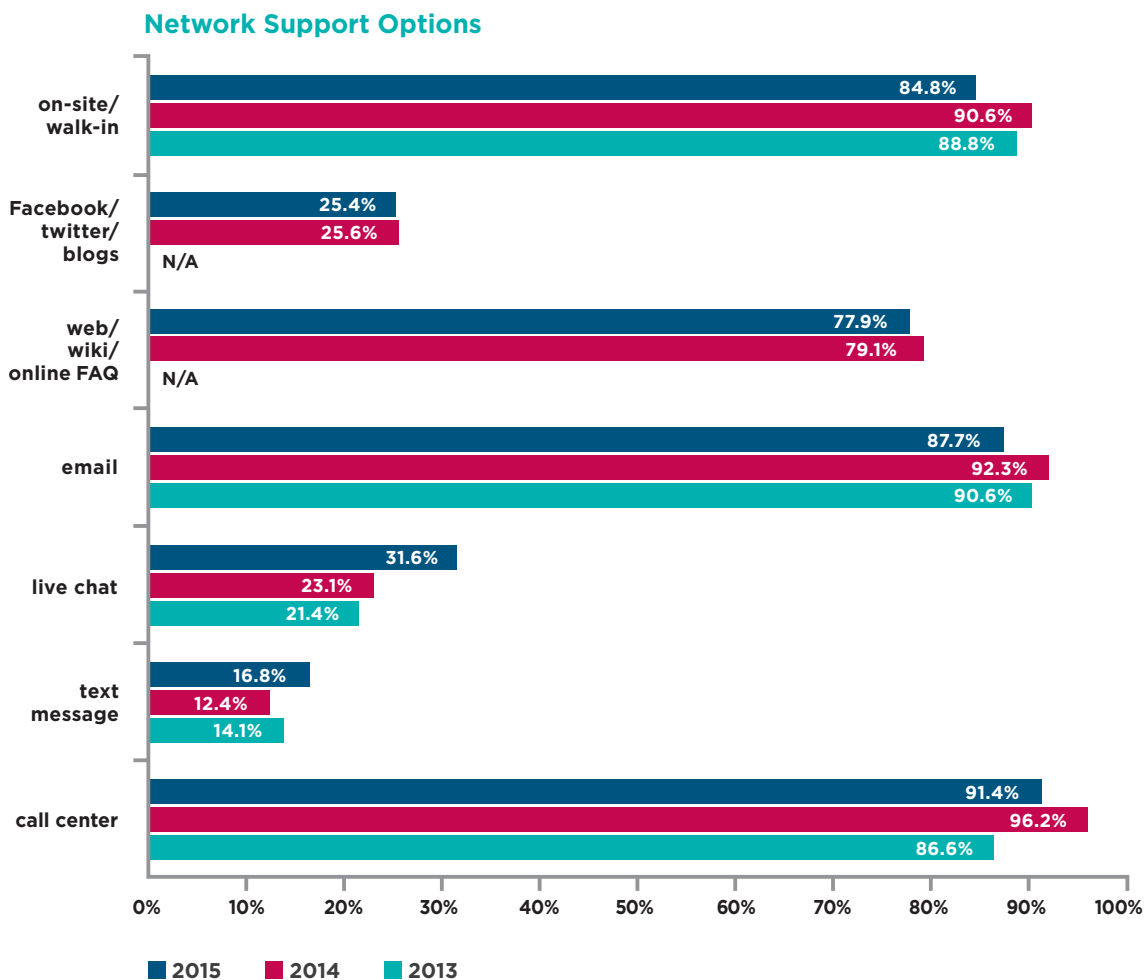
Within the housing department, manpower allocated to the ResNet is scarce, with a majority (86%) of surveyed Housing officers saying that ResNet makes up less than 20% of their daily responsibilities. Furthermore, more than half indicate that there is no full-time staff working within their housing/residence life IT department.

