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11-9-2022

The Role of IT in Campus Sustainability Efforts: Model Sustainability in IT Operations, Infrastructure, Cybersecurity, and Teaching and Learning

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THE ROLE OF IT IN CAMPUS SUSTAINABILITY EFFORTS

**MODEL SUSTAINABILITY IN IT OPERATIONS, INFRASTRUCTURE, CYBERSECURITY, AND TEACHING AND
LEARNING.**

JT SINGH, KEVIN PARTRIDGE, TERESA HUDSON, AND PETE CALVERT

WEDNESDAY, NOVEMBER 9TH, 2022

YOUR WEST CHESTER UNIVERSITY IS&T SUSTAINABILITY DISCUSSION PANEL:

JT Singh,
Chief Information Officer and Sr. Associate VP

Kevin Partridge,
Deputy CIO and Executive Director

Teresa Hudson,
Director of Technical Support Services

Pete Calvert,
Director of IT Strategic Planning & PMO

Mission Statement

WCU IS&T supports student success through strategic information technology and partnerships with the entire university community.



01

The concept of
Green IT

02

Other senses of
the word
“Sustainability”
for IT

03

Questions and
Open Discussion

AGENDA IN 3 PARTS

IT ASSET MANAGEMENT

- End-User Devices
 - 6,300+ university owned and remotely managed computers & tablets (4-5 year replacement cycle)
 - 400+ multimedia/audio-visual systems (6-8 year replacement cycle)
 - 600+ printers
- IT Infrastructure
 - 4,000+ wireless access points
 - 800+ network switches
 - 100+ network routers

ENERGY SAVINGS

- IS&T procures Energy Star certified hardware.: [What is ENERGY STAR](#)
- Some examples are:
 - Campus computers and Multi-Function Printers - configured for sleep mode after 15 minutes of inactivity
 - Digital Signage monitors configured to power off after hours
 - This solution reduces printed paper posted on campus bulletin boards
 - Classroom presentation systems are configured to power off after hours
 - IS&T transitioned from projector bulbs to laser projectors which consume less energy
 - Data Center Hardware



RECYCLING

- Outdated/damaged university owned technology hardware recycled by R2 (Responsible Recycling) certified vendor

Fiscal Year	IS&T Recycling	
	Gross Weight of Material Recycled (lbs)	# of Items Recycled
FY19	27,751	N/A
FY20	19,790	N/A
FY21	18,966	1,629
FY22	29,603	1,500
July/August 2022	10,808	738
TOTAL:	106,918	3,867

