

SUCCESS MEASURES

INFORMATION TECHNOLOGY

December 2022



COLORADO

COMMUNITY COLLEGE SYSTEM

Mission for System IT

• Vision of Success (What we seek to be)

- We strive to be a model information and technology organization recognized for proactive leadership, collaboration, innovation, transparency and responsive customer service.

• Mission Statement (what we do)

- We, the employees of the Colorado Community College System Information Technologies, are committed to
- Providing a robust and solid technology infrastructure
- Facilitating the colleges' ability to teach and students' ability to learn
- Supporting operational services and business functions at both enterprise and distributed levels.
- Align our efforts and our projects with Colorado Community College System's strategic goals of transform the students experience, transform our own workforce experience, create education without barriers through transformative partnerships, redefine our value proposition through accessibility, affordability, quality, accountability, resource development and operational excellence.

• Core Values (Guiding Principles for achieving our mission and vision)

- **Pride:** we take pride in our work. We strive for personal and professional excellence. We recognize and reward initiative and problem solving.
- **Quality:** We ensure that our services and deliverables meet industry best practices found in both the technology and higher education industries while we adapt to an ever-changing technology environment.
- **Respect:** We appreciate and value one another. Our actions are carried out with trust, integrity and fairness.
- **Service:** We focus on our customer needs, while being flexible and adaptable to business requirements. We recognize in order to improve service, we must be a learning organization that seeks improvement and embraces accountability in a pro-active manner.
- **Teamwork:** We support a cooperative work environment. Our team is strengthened by the diversity and contributions of each member. We strive to communicate openly and honestly.
- **Collaboration:** We work together with our customers to find reasonable and flexible solutions to their business problems. We seek to listen to our customers, understand their perspective and support their needs. We strive to say, "yes, we can".
- We support and encourage an inclusive and transparent governance process for IT investments and projects.



1 INTRODUCTION

The goal of the Information Technology division at Colorado Community College System Office (System IT) is to provide the CCCS colleges and System Office with the highest quality technology-based services, in the most cost-effective manner, to facilitate the Colleges' mission as it applies to administration, teaching, learning, and community. Under the leadership of the Vice Chancellor for IT and CIO, System IT seeks to foster partnership and collaboration with academic and administrative units across all CCCS colleges in order to create a robust, best-in-class IT environment centered around student success and organizational effectiveness.

System IT creates a significant positive impact on the daily business activities across all the CCCS colleges and System Office and in this report we provide an insight into the contributions System IT makes on a daily basis by summarizing key figures and statistics that illustrate these accomplishments. Unless stated otherwise, the statistics included in this report are from June 2021 through May 2022.



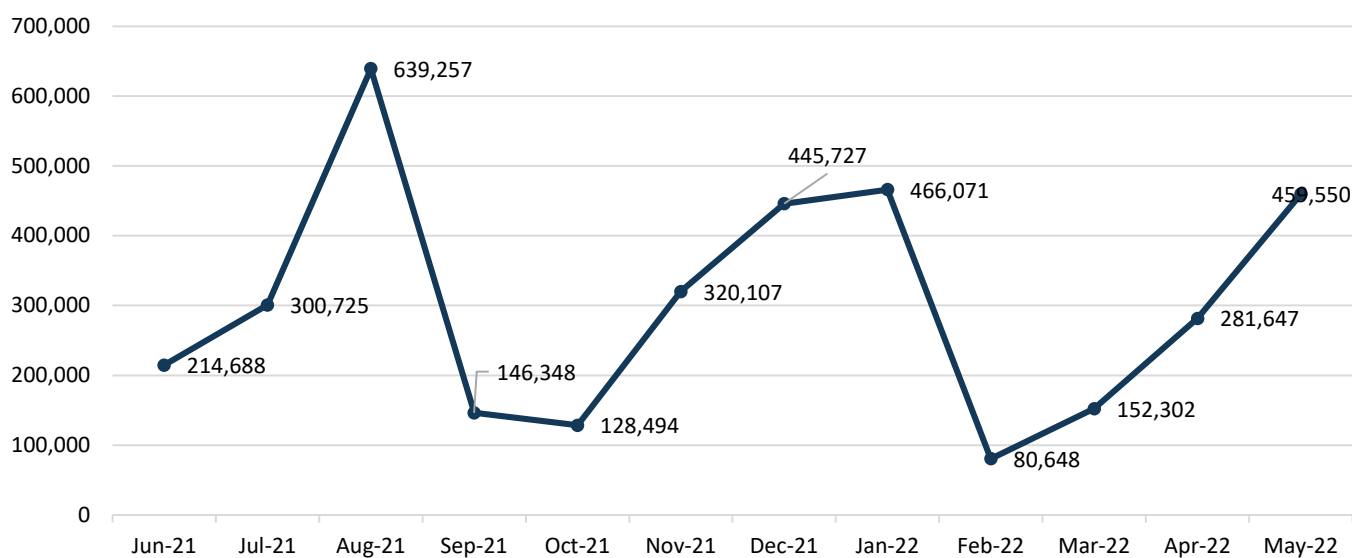
2 ELLUCIAN BANNER

- Ellucian Banner is the CCCS enterprise resource planning (ERP) system.
- System IT locally maintains and supports Admin Pages (also known as Banner 9) and Banner Self-Service (SSB).
- Banner 9 and SSB contain several modules, including Banner Student, Banner Finance, Banner Human Resources, and Banner Financial Aid.