FINDINGS *(continued)*

Options for Support

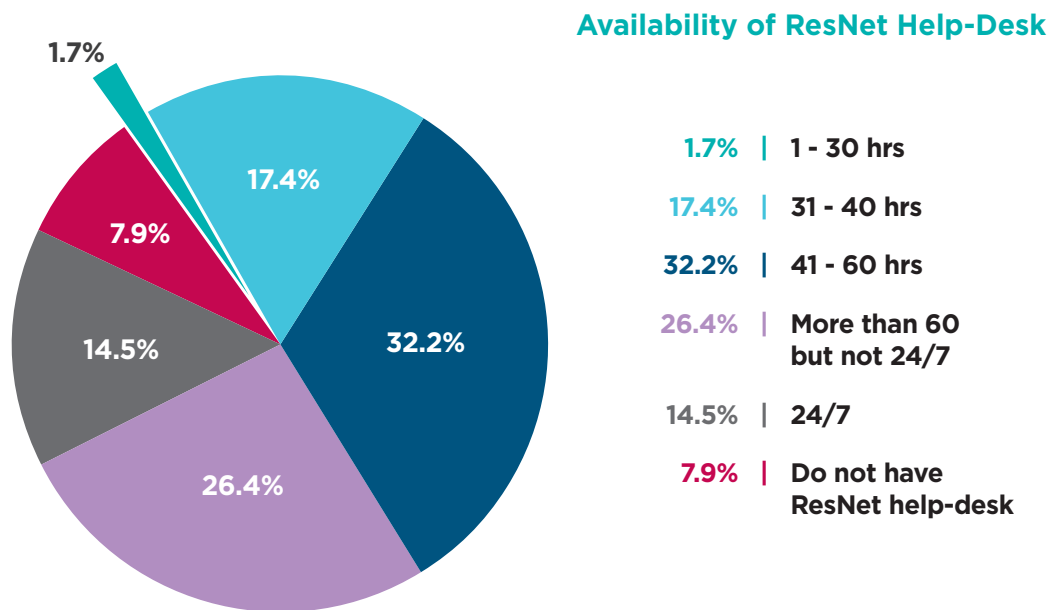
The influx of network devices on college campuses has increased the need for IT support. Institutions now provide residents with options for support that are as numerous and diverse as the network-enabled devices. Reflecting the on-demand nature of today's communications, live chat and text messaging show the only increase in popularity among service options.

The ResNet Help-desk provides a single contact point for students, faculty, and staff to request technical assistance, ask questions, or report problems. As discovered in the 2013 ResNet Trends and Practices study, this is slowly evolving into a full-blown computer help-desk on many campuses. Schools are increasingly finding themselves needing to walk the tight rope between maintaining staffing and financial resources while stretching to meet students' ResNet needs.



FINDINGS *(continued)*

With rising student technical demands, 79.4% of schools now offer more than just 9-to-5 help-desk support, but still, only 14.5% provide 24/7 support. Sixty-eight percent of schools that have outsourced their ResNet have 24/7 support compared with 9% of schools with in-house networks.