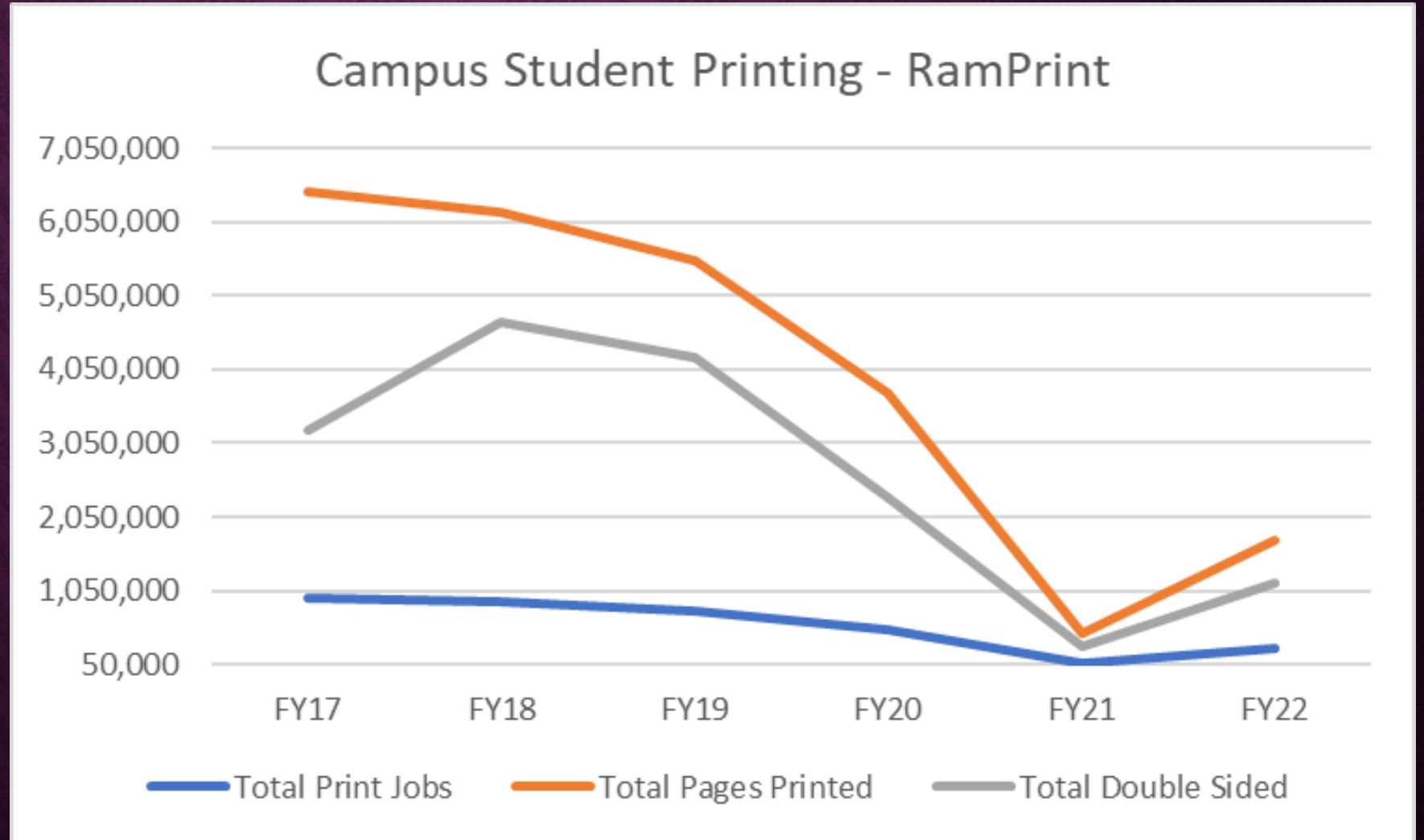


GREEN OFFICE PROGRAM

- IS&T collaborates with the Sustainability Office in support of the Green Office Program and working digitally:
 - Mobility First (laptops more energy efficient than desktops)
 - Platform Agnostic Solutions (Windows, Mac, Google Workspace, Office365, D2L, RamCloud)
 - Unified Communications (Jabber and Teams)
 - VPN (Virtual Private Network) for remote access to university resources
 - Create awareness on the sustainable impact of multi-function printers and RamPrint
 - Secure printing of all print jobs
 - Configured for default duplex printing (double-sided)
 - Students limited to 125 pages per week



STUDENT (RAMPRINT) PRINTING DATA



CAPITAL PROJECTS: DESIGNED TO SUPPORT SUSTAINABILITY

- Sciences and Engineering Center and The Commons (SECC)
 - Configurable technology.
 - Writable Surfaces within the space – less paper use.
 - We support/ configured the Lutron server which allows facilities to turn lighting on/ off remotely.
 - Continued card access reader installations allow for remote space management.
 - Video streaming is being installed.
 - The building itself – green roof, energy efficiency, LEED certified.
 - Powered Fiber - power and data from single cable for long distance runs; which allows less network equipment to reach longer distances for security cameras and outdoor wireless access points on light poles.



LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)