2.1 BANNER STUDENT TRANSACTIONS

- Activities conducted directly by students within Banner applications.
- Includes student registrations, adds, and drops.
- Student registrations, adds, and drops can be initiated using other applications, such as Banner self-service, EAB Navigate, or the Mobile App.
- Regardless of the registration application, all student transactions are eventually processed by Banner and stored in the Banner Database.

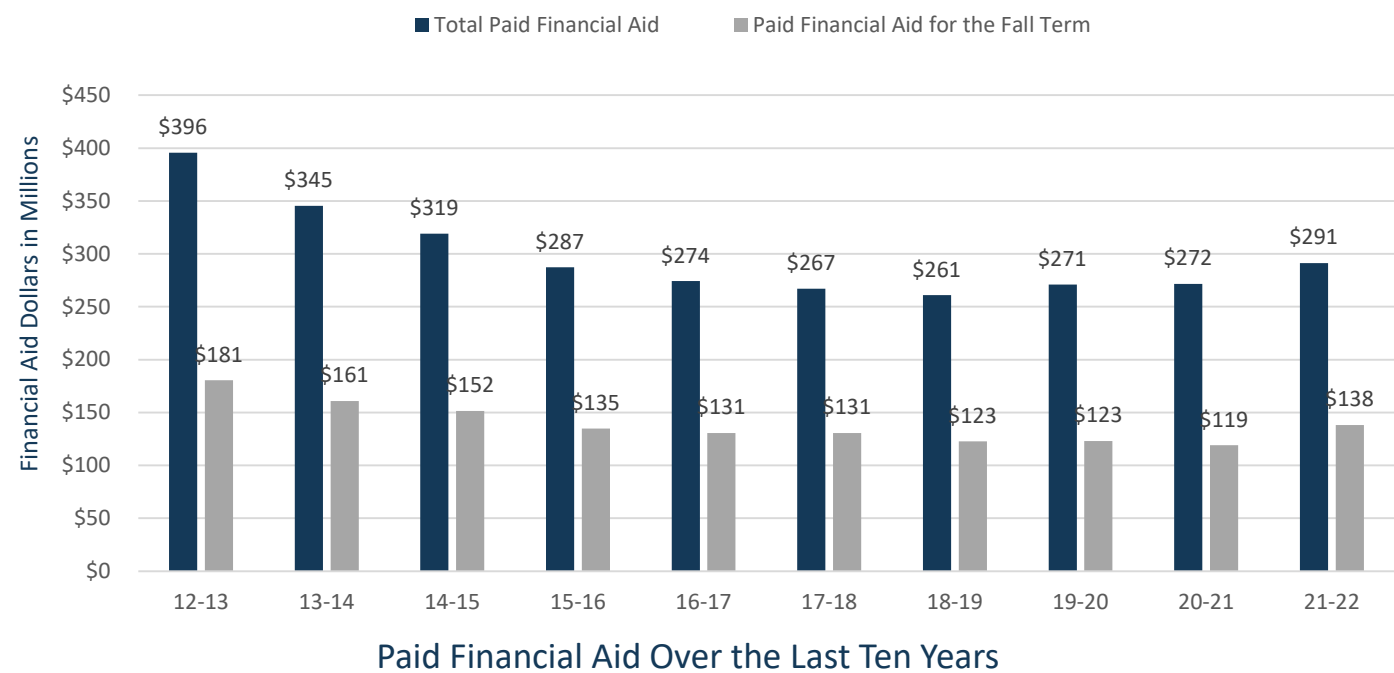


Total Number of Student Transactions in Banner per Month

- **More than 3.6 million student transactions processed from June-2021 to May-2022, 11.2% fewer transactions than the prior year.**
- **An average of 302,964 transactions per month.**
- **An average of 9,961 transactions per day.**

