Department/Unit: CaTS – Technical Services   **Year: 2018**
Contact Name: Larry Fox   **Contact Title:** Director of Technical Services

Unit Overview/Mission/Purpose

CaTS Technical Services is made up of a number of groups that serve the university's technical infrastructure needs. These groups are: Computer Operations & Scanning, Telecommunications, Networking, Windows and Unix Servers, Storage, Video Services, and Classroom Engineering. These groups provide behind the scenes service to our diverse customer base.

Staffing

	FY16	FY17	FY18	FY19
# Full Time Staff	46	45.5	33	34
# Student Employee FTE				

Success Outcome 1:

The Video Technical Services group works directly with our customers and our Athletic Department to provide video services. These services are streamed to ESPN and to our user community.
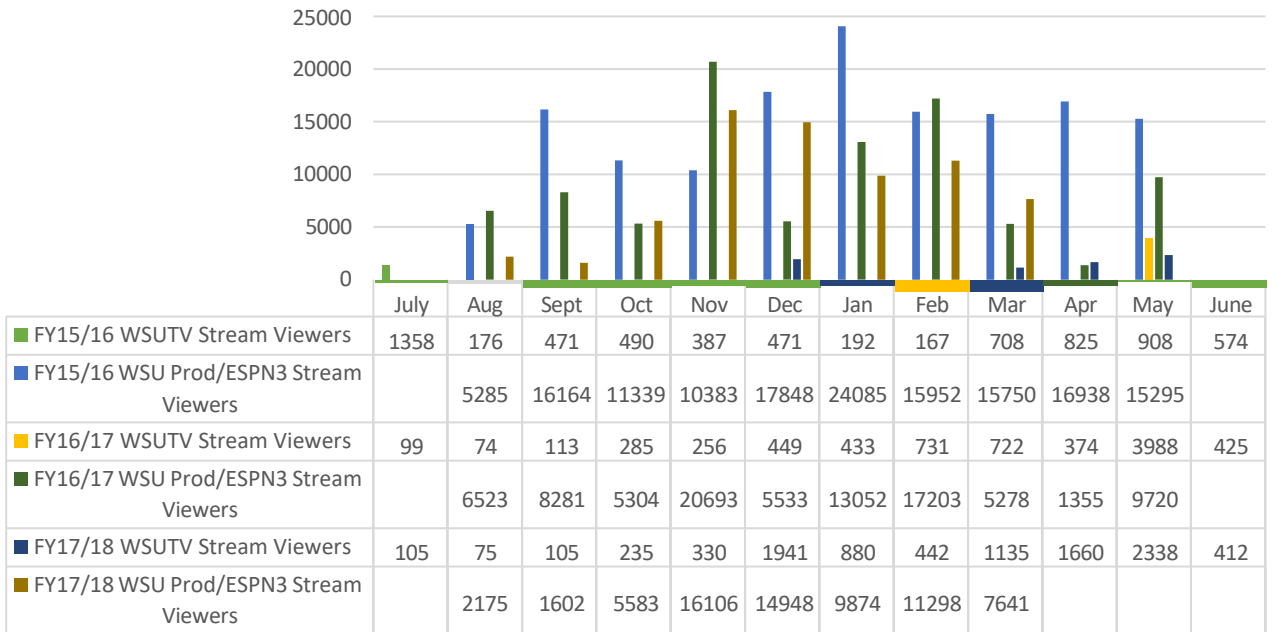
CaTS Video Technology Services Production Requests