IT INFRASTRUCTURE SUSTAINABILITY

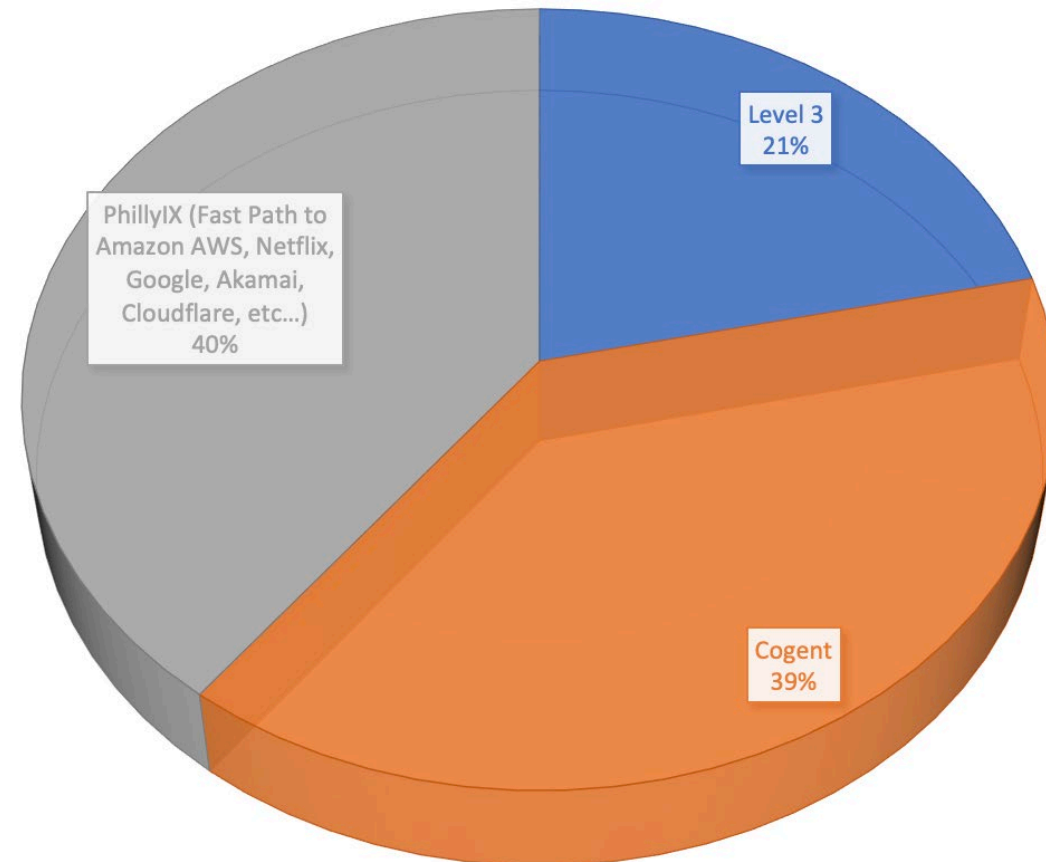
IT INFRASTRUCTURE: PHYSICAL FOOTPRINT

- (4000+) wireless access points (5-year replacement cycle)
- (800+) network switches (5-year replacement cycle)
- (100+) network routers (5-year replacement cycle)
- (250+) network room battery backup UPS units (*new 8-10-year replacement cycle)
- (2) core routers (5-year replacement cycle)
- External Network Access
 - (2) Primary 10 Gigabit Internet Connections
 - (1) 100 Gigabit “Fast Path” network connection to content deliver networks (Amazon AWS, Netflix, Google, Akamai, Cloudflare, etc...)
- (2) fully redundant 24/7/365 data centers
 - Allegheny
 - E.O. Bull

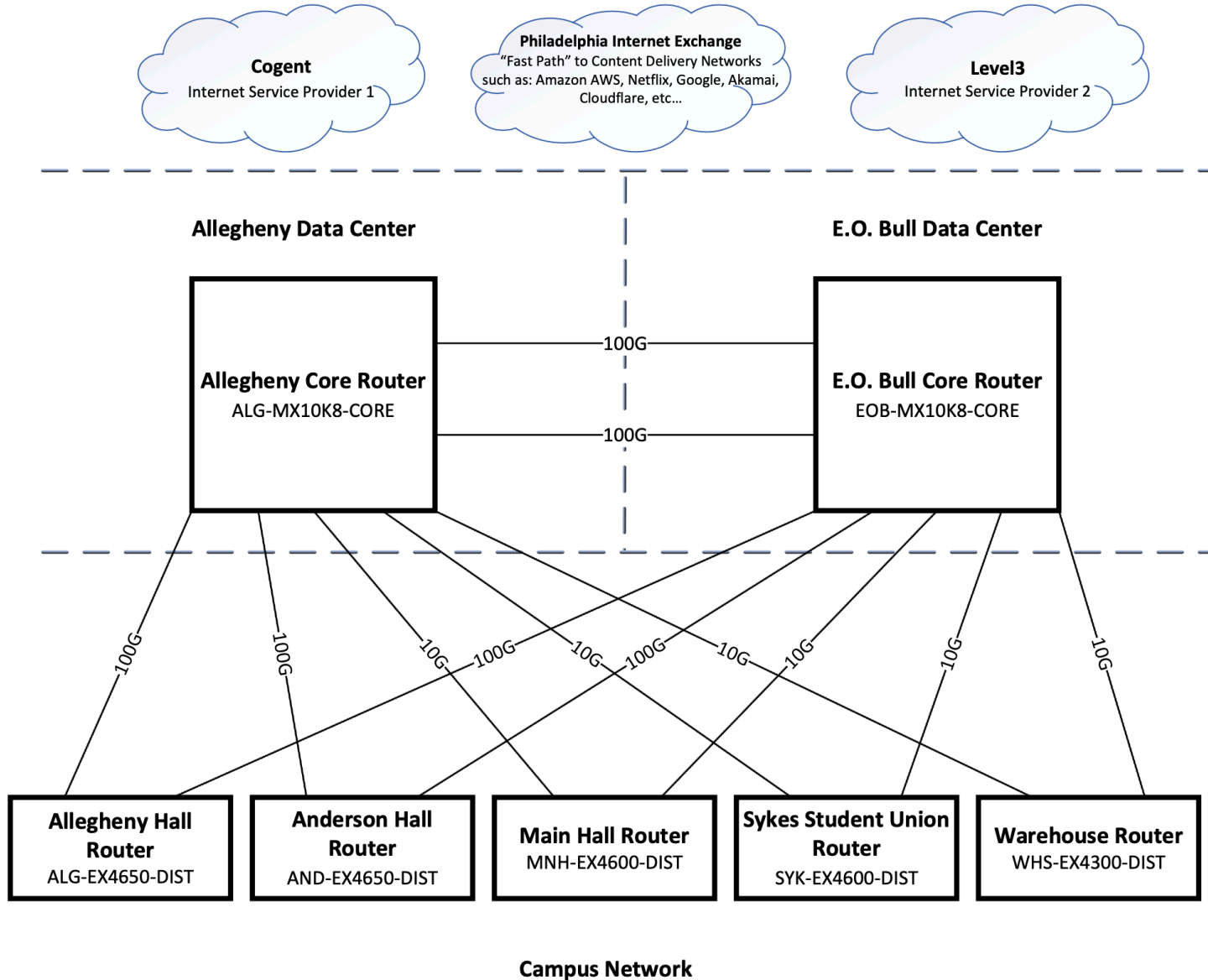
WHAT DOES THIS IT INFRASTRUCTURE SUPPORT AND HOW DO WE REMAIN “SUSTAINABLE” ?