2.2 BANNER FINANCIAL AID

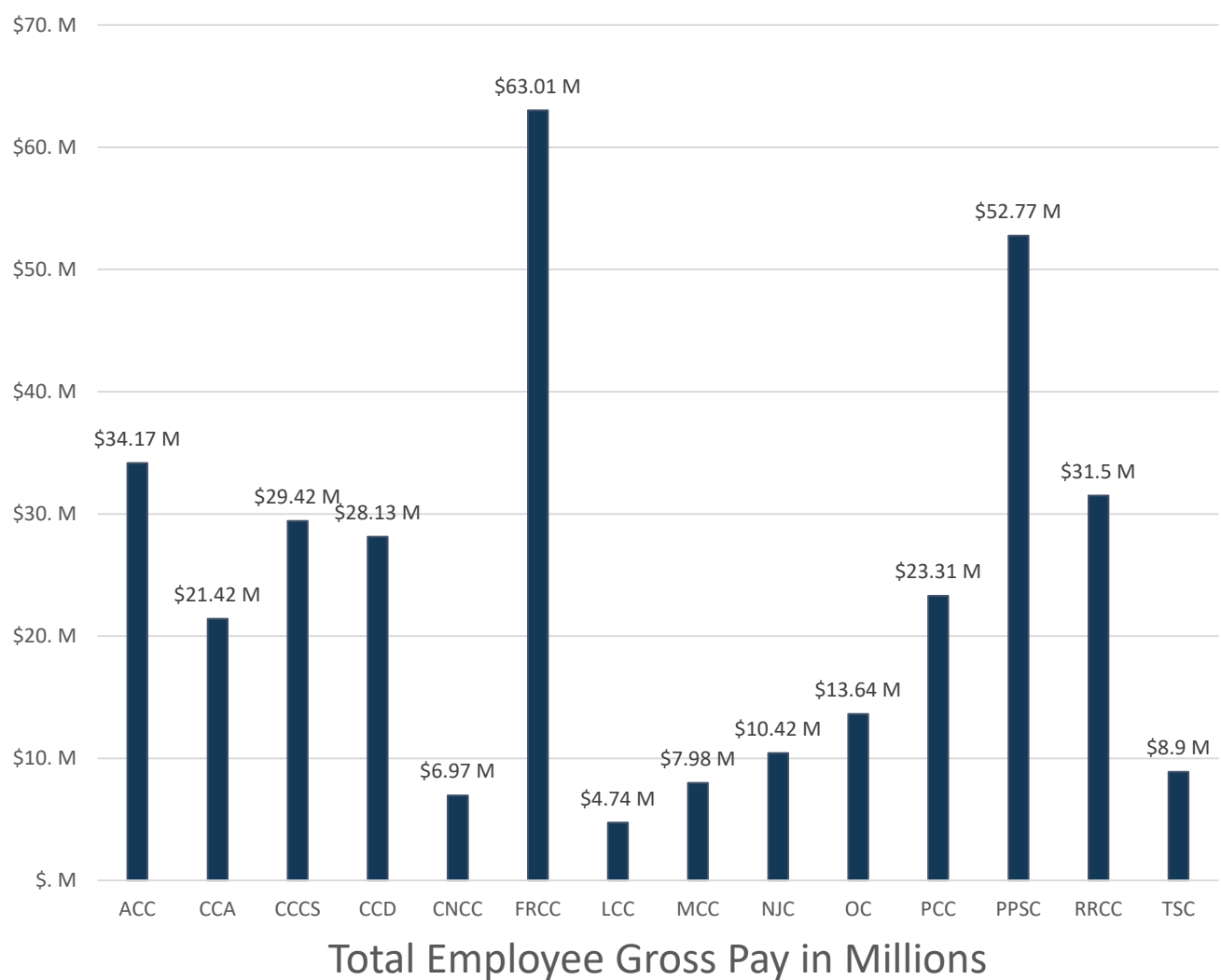
- Provides visibility and tracking of Financial Aid processes.
- Automates Financial Aid daily tasks.
- System IT has customized some Banner Financial Aid processes and implemented other processes to integrate Banner Financial Aid with other CCCS applications and state and federal education department applications.



- **Almost \$3 billion of Financial Aid grants processed over the last 10 years.**
- **Financial Aid paid to students decreased every year from 2012-2013 through 2018-2019. However, the past three years have seen a 12% increase from 2018-2019.**
- **Paid Financial Aid for 2021-2022 is around 26% less than the year 2012-2013, which is the highest in the last ten years.**
- **Total Financial Aid for 2021-2022 (\$291,307,347) is 7.2% higher than 2020-2021 (271,630,968).**

2.3 EMPLOYEE PAYROLLS (GROSS PAY)

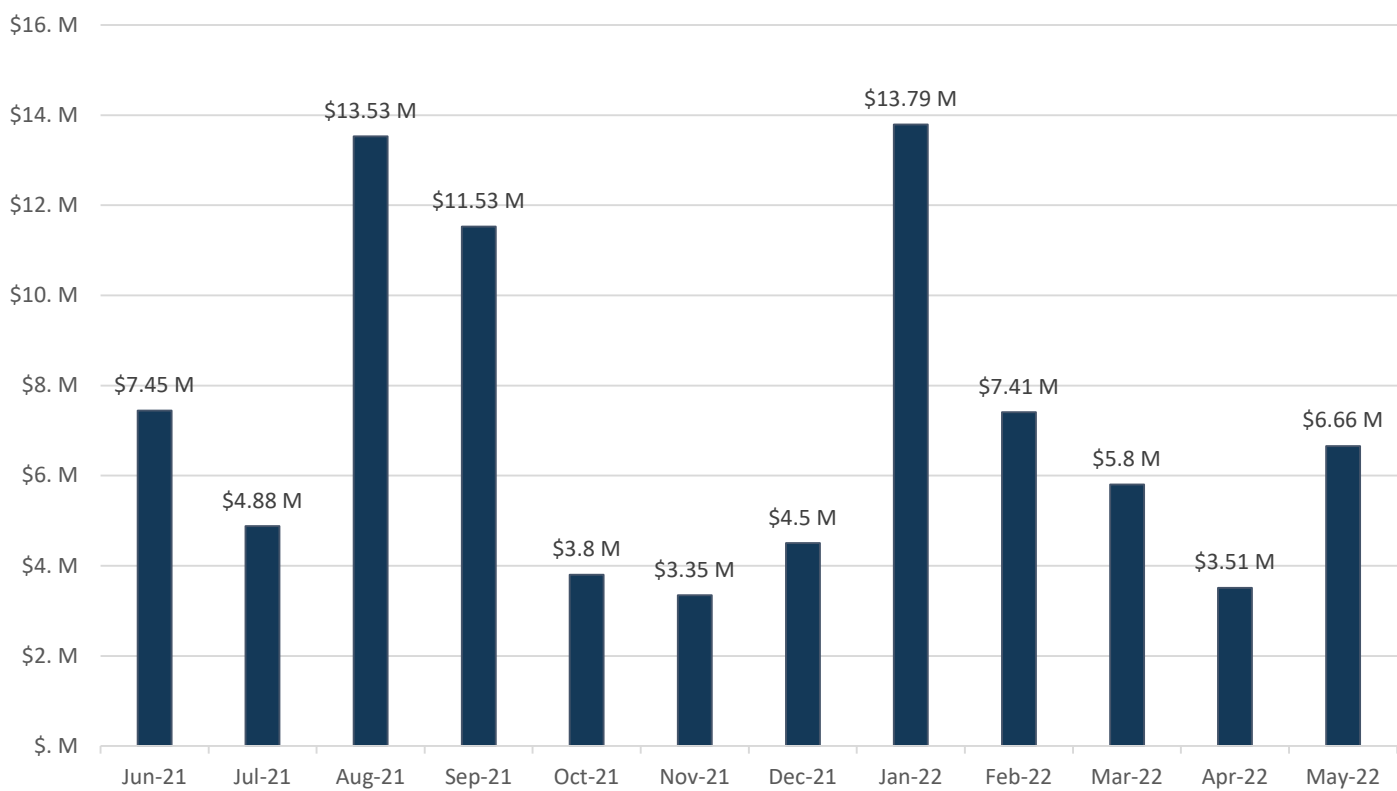
- Banner supports the administration of employment, benefits, payroll, and all other aspects of the employee lifecycle.