Planning and Measurement

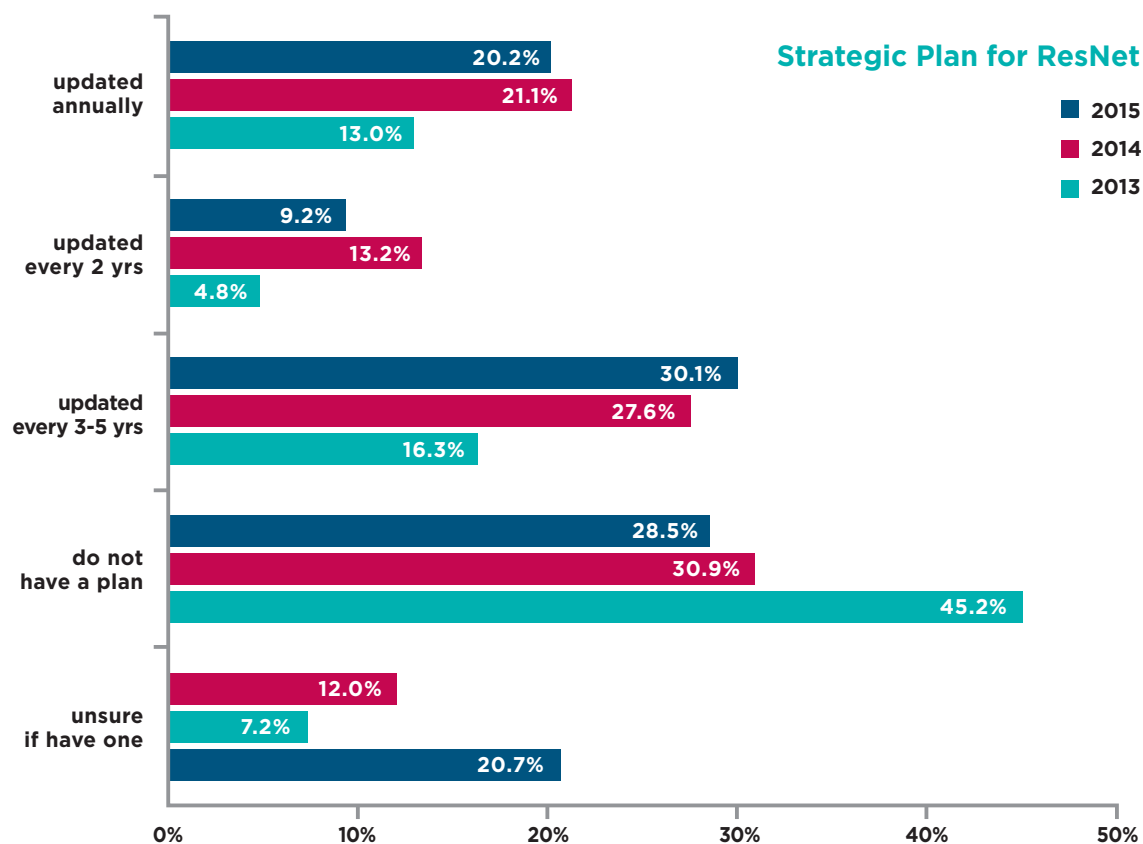
Key Takeaways:

- Over the past three years, there has been a 26% increase in the number of institutions with a ResNet strategic plan, jumping from 34% to 60%. But only 20% update their plan annually.
- Although more than two-thirds of Housing and Business officers would like benchmarking information, almost 60% do not have access to such information.
- Business officers value reliability (uptime), security and performance (speed) over cost.
- While security is a top IT priority, slightly more than one-fourth of schools have no Information Security and Internal Audit (ISO) team.

FINDINGS *(continued)*

To adequately meet rapidly evolving networking needs, 60% of schools now have strategic plans in place for the ResNet. Such a plan may include an approach for management, as well as cost and performance information for wireless internet (Wi-Fi), Internet bandwidth, cable TV, IPTV, VoIP and related services.

In order to create a clear, focused path for the future of ResNet, 20% update their strategic plan annually, while 39.3% update it every 2-5 years. In contrast, 12% of institutions are unsure whether they have a strategic plan and/or how often it's updated.



FINDINGS *(continued)*

Communication

To ensure ResNet initiatives and goals align, officers from business, housing and IT need to communicate with their counterparts regarding the quality and performance of ResNet services. The 2015 study found that communication is lacking between departments. One-fourth of Business officers do not meet with their IT department, nearly 20% of Housing officers do not meet with the IT department, and 21.9% of IT officers do not meet with the Housing/Residence Life department.