- An average of 17,000+ devices are connected to our wireless networks on a daily basis
- 70,000+ unique devices connected to our network on a monthly basis
- Internet network traffic averaging 8.5 Gbps (gigabits per second) daily
- ~38,000 network ports with power over ethernet (PoE)
 - providing power and network access to wireless access points, classroom A/V equipment, cameras, telephones, door locks, e-phones, card readers, temperature sensors, clocks, etc..
- 2.5 million daily authentication requests
- Achieving 99.99% uptime of all our services

DISTRIBUTION OF INTERNET TRAFFIC



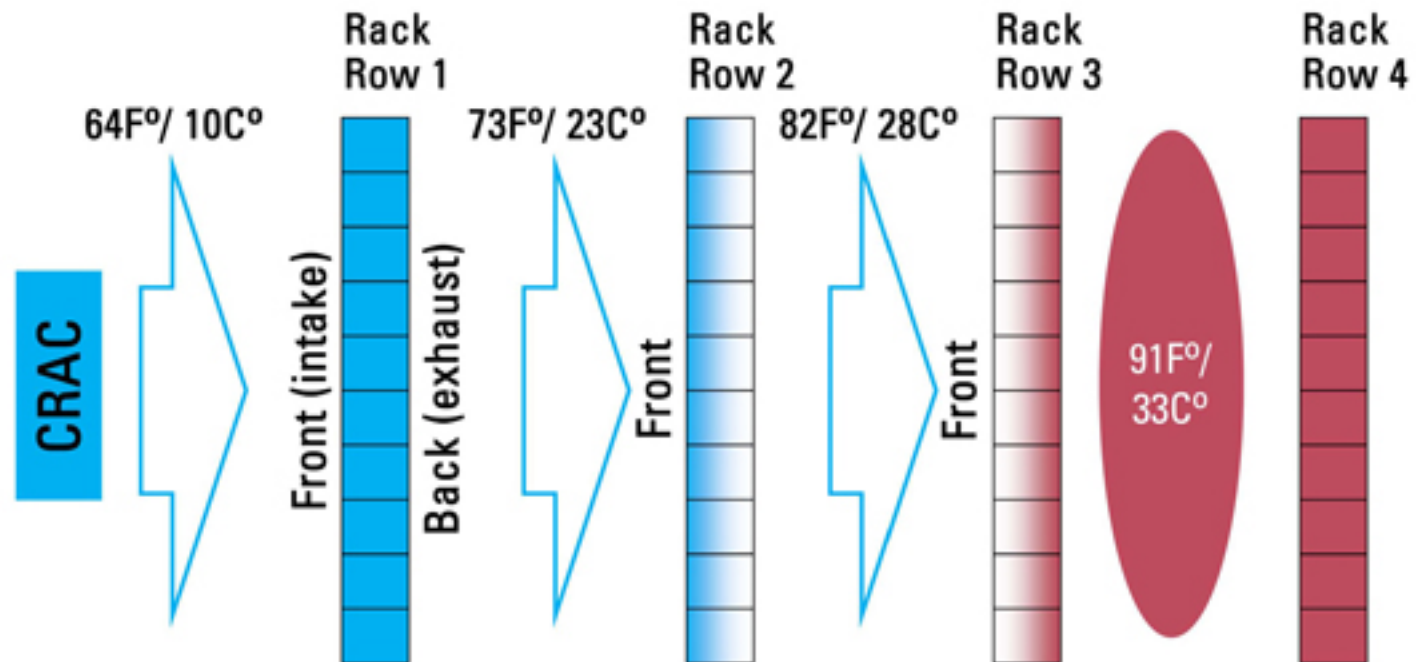
SUSTAINABLE NETWORK AND INTERNET CONNECTIVITY HA DESIGN



DATA CENTER / NETWORK SUSTAINABILITY

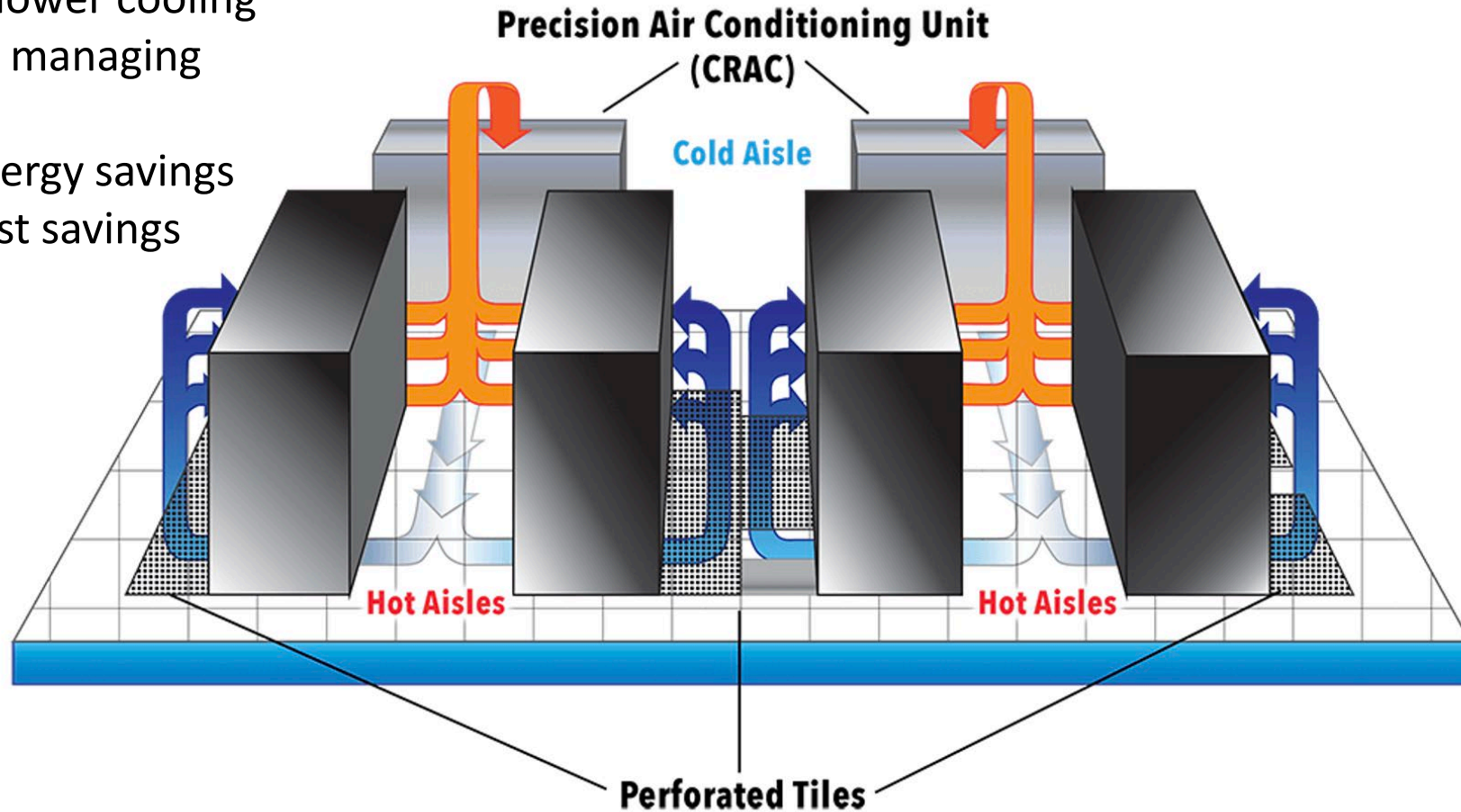
LEGACY DATA CENTER COOLING DESIGN

- **One-way front to back cooling**
 - energy inefficient
 - more costly to cool
 - higher equipment failure rate