FY15/16 - 213 / **FY16/17 - 208** / **FY17/18 - 184**
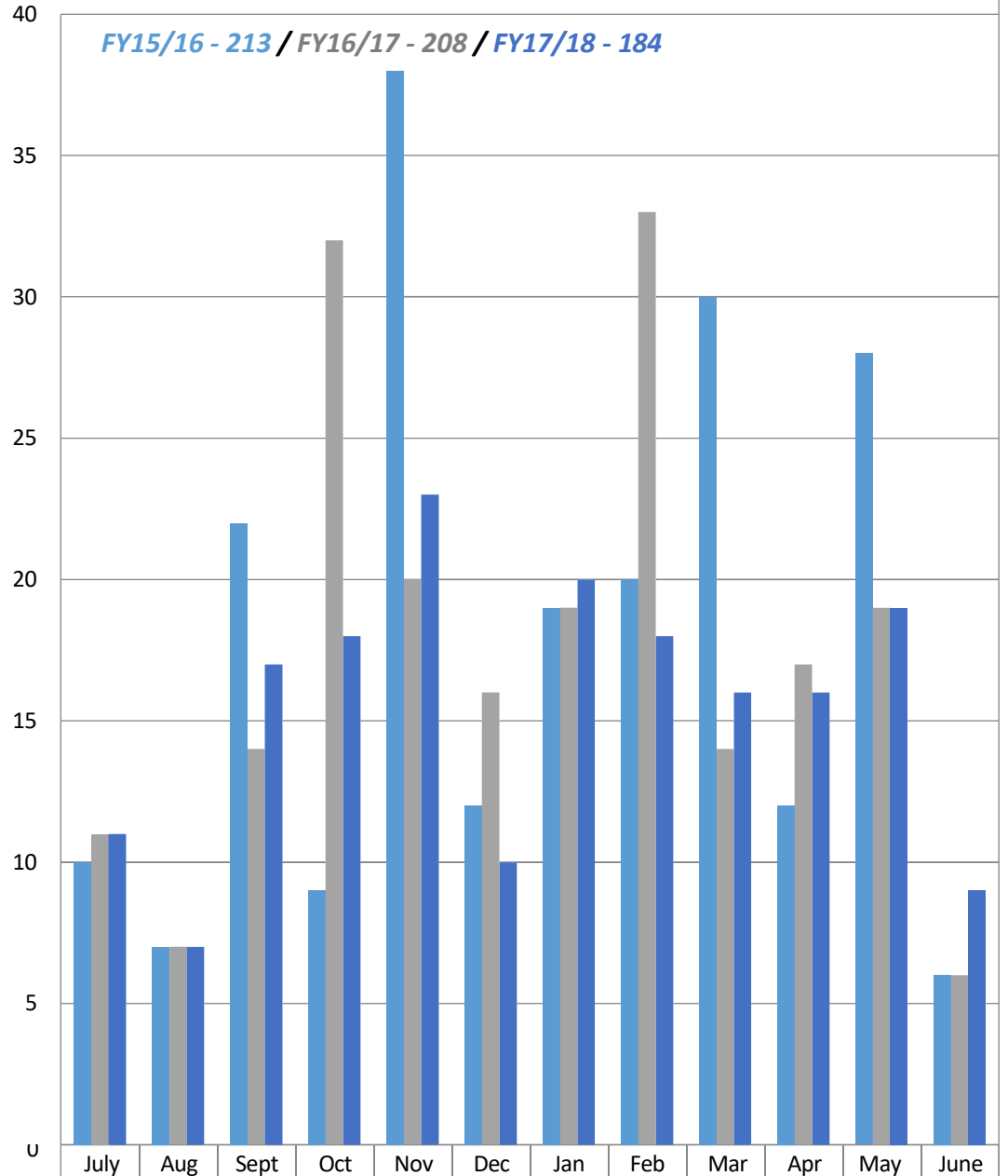
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
■ FY15/16 Requests	10	7	22	9	38	12	19	20	30	12	28	6
■ FY16/17 Requests	11	7	14	32	20	16	19	33	14	17	19	6
■ FY17/18 Requests	11	7	17	18	23	10	20	18	16	16	19	9

CaTS Video Technology Services Stream Viewers

FY15/16 WSUTV - 6727 / FY15/16 ESPN3 - 149039 / FY16/17 WSUTV - 7949
FY16/17 ESPN3 - 92942 / FY17/18 WSUTV - 9658 / FY17/18 ESPN3 - 69227

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
FY15/16 WSUTV Stream Viewers	1358	176	471	490	387	471	192	167	708	825	908	574
FY15/16 WSU Prod/ESPN3 Stream Viewers		5285	16164	11339	10383	17848	24085	15952	15750	16938	15295	
FY16/17 WSUTV Stream Viewers	99	74	113	285	256	449	433	731	722	374	3988	425
FY16/17 WSU Prod/ESPN3 Stream Viewers		6523	8281	5304	20693	5533	13052	17203	5278	1355	9720	
FY17/18 WSUTV Stream Viewers	105	75	105	235	330	1941	880	442	1135	1660	2338	412
FY17/18 WSU Prod/ESPN3 Stream Viewers		2175	1602	5583	16106	14948	9874	11298	7641			

KPI 1.1
Data: Data is collected on a monthly basis and tracked over time
Result: Data shows how many events are completed each month and the number of users that have watched the stream.
Response/Action Plan:

Success Outcome 2:
This is a measure of the Technical Services Group level P1 and P2 problem types. Both of these type of incidents can have a major impact on the campus.