Diagnostics

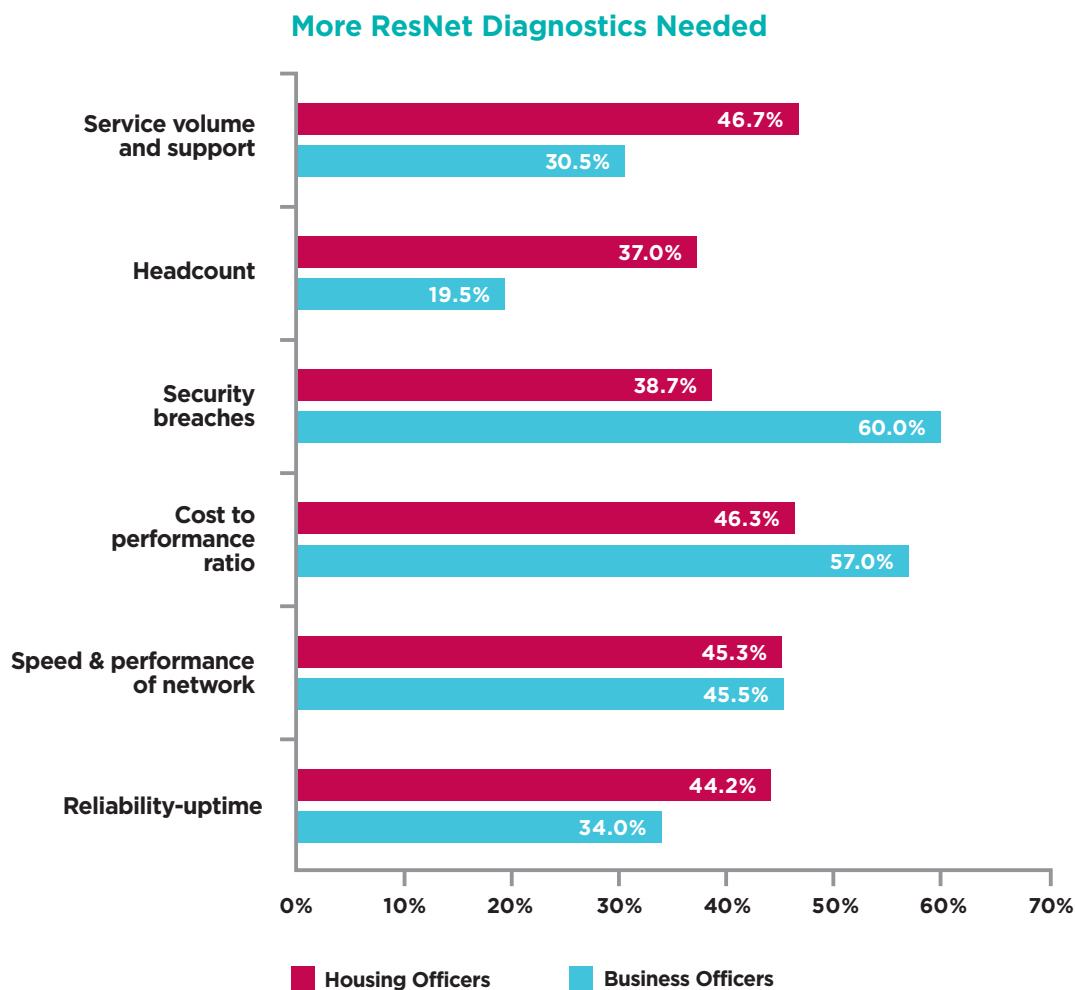
Measurements and reports can be a critical component of a strategic plan. Although 66.9% of Housing and Business officers would like to benchmark ResNet services, 58% do not have access to such information. When Business officers were asked to rank various factors in terms of relative importance with respect to IT telecommunications and networking services, the survey found that reliability (uptime), security, and performance (speed) were valued over cost. The following table illustrates the ranking factors and weighted scores (which is the sum of all weighted rank counts).

Drivers of IT Telecommunications and Networking Services Ranked by Importance - Business Officers		
	Rank	Weighted Score
Reliability (uptime)	1	969
Security	2	889
Performance (speed)	3	770
Operating Cost Predictability	4	712
Capital Cost Predictability	5	592

FINDINGS *(continued)*

Although the chart below shows that Business officers value information regarding security breaches, more than half say they do not have access to—but would like—this data.