HOT AISLE / COLD AISLE DATA CENTER COOLING DESIGN (IN USE @ WCU SINCE 2009/2010)

- **Energy Efficiency and Cost Savings**
 - hot aisle/cold aisle arrangements lower cooling costs by better managing airflow
 - 20% to 25% energy savings
 - 10% to 35% cost savings



NEW LITHIUM-ION NETWORK ROOM BATTERY BACKUP SYSTEMS BEING DEPLOYED AT WCU



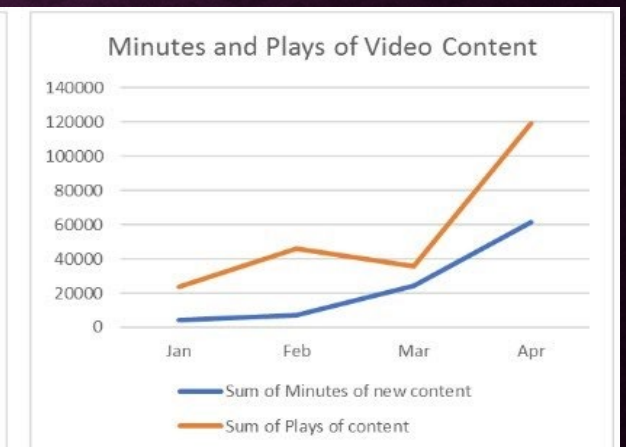
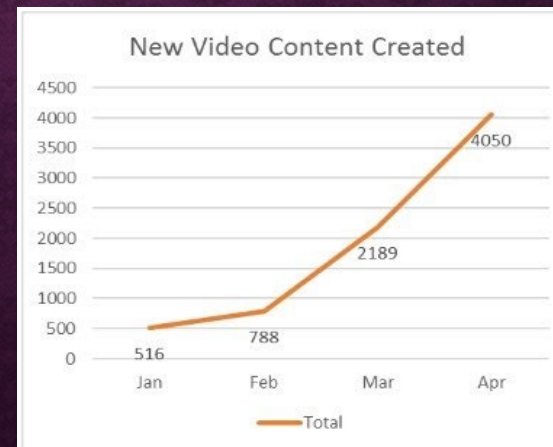
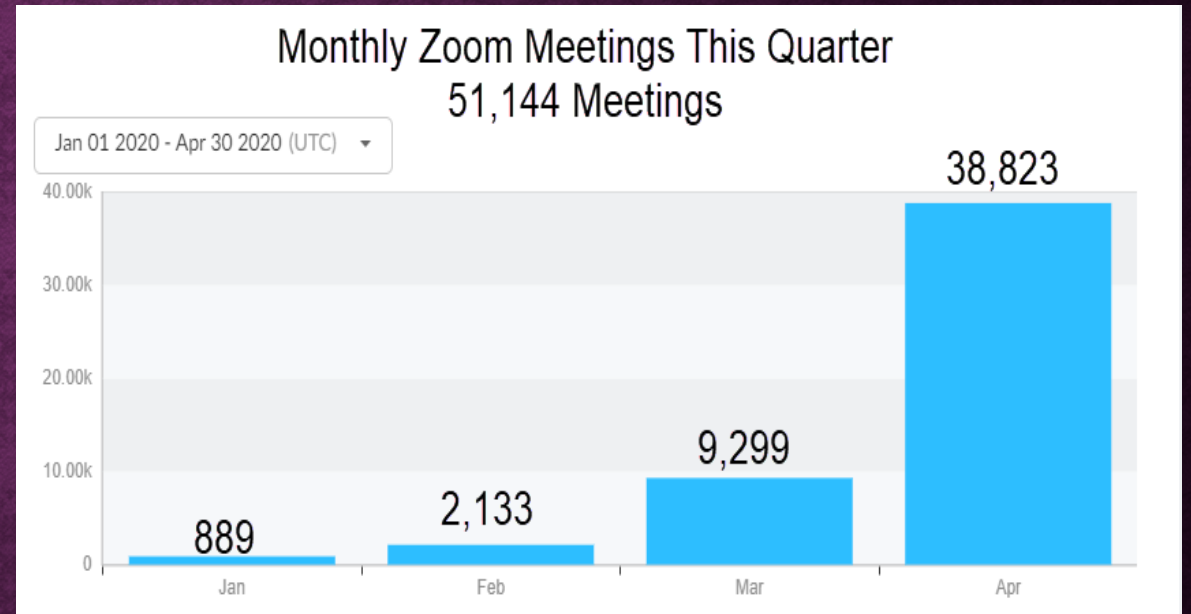
- **Lithium-ion batteries**
 - Have a significantly longer lifespan
 - compared to a traditional lead-acid battery technology that typically lasts three to five years
 - lithium-ion technology can provide a battery service life of eight to ten years
 - this leads to savings in human capital (less often replacement of units) and less materials in landfill
 - Contributes to a Lower Total Cost of Ownership
 - lithium-ion batteries can provide up to 50% savings over their life expectancy
 - this is primarily due to their longer lifespan, high-temperature resilience, reduced maintenance expenses
 - Faster to recharge
 - lead-acid batteries can take over 12 hours to charge from 0% to 90% of full runtime capacity
 - lithium-ion batteries take only 2 to 4 hours to recharge