- The total dollar amount of gross pay processed for all colleges from July-21 through May-22 was **\$336,381,264**, which is a **2.9%** increase from the previous year.

2.4 ONLINE TUITION PAYMENTS

- Online tuition payments are processed through our web payment gateway, Transact (formerly known as CashNet), which is integrated with Banner.

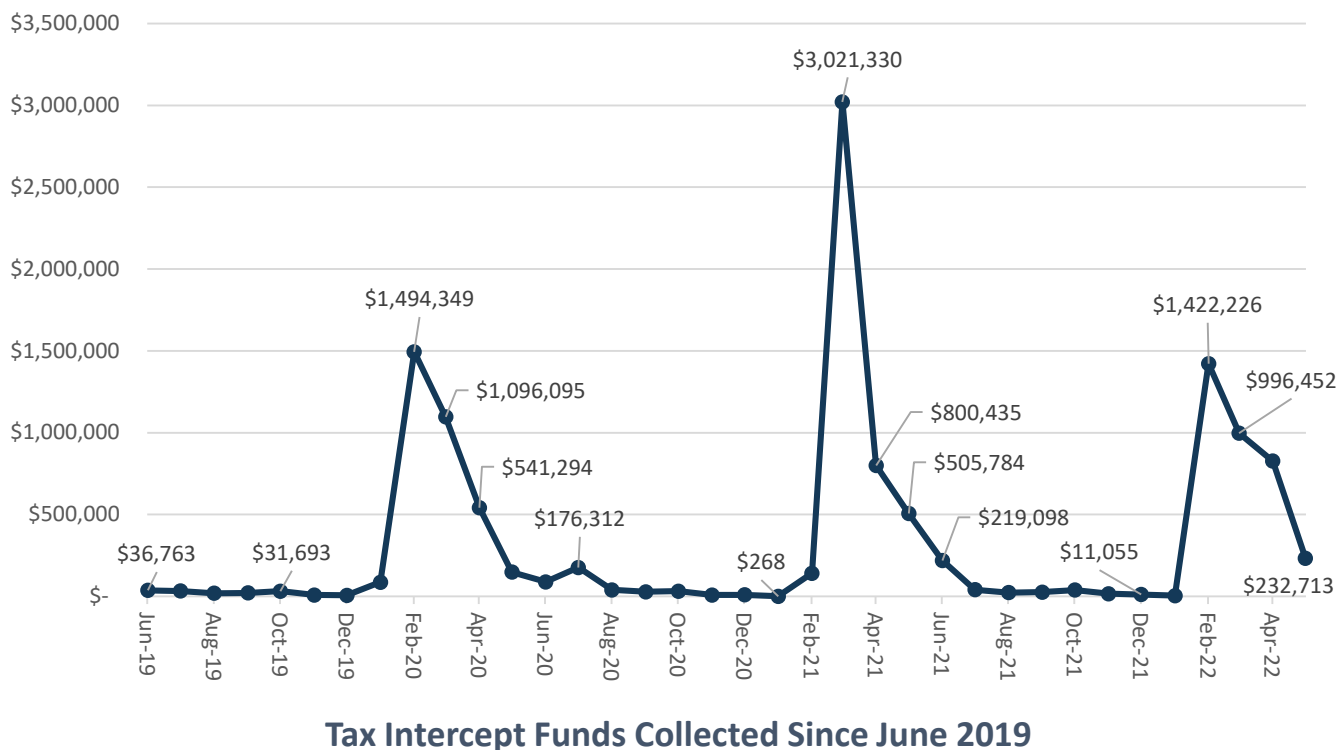


Total Tuition Payment Dollars Processed Through CashNet

- **The total amount of tuition processed over the last fiscal year through Transact for all colleges is \$86,198,550, which is 1.4% lower than the previous year (\$87,430,257).**
- **The collected tuition of \$86,198,550, required 70,991 Banner transactions, which results in an average of \$1,214.22 collected per transaction.**

2.5 TAX INTERCEPT FUNDS

- Tax intercept is a process to intercept State of Colorado tax refunds as payment of debts that have been submitted to collections.
- This process was developed by System IT in conjunction with the State of Colorado.