This lack of information may be due, in part, to limited manpower dedicated to security—28% of universities and colleges do not have an Information Security Office and Internal Audit team. Forty-eight percent have a team of between 1 and 4 staff members. And 16% of institutions have a team of between 5 and 9 staff members, while 9% have 10 or more.

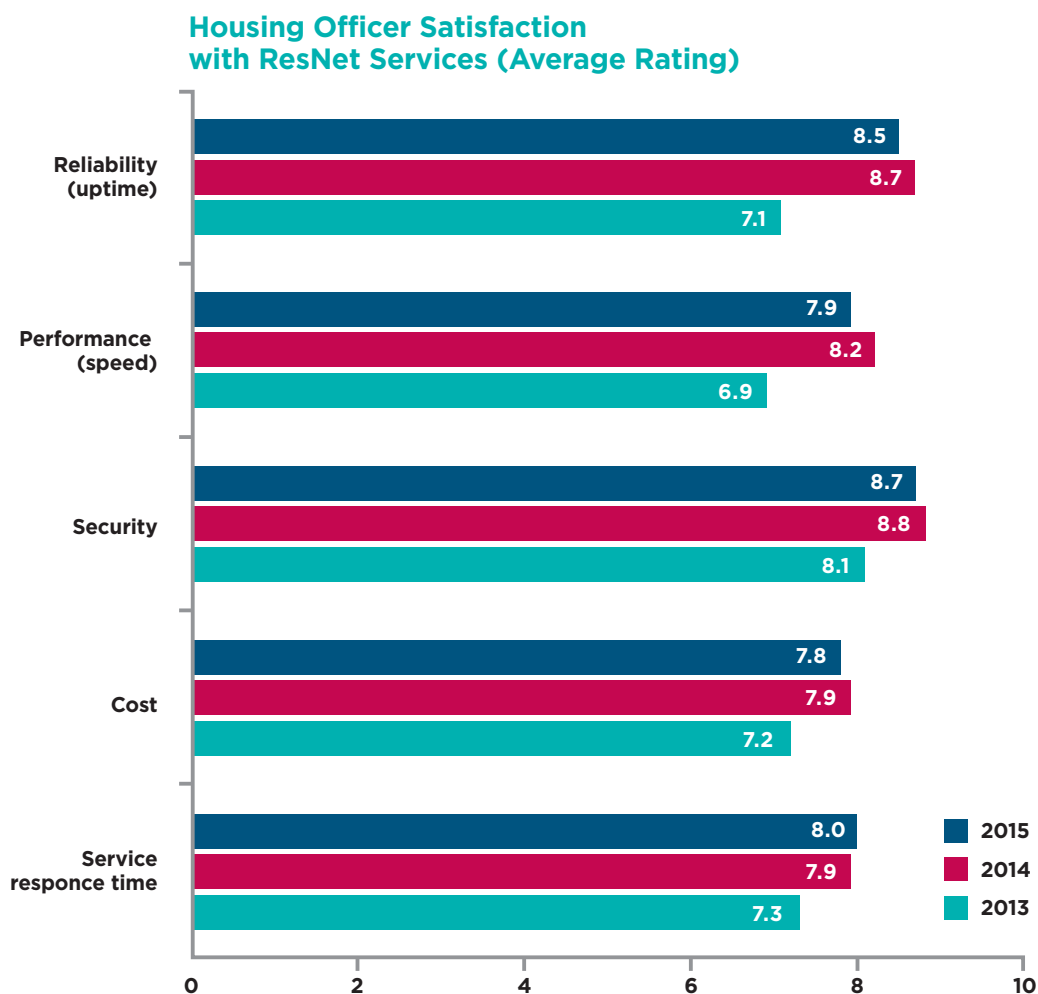


FINDINGS *(continued)*

Level of Satisfaction with ResNet Services

The majority of responding universities and colleges (63.3%) measure student satisfaction with ResNet services. The housing departments (66.1%) are primarily responsible for measuring ResNet satisfaction, while 17.7% of institutions rely on IT for evaluation.