- A P1 is defined as: an incident impacting teaching and learning, or support services, for the entire university or many departments. Core line of business or critical support services are affected.
- A P2 is defined as: an incident impacting teaching and learning, or support services, for a single or few departments. General university support services are affected.
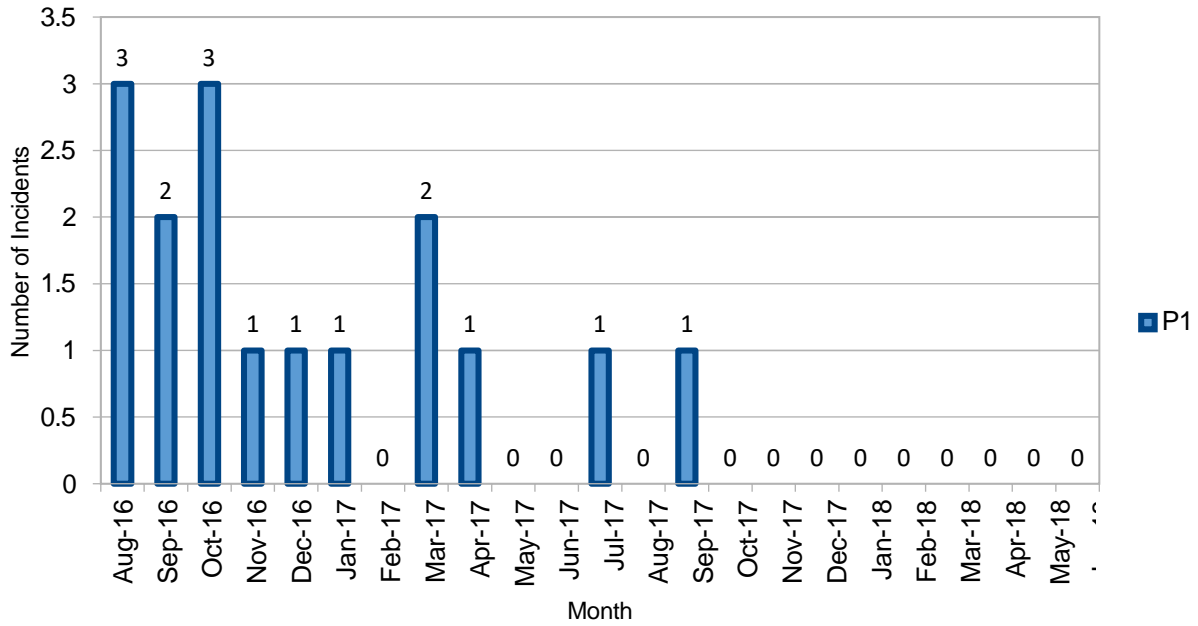
KPI 2.1
**Data:** This data is the number of incidents we have on a monthly basis.
Result: CaTS wants to see this number decline so we don't impact our customers
Response/Action Plan: The Change Management process was put in place in early 2018 and we are already seeing a reduction in the number of incidents.

CaTS Technical Services P1 Incidents by Month

CaTS Technical Services P2 Incidents by Month
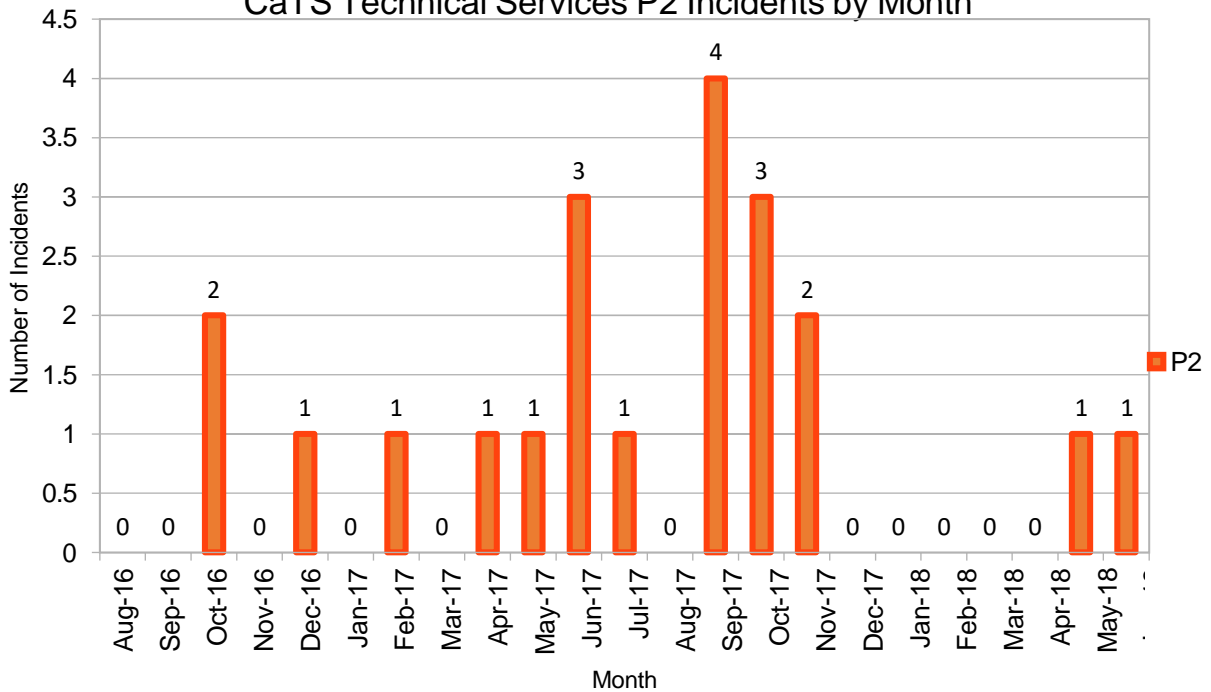
Concluding Remarks:

High priority problems need to be addressed fast to keep the customer impact low. This has always been a priority for the CaTS department and it shows on how we compare with industry.