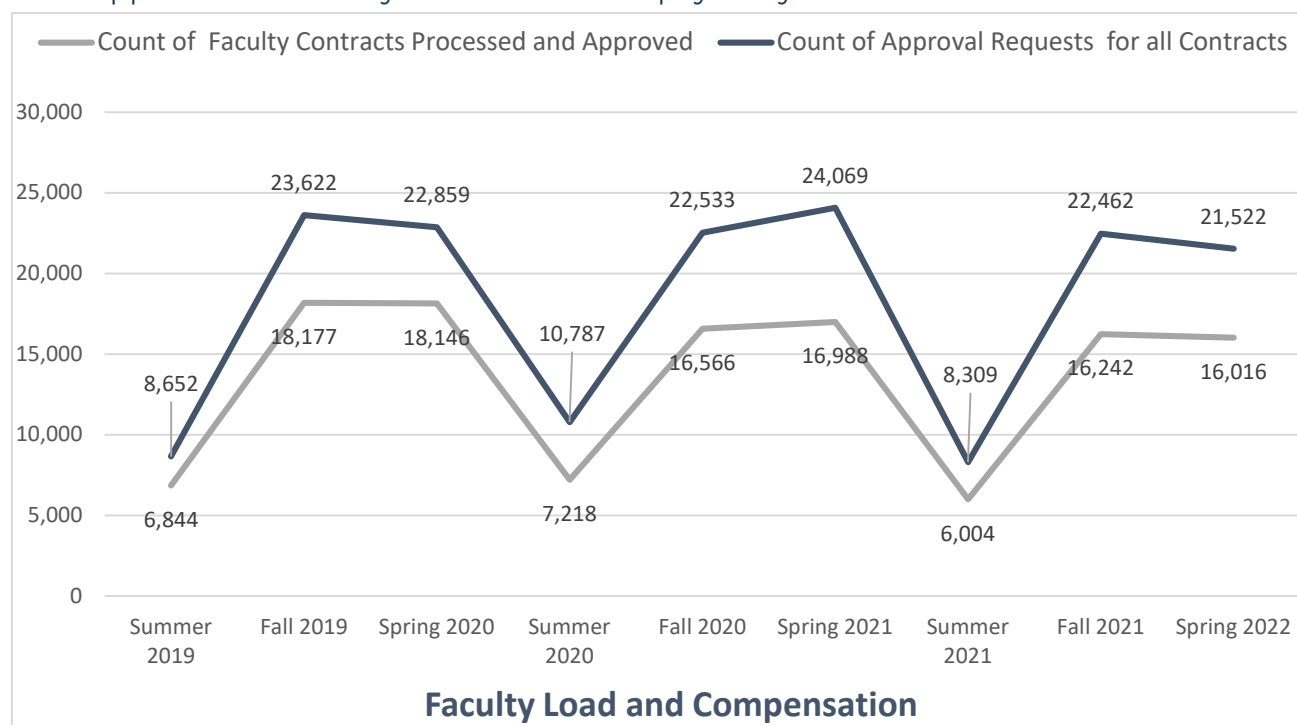


- **This process helped CCCS obtain \$12,228,080 in funds since June 2019.**
- **\$3,857,073 were collected automatically in the past fiscal year via this process. This is 20.5% lower than the previous year.**



2.6 FACULTY LOAD AND COMPENSATION

- Faculty Load and Compensation (FLAC II) is a heavily customized Banner module that processes faculty, adjunct, and overload teaching assignments into the payroll system.
- FLAC II bridges the gap between Banner HR, Finance, Payroll, and Student modules as well as providing an electronic workflow function to route educator assignments for approval before they are added to the payroll system.



- **One contract may involve multiple approval requests.**
- **122,201 faculty contracts were processed over the last three years.**
- **38,262 contracts processed from Summer 2021 through Spring 2022, which is 6.2% fewer contracts than last year.**



2.7 ACCESS REQUESTS

Access Requests

- System IT supports and administers various levels and types of access within Banner and IT environments.
- Access can be requested for a specific Banner module, with pre-defined roles, and other IT applications and resources, such as Degree Works, Cognos, Portal Admin, a server or shared folder.
- Access requests are submitted via email and they follow established procedures and require different level of approvals depending the required access type.

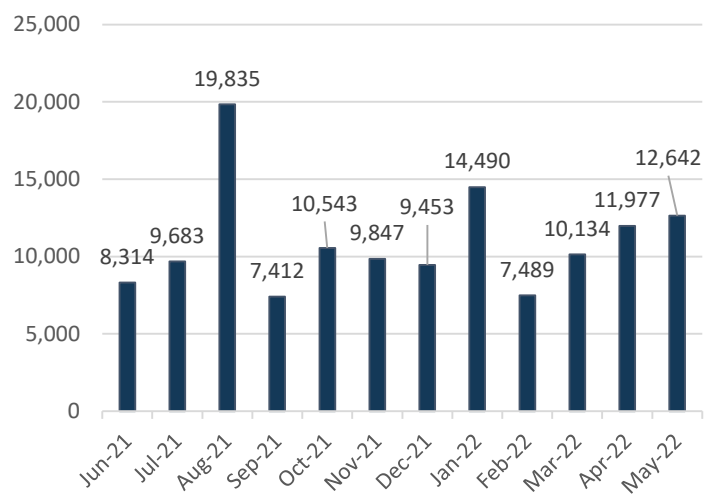
Month	Incoming Request Emails	Number of Processed Requests
Jun-21	244	173
Jul-21	298	332
Aug-21	402	338
Sep-21	350	256
Oct-21	380	411
Nov-21	352	222
Dec-21	272	202
Jan-22	365	241
Feb-22	330	377
Mar-22	388	287
Apr-22	259	244
May-22	338	308
Total	3,978	3,391

- System IT processed 3,391 security requests over the last fiscal year. It is around 55% more than the previous year at 2,193 requests . This increase is likely due to the returning of work on-campus and the hiring of more student workers.
- Access requests include both granting and disabling access.
- An access request could be disapproved by the approval authority due to various reasons.