Generally, Housing officers are satisfied with the performance of the ResNet services available to their on-campus residents. However, satisfaction drops when comparing the performance of wired vs. Wi-Fi ResNet services. Housing officers were asked to measure the performance of ResNet services on a scale of 1 to 10, where 1=poor and 10=excellent. The following chart provides the average rating. Scores are slightly lower than 2014 rating in all categories except for service response time.



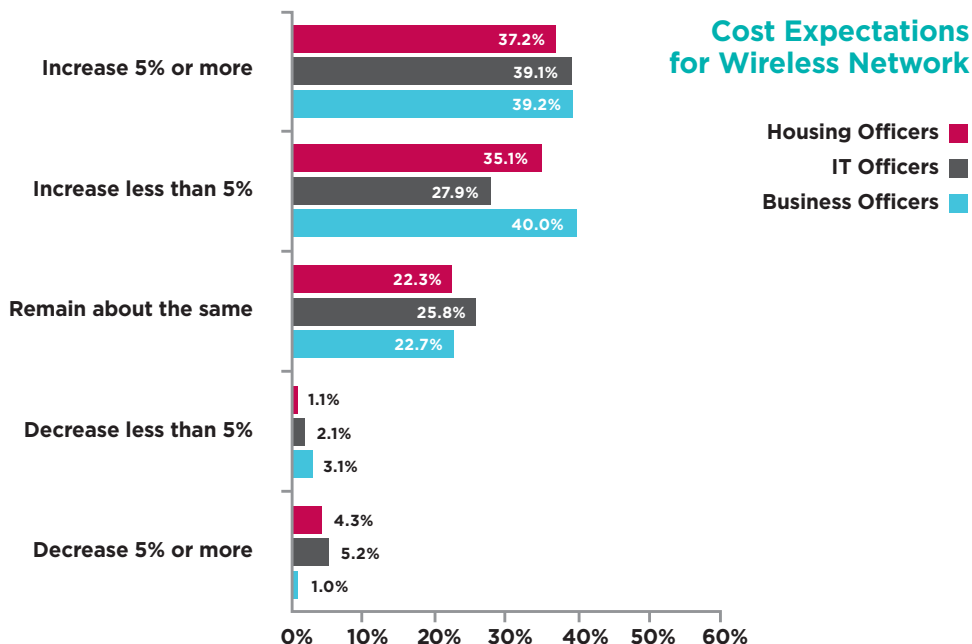
FINDINGS *(continued)*

Funding and Technology Costs

Key Takeaways:

- An increasing number of schools are funding the network as a core service from central university funds.
- An increasing number of respondents expect wireless costs to increase and by larger and larger percentages.
- The number of institutions that saw an increase in ResNet funding jumped from 38% in 2014 to 54% in 2015.
- Slightly more than one-fourth of institutions do not levy a technology fee.

Colleges and universities continue to face an uphill battle with wireless costs and funding. Seventy percent of all institutions expect the cost of wireless network services to increase over the next two years with nearly 40% expecting an increase in cost of 5% or more. A deeper analysis of these findings shows that Business officers have a more discouraging expectation of the future costs of wireless (see chart below), with more than 70% expecting wireless costs to increase. On the positive side, the number of institutions that forecast an increase in ResNet funding jumped from 38% in 2014 to 54% in 2015. Yet, 13% of institutions expected a decline in funding (3% more than last year).



FINDINGS *(continued)*

Who Pays for ResNet Costs & How Costs Are Recovered

Annual budgets for ResNet closely reflect the size of the institution. The majority (41.5%) of institutions have an annual budget of less than \$750,000; more than a third have a budget between \$750,000 and \$2.5 million and 20% over \$2.5 million.