SUSTAINABLE IT SOLUTIONS & PRACTICES

- **University Cyberinfrastructure**
- **Digital Learning**
- **Digital Transformation of University Business**
- **Support and Training**
- **Governance & Stewardship**

COMPARISON OF PRE & POST PANDEMIC DATA

March 30, 2020	
D2L Logins	> 17,000
Newly Activated Courses	> 150
Weekly Zoom Meetings	> 6,000
Zoom Meeting Participants	> 10,500
New Instructional Media (Kaltura)	> 2,900 vids
Instructional Media Viewed	> 25,000 vids



E-TEXTBOOK INITIATIVE

Notable Numbers



15
eTextbooks
produced



2,858
students
supported



Used in 139
course
sections



\$117,296 in
student
savings

DIGITAL TRANSFORMATION

Acceleration and scaling of existing and new services as IT demand is always greater than supply.

Some notable examples:

- DocuSign implemented for electronic signatures
 - Eliminates paper and shipping costs.
- Streamlined IT service management workflows and processes (ServiceNow)
- Automation (Chatbots)
- Enhanced Cybersecurity (Multi-Factor Authentication, Managed Detection and Response Systems)
- Data Driven Decision Making (Early Alert Systems, Dashboards, User Surveys)

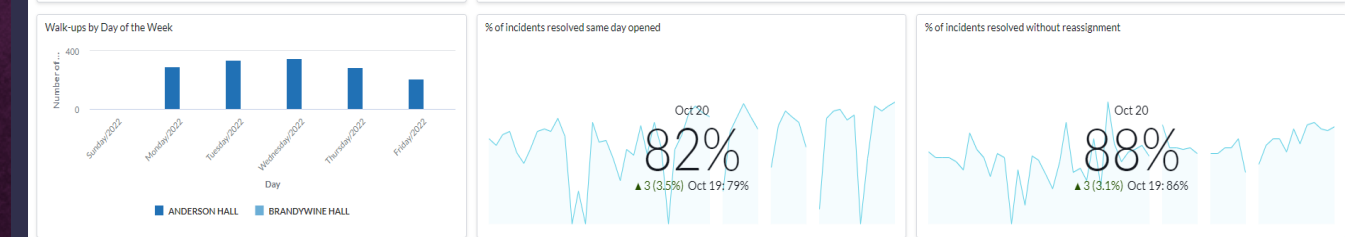
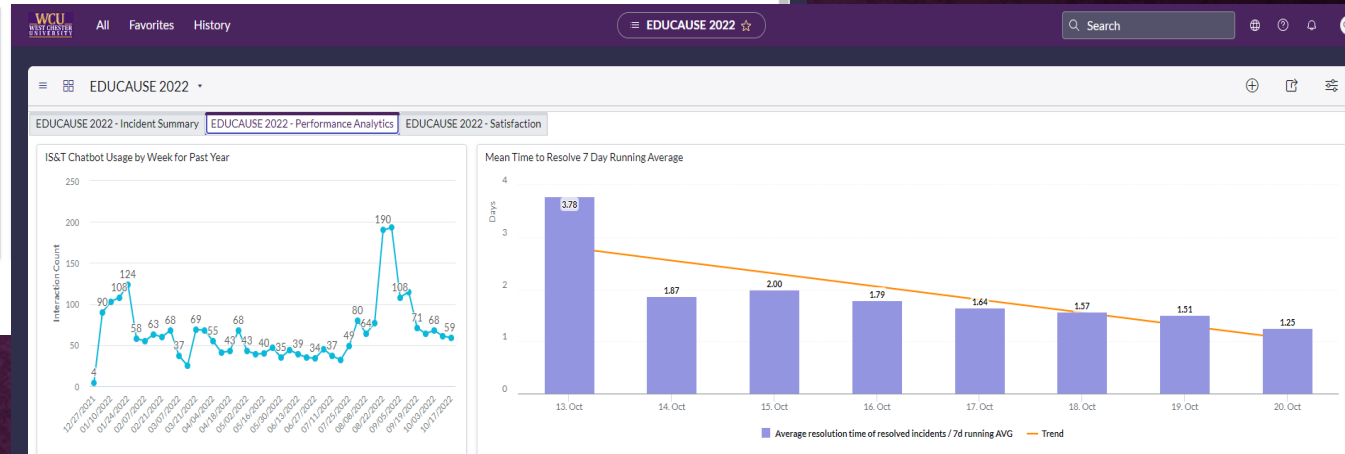
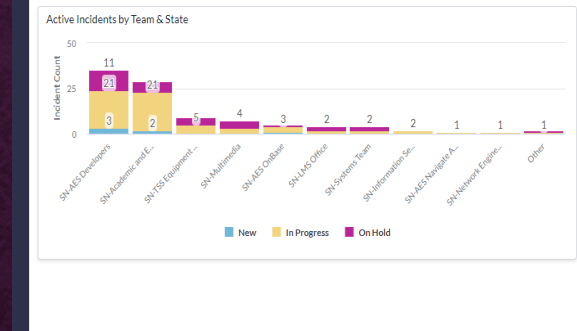