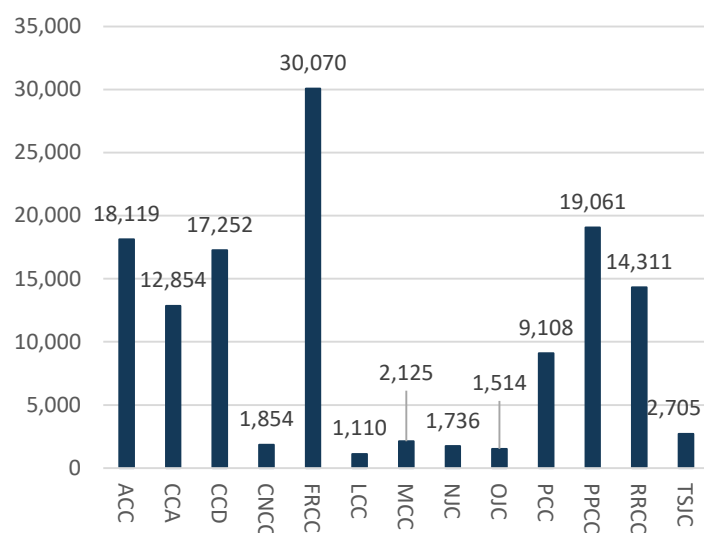


3 CRM RECRUIT

- Ellucian cloud solution that supports the recruiting and admissions lifecycle.
- Provides tools for students to submit and track their admission applications and engage with staff or peers.
- System IT customized some of the Recruit processes and forms and implemented other processes to integrate Recruit with other CCCS systems, such as Banner, Portal, and Identity Management Systems.



Total Active Applications By Month



Active Recruit Applications By College

- Fraudulent applications that were deactivated by the colleges are not included.
- 131,819 active applications were processed for all colleges, 2.1% more than the previous year.



4 PARCHMENT

- Parchment is the authorized vendor for all CCCS colleges to manage the ordering, processing, and secure delivery of official student transcripts.
- Provides students with the ease and convenience of ordering transcripts online.
- Transcripts requested online are sent securely to the colleges, universities, or scholarship funds that student select.
- System IT supports a number of processes that integrate Parchment with Banner.

Transcripts Processed

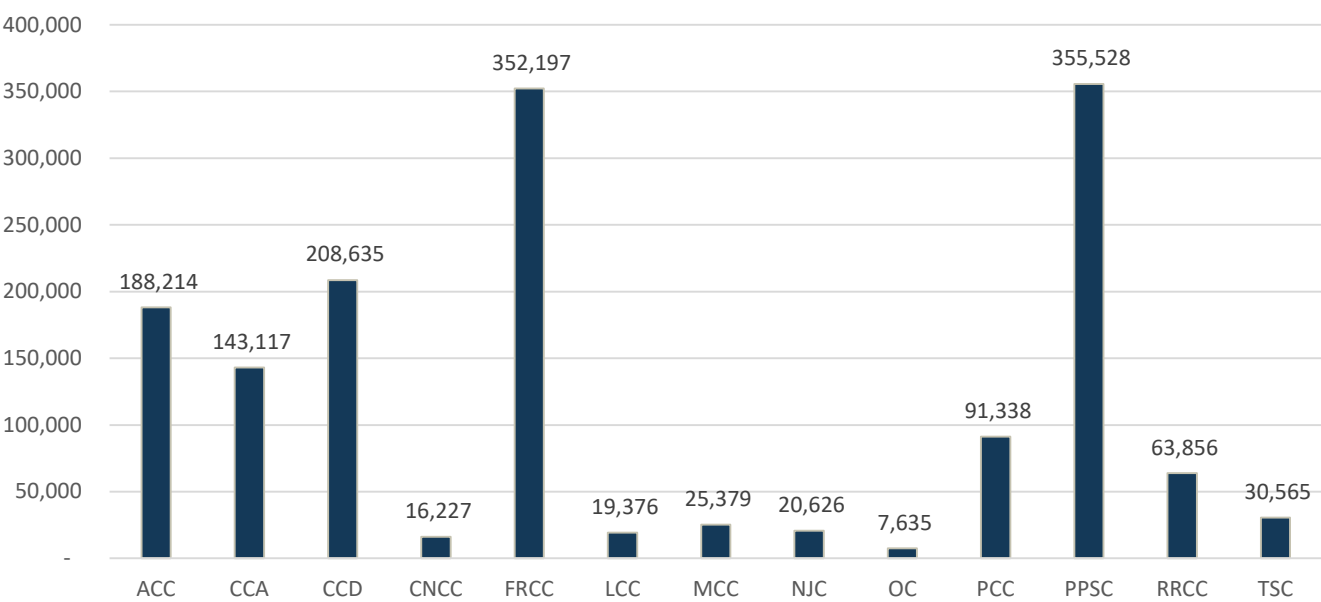
College	Electronic Processed by Parchment	Mail	Pick up on Campus	Totals
ACC	15,665	0	0	15,665
CCA	8,429	9	7	8,445
CCD	9,104	0	2	9,106
CNCC	1,564	13	0	1,577
FRCC	22,129	1	0	22,130
LCC	1,152	2	0	1,154
MCC	1,616	1	0	1,617
NJC	1,768	10	0	1,778
OC	1,585	6	0	1,591
PPCC	16,736	44	0	16,780
PCC	5,266	7	9	5,282
RRCC	8,832	0	0	8,832
TSC	1,945	6	0	1,951
Totals	95,791	99	18	95,908

- Over 99.9% of requested transcripts were processed electronically by Parchment.
- The total number of requests this year was 95,908, which is around 0.4% less than the previous year at 96,293.