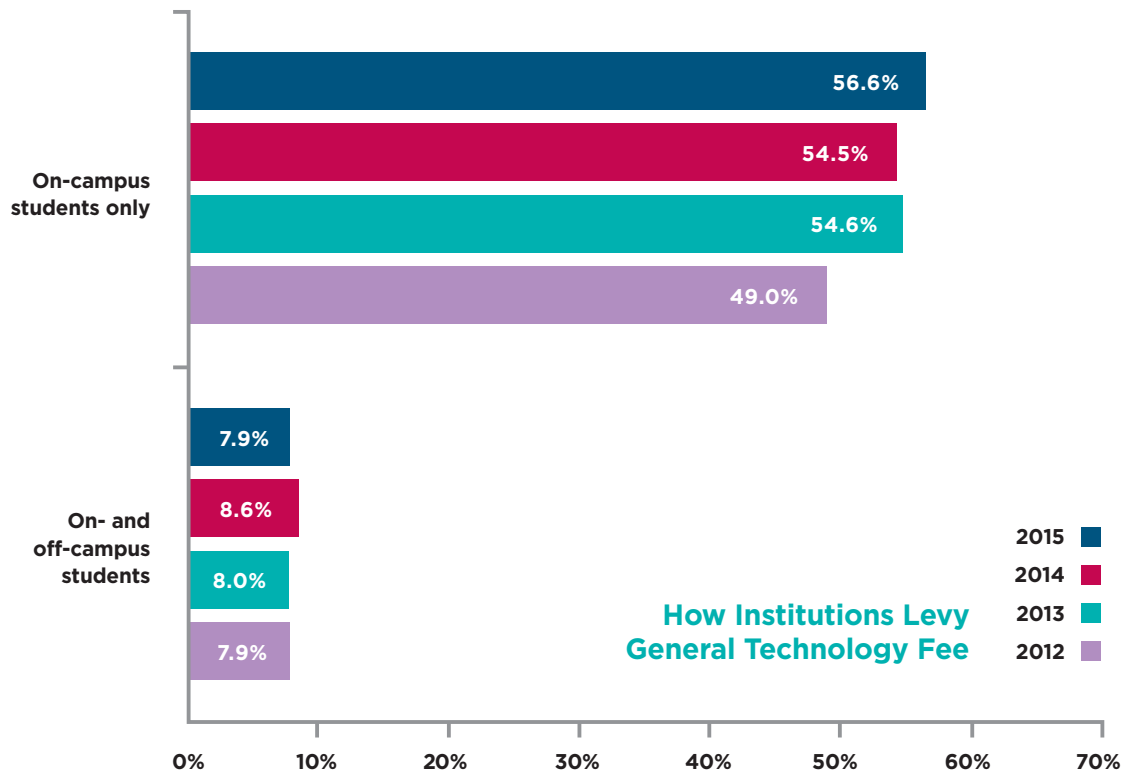
Funding models follow tightly with the size and type of university. Small, predominantly private institutions fund centrally, and medium to large, predominantly public institutions use a fee/recharge system.

An increasing number of schools are funding the network as a core service from central university funds. This could be because network capability and performance is now central to business, academic functions and research.

Funding Models for Campus Telecommunications and Network Services			
	2013	2014	2015
Completely fund the network as a core university service from central university funds.	30.8%	49.3%	47.4%
Partially fund with student fees and partially through central university funds.	35.9%	23.7%	28.6%
Jointly fund the network through central university, student fees and departments.	15.0%	13.8%	15.1%
Partially fund by departmental assistance (colleges and schools) and partially funded by central university funds.	12.8%	9.9%	4.2%

Some technology costs are recovered through a general technology fee. More than half of universities levy a general technology fee to both on- and off-campus residents; 7.9% charge on-campus fees only, while 28.5% of campuses do not levy any fee at all.