High Priority Problem time to resolution compared to industry average.
Industry Average: 6 Days 22 hours
WSU: 2 hours

Success Outcome 3:

This is very critical to the campus functioning on a daily basis. The bandwidth utilization has an impact on Faculty, Staff, and Students. CaTS must make sure that we are not utilizing all of our purchased bandwidth. As you can see from the charts below the amount of bandwidth needed to run the university has increased over time as more and more devices are added to the wired and wireless network.

Bandwidth in Mbps

Average Bandwidth in Mbps
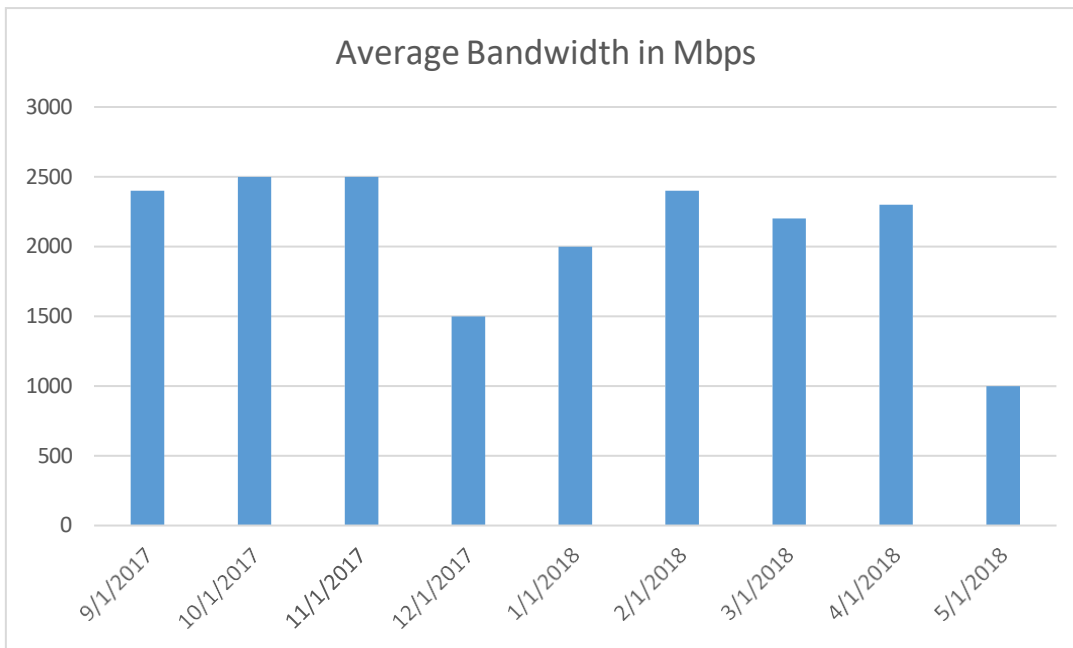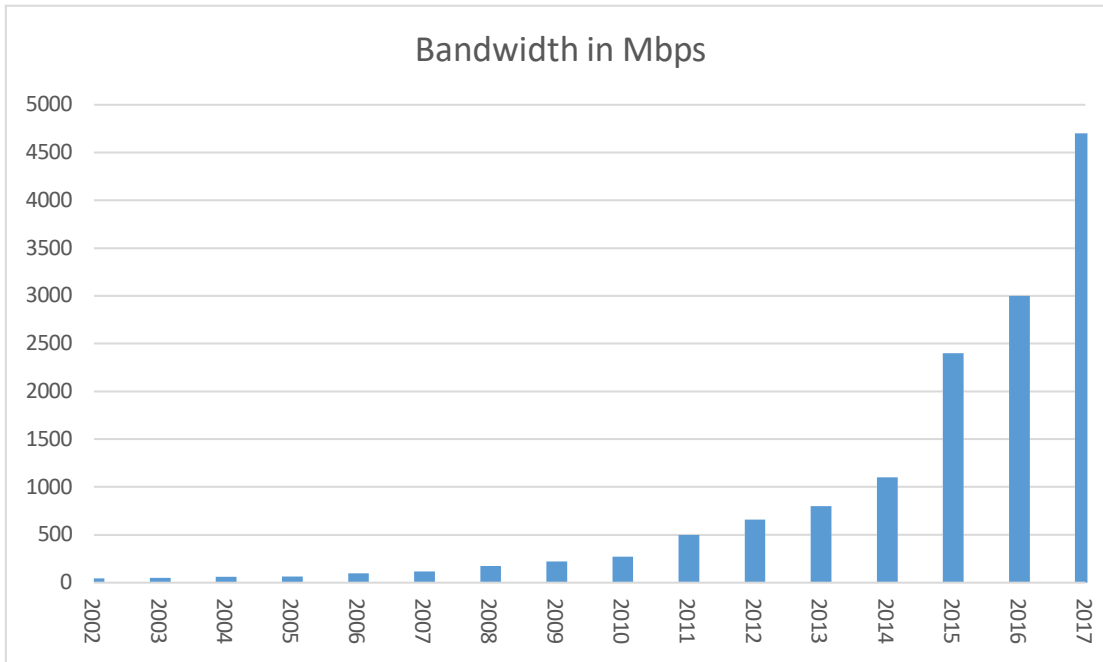
KPI 3.1
Data: The amount of data purchase starts in 2002 when the university purchased 42 Mbps of bandwidth to 2017 when we are at 4700 Mbps of bandwidth needed.
Result: This data is analyzed many times during the semester to make sure that we are not hitting our bandwidth caps and impacting the university

Response/Action Plan: This data is constantly reviewed and discussed to see if any additional bandwidth is needed during the academic year and what is needed when we go into a new Fall Semester.