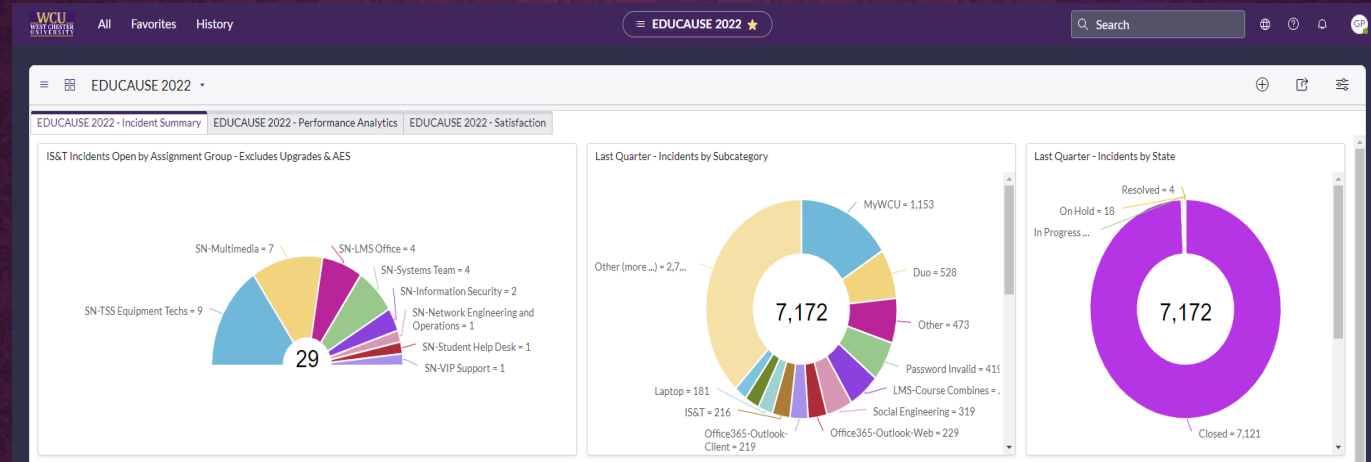
INCREASED PRODUCTIVITY & EFFICIENCY

- IT Support Productivity

- 7,000+ Incidents Last Quarter
- 106 Average Open Incidents
- **82% Resolved Same Day**
- **88% Resolved without Escalation**
- **89% Resolved within SLA**
- **94% Satisfaction Rating**

- IT Self-Service

- Over 500 Intuitive KB Articles
- Average 1,309 KB Article views per week
- **12% Incidents are resolved by Chatbot**



MOONSHOT FOR EQUITY TECHNOLOGY ACCESS

- During the height of the pandemic, IS&T processed over 1,500 loaner requests for equipment.
 - Students expressed a need for laptops, webcams, and even internet connections
 - Laptops from carts were reconfigured to supply an emergency lending program
 - **Over 1500 devices shipped within the first 6 months of the COVID-19 Pandemic**
- Moonshot for Equity: IS&T created pathways to align students with technology resources
 - FHG Library short-term (2-week) lending program
 - Academic Success Program
 - College of Education & Social Work
 - IS&T long-term (2 semesters) lending program
 - <https://www.wcupa.edu/infoServices/serviceNow/resourceLinks.aspx>
 - **386 laptops have been provided to students in Fall 2022, and 36 to Adjunct Faculty**



Q&A