FINDINGS *(continued)*



Below are some suggestions from fellow officers to decrease Internet costs:

- Get multiple service providers to compete for the business
- State contract pricing
- Regional network pricing
- Issuing an RFP every three to five years

FINDINGS *(continued)*

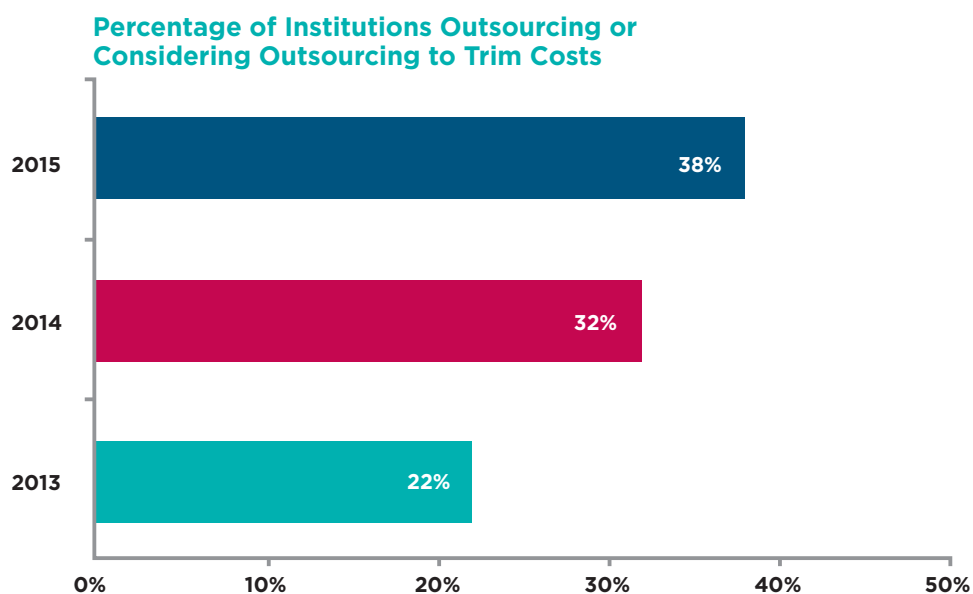
Outsourcing

Key Takeaways:

- The number of schools outsourcing or considering outsourcing continues to increase year over year and has nearly doubled from 22% in 2013 to 38% of schools.
- Outsourcing Internet may be the way of the future as nearly one-fourth of universities are considering an outside entity to provide these services.
- The idea of outsourcing the help-desk is becoming more prominent with 17% of institutions outsourcing or considering outsourcing the services.

Traditionally, colleges and universities have operated their own campus services to provide goods and services needed by the institutional community. Services such as food and bookstores were turned over to vendors, early on, to operate for the institution. A recent phenomenon has been the outsourcing of more and more campus services, including ResNet services. The chart below demonstrates a steady increase in the number of institutions outsourcing or considering outsourcing.

While cost-savings seems to be a predominant reason for outsourcing campus services, many institutions outsource as a way to improve service quality. In the case of ResNet, for example, a private specialist may be able to provide resources and technological expertise to operate the service more efficiently and effectively than the higher education institution.



FINDINGS *(continued)*

Since 2013, the number of institutions outsourcing or considering outsourcing some or all ResNet services has almost doubled from 22% to 38%, reflecting the growing trend toward a shared service model to address complex operational and funding issues that come with managing this critical campus service.

While there is a small decrease in the percentage of schools outsourcing cable, there is a parallel decline in the number of schools that provide cable TV services to on-campus residents. Fewer institutions currently outsource or are considering outsourcing help-desk services compared to other ResNet services. However, this year, more schools outsourced the help-desk than cable television and phone.

Percent of Institutions Outsourcing ResNet Services

	2013			2014			2015		
	Currently outsourcing	Currently considering outsourcing	Total	Currently outsourcing	Currently considering outsourcing	Total	Currently outsourcing	Currently considering outsourcing	Total
Internet	10.8%	3.7%	14.3%	14.5%	8.6%	23.1%	7.6%	21.6%	29.9%
Phone	15.5%	3.0%	18.5%	13.5%	9.9%	23.4%	13.8%	9.6%	23.4%
Cable	48.8%	2.0%	50.8%	53.3%	8.8%	62.1%	47.9%	10.3%	58.2%
Helpdesk	9.9%	3.3%	13.2%	5.4%	8.0%	13.4%	8.3%	8.9%	17.2%



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