Success Outcome 4:

This chart shows the number of staff that are managing our network infrastructure compared to industry average.
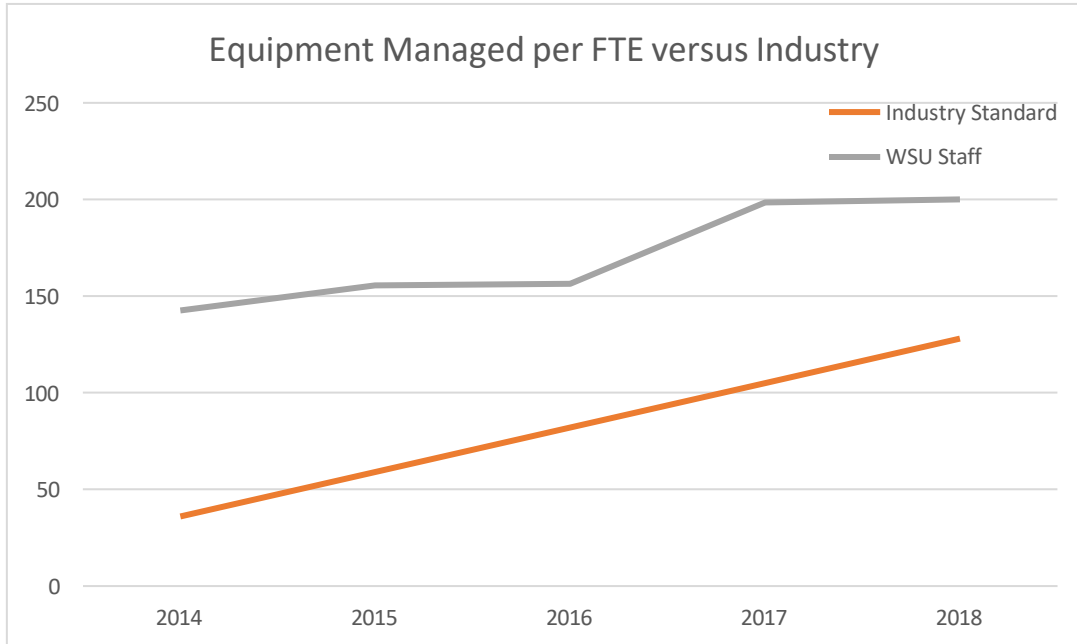
KPI 4.1
Data: Historic equipment per FTE industry standard were obtained and extrapolated as a basis for comparing Wright State's network management workload with industry.
Result: It is clear that each of the network staff manage more equipment on average than that calculated from industry norms.
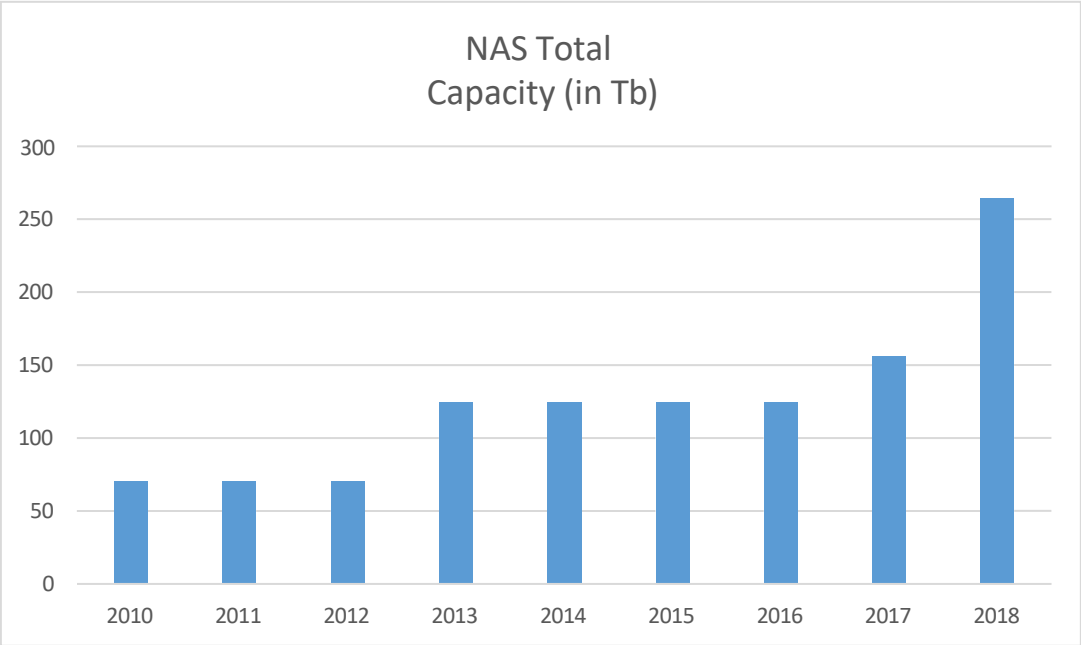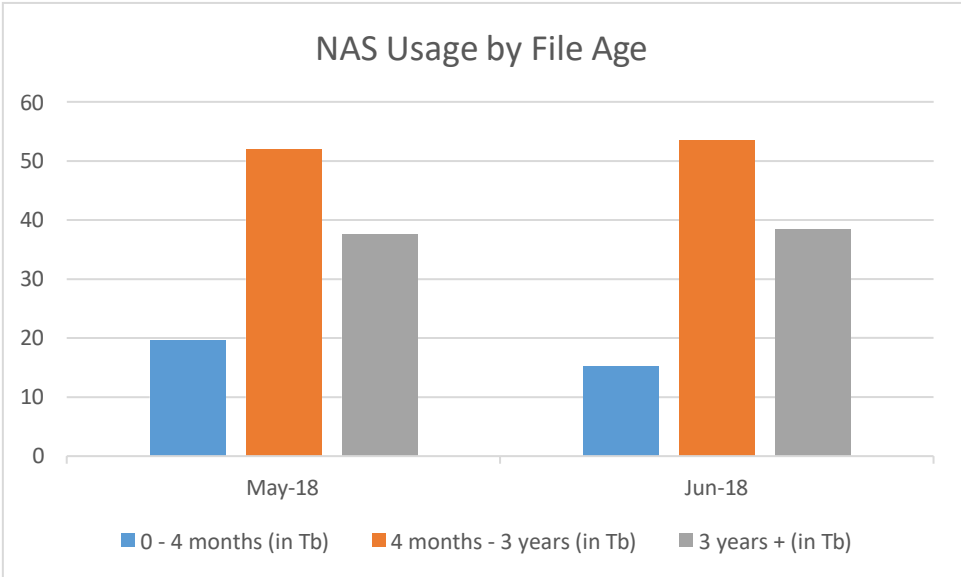**Response/Action Plan:** No action Plan is needed at the current time.