5 DEGREE WORKS

- Academic advising and degree progress monitoring tool that helps students and their advisors create a path to on-time graduation.
- Degree Works is fully integrated with Banner to allow students to easily identify which degree requirements have been satisfied.

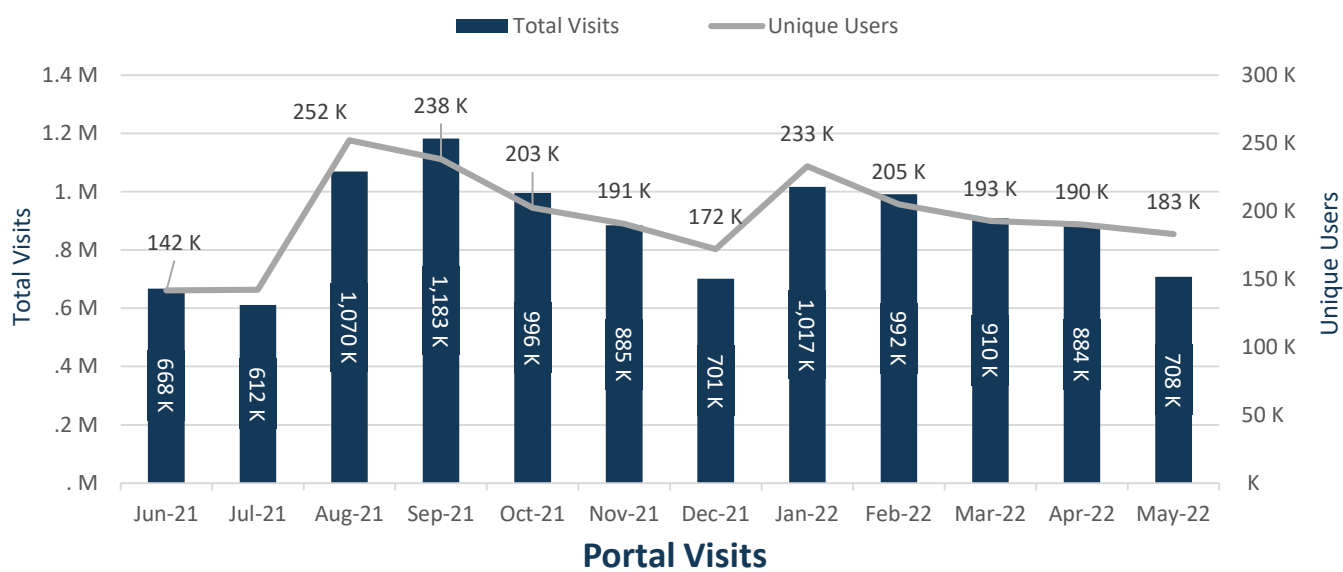


Total Audit Views by Students and Advisors

- **Audit view counts every time an audit is viewed by students and advisors.**
- **1,522,693 audit views were conducted by students and advisors for all colleges over the last fiscal year. That is 7.2% more than the previous year at 1,420,440 and is the highest number of audit views since we began tracking in AY 18-19.**
- **The highest number of audit views in AY22 were conducted during the beginning and end of terms, specifically around the months of August (180,308), May (176,746), and January (174,308).**

6 LUMINIS PORTAL

- Ellucian web services and delivery environment that enables CCCS colleges to provide an interactive and collaborative environment with a more personalized user experience.
- System IT locally maintains and supports the Portal and its components, such as LDAP, BEIS, BanPortal, and Solr. The school Portal Admins support their school contents and some features.
- Each college's Portal is branded based on the preference and requirements of each college.
- System IT customized some of the Portal processes and implemented other processes to integrate the Portal with other CCCS applications as well as Banner, Office 365, Active Directory, EAB Navigate, Parchment, and many other internal and external applications.



- **Unique users are counted based on the browser cookies/cache. When a user clears their browser cookies/cache, they will be treated as a new user.**
- **The Portal is used throughout the year with a total of over 10.6 million visits from Jun-21 to May-22, around 1.7 million less than the previous year.**
- **On average, around 9K visits per month, around 14% less than the previous year.**
- **The monthly average of unique users is 195,367.**

7 INSTITUTIONAL RESEARCH & BUSINESS INTELLIGENCE

System IT IRBI strives to support the day-to-day operations of the system and empower leaders at CCCS and our 13 community colleges to make evidence-based decisions for the betterment of our students through high quality data, research, reports, and analytics. This work includes the development and maintenance of our Operational Data Store (ODS) and Cognos, which utilizes data in the ODS for reporting. Our team also produces system-wide data products, supports grants and the CCCS foundation, provides research support, and responds to legislative and media inquiries.