Concluding Remarks:
It is critical for the engineering resources to be maintained at this level. Any additional drop in resources will have a large impact maintaining the campus environment.

Success Outcome 5:

The amount of storage and the availability of enterprise storage is critical to the success of the university. When this data is managed and maintained centrally it can have a backup, replicated at an off-site location, and we have the ability to restore data for the customer.

NAS Usage by File Age

| | 0 - 4 months (in Tb) | 4 months - 3 years (in Tb) | 3 years + (in Tb) |

NAS Total Capacity (in Tb)

CaTS Technical Services - NAS Usage by Share

Shared Area	May-18	Jun-18
Home (in Tb)	3	3.2
Shared (in Tb)	2.4	2.7
Restricted (in Tb)	2.4	3.6
Other Admin and Academic (in Tb)	60.2	64.6

KPI 5.1

Data: Chart 1 NAS Usage by File Age

Technology users create an ever-increasing amount of data; however, much of this data is not accessed beyond a short period of time after its creation. Storing this data creates a challenge

on the enterprise NAS. To address this challenge a tier of lower cost storage was added to the NAS.

Data: Chart 2 NAS Total Capacity

The Enterprise NAS is used to store the University's critical documents and files; the total size of this data is increasing over time. Additionally, Technical Services has significantly increased all user and departmental quotas in an attempt to entice even more users to store their valuable data on this NAS where it is protected against data loss.

Data: Chart 3 NAS Usage by Shared Area

The major shared areas on the Enterprise NAS are: home directories, shared, restricted, and variety of other administrative and academic shares. The amount of data stored in each of these areas is increasing steadily over time.
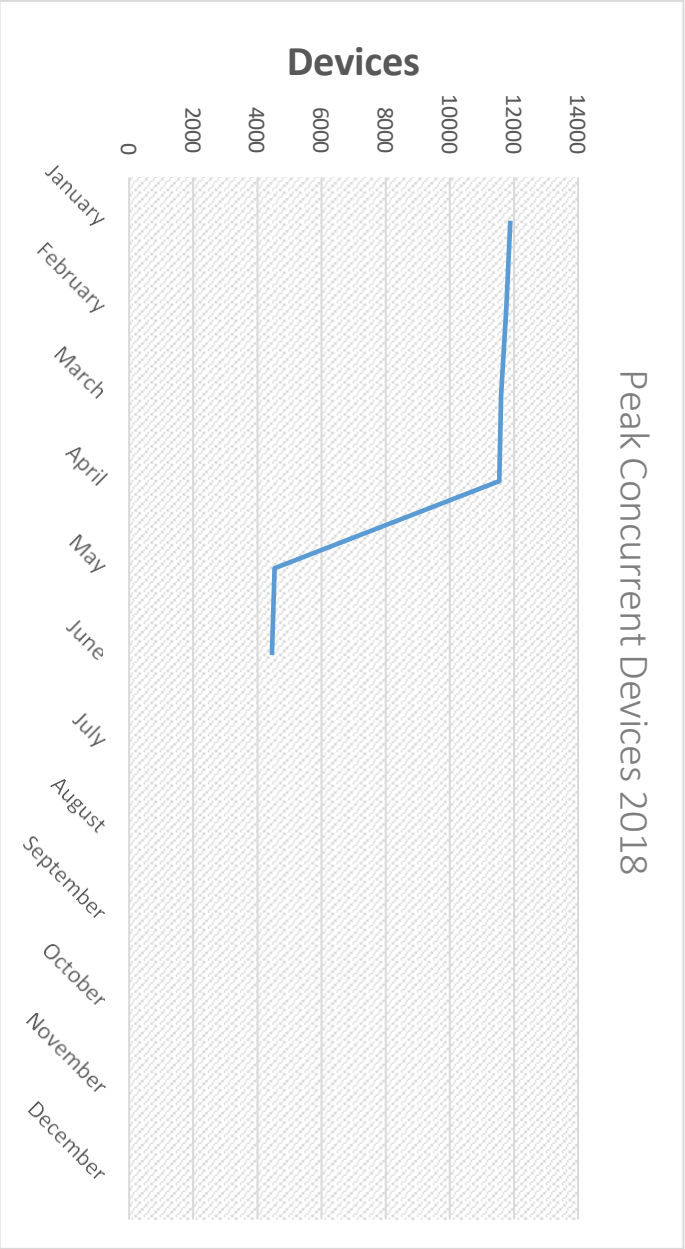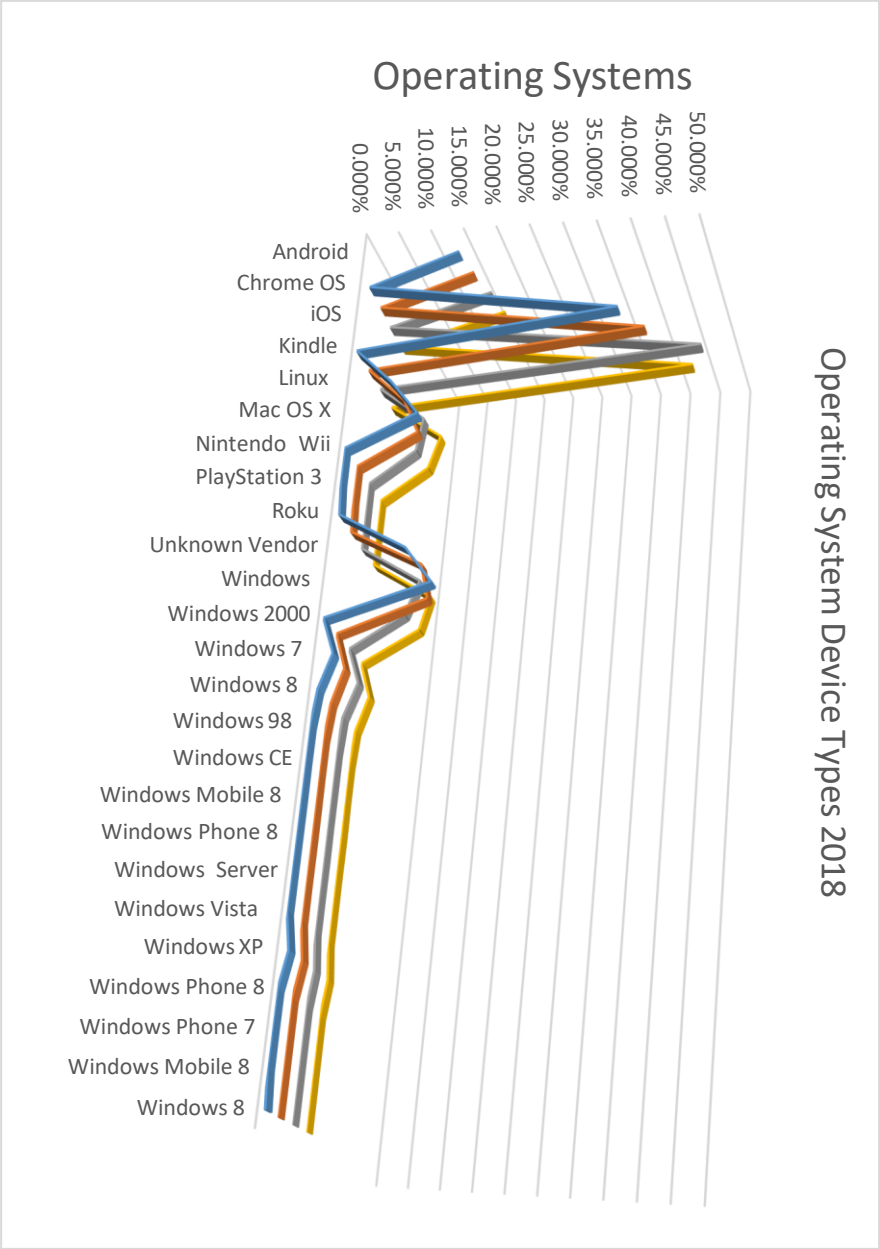
Result: Make sure we have enough capacity for the customer.
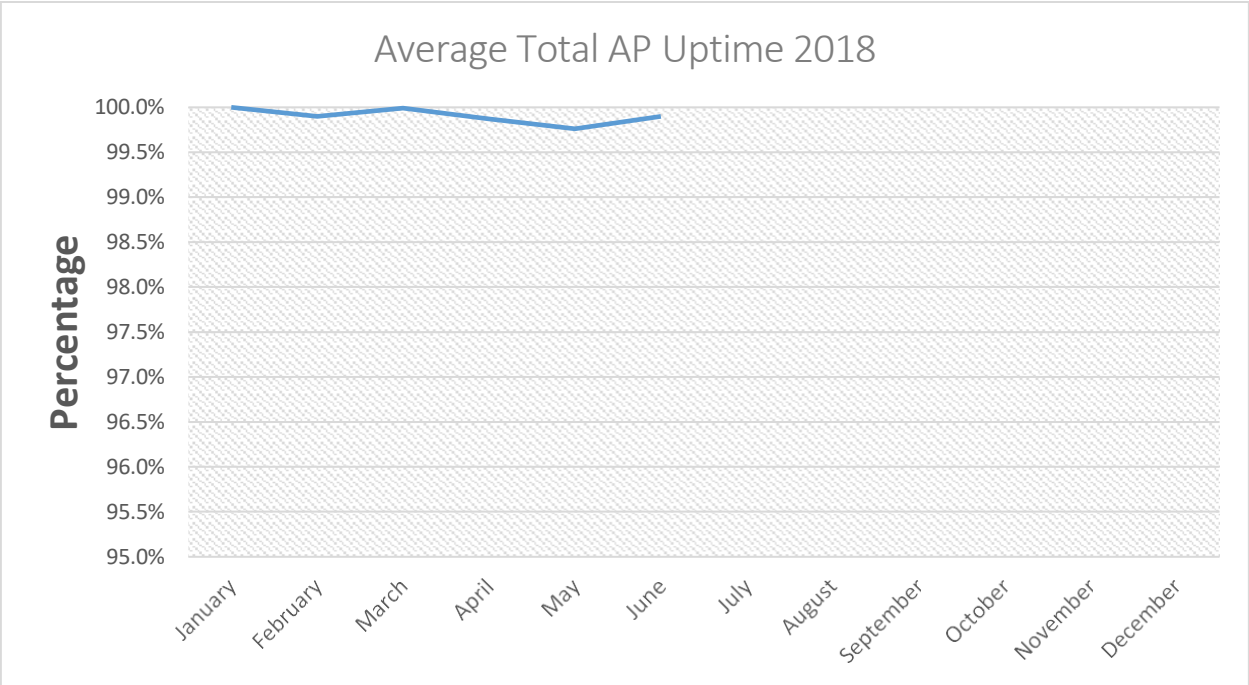**Response/Action Plan:** Analysis is done every year on where we are using the most data, where we have short falls and what needs to be done to have no impact on our customers. These results are included in our 5 year infrastructure planning book.

Success Outcome 6:
Wireless is one of our most critical resources on campus. Everyone uses the wireless network on campus and have come to depend on it just like the wired network. In the last couple of years many customers (Faculty, Staff, Students) have multiple devices that they are using on campus and using them at the same time (laptop, tablet, phone, watch, etc..). This network must be maintained and supported at the highest level. We surveyed all the students on all campuses this Spring and from their recommendations we made enhancements to the network. During the Fall of 2018 we are also doing a major campus wireless upgrade that will include all of our administrative building and the two residence hall that we own (Hamilton Hall and Forest Lane).

Peak Concurrent Devices 2018

Devices

Operating Systems

Operating System Device Types 2018

Average Total AP Uptime 2018

KPI 6.1

Data: This data starts from the beginning of 2018. It will continue to be collected over time. This data will include peak concurrent devices along with average devices on our network on a monthly basis. Included will be uptime AP reports that reflect total number of APs. Device types will also be recorded and will reflect operating system device types.

Result: The results will help determine growth and make sure that we can address any needs regarding licensing, IP addresses and high-density.

Response/Action Plan:
Wireless is provided at every location throughout main campus, residential halls and remote sites. Continuing to monitor the wireless infrastructure is critical to mitigating any possible issues for students, faculty, staff.