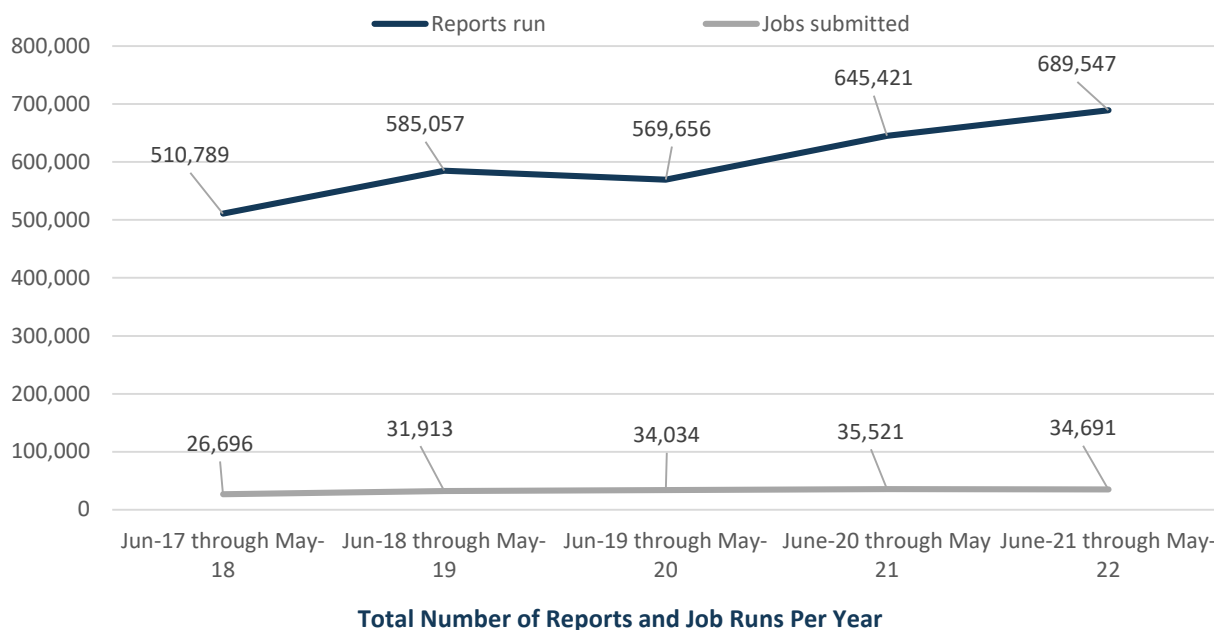
In total, IRBI completed 137 projects from June 2021 to May 2022. System-wide projects include::

- 14 Data Books (13 colleges plus the system)
- 7 Strategic Plan KPM Dashboards
- Ongoing Data Support for CO Online Project
- Annual Concurrent & Developmental Education Reports
- Adult Learner Summit Data Packets
- Delta Dental Study – Barriers to Enrollment & Graduation of Students of Color in CCCS Dental Hygiene Programs
- PDP Implementation (in progress)
- Significant Cognos Upgrade
- Degreeworks Reporting
- 6 Data Requests for the Legislative Session



7.1 COGNOS ANALYTICS

- IBM web-based integrated business intelligence suite that is used for creating reports and dashboards from various CCCS information systems.
- All data that is used for reporting is housed in the Banner Operational Data Store (ODS) which is the authoritative source for reporting across the System.
- The ODS at CCCS has been extended to allow reporting against “real-time” Banner data and will soon be the source of reporting for D2L and Degree Works data.
- All Shared Operational and Real-time Reports in Cognos are designed and supported by System IT.

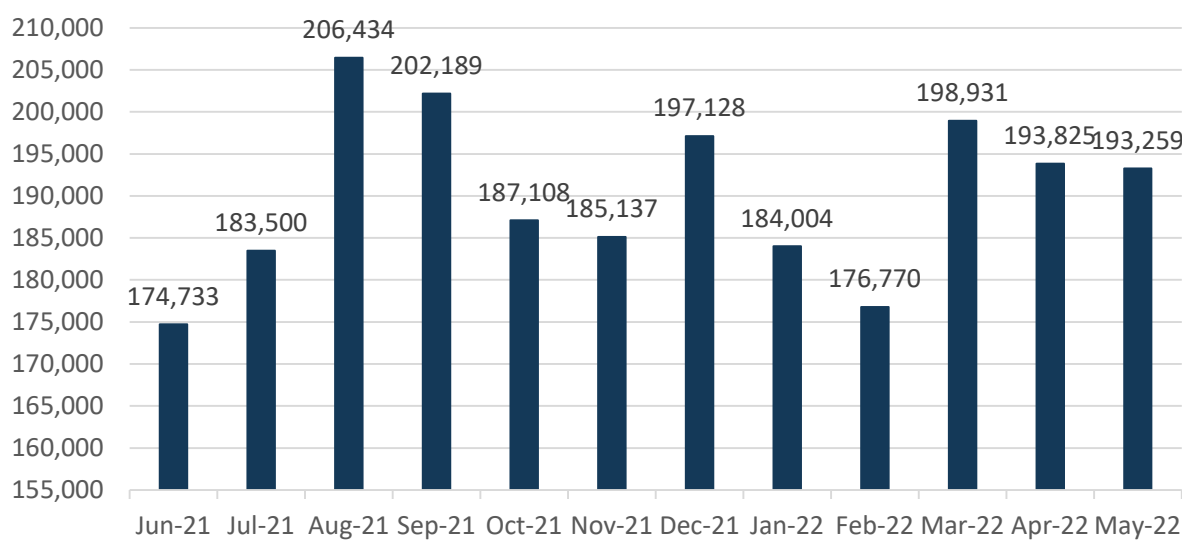


- **3,000,470 reports and 162,855 jobs were processed by Cognos over the last five years. This past year the number of reports run increased by nearly 7%.**
- **System IT’s Institutional Research & Business Intelligence Department has seen the annual total number of reports and jobs run has seen a 35% and 30% increase, respectively, in the past five years.**



8 AUTOMIC

- Automic (formally AppWorx) is a web-based application that is used to automate the running and submission of jobs and processes.
- System IT uses Automic to schedule most of Banner jobs, reports, and processes, such as payroll, financial aid, billing, finance control reports, placing advising holds and grade calculations.
- Automic is also used to schedule jobs and processes of other applications, such as Bookstores, Portal, Degree Works, and others.



Total Number of Jobs per Month

- **Automic processed almost 2.3 million jobs over the last fiscal year and that is 0.2% more than the previous year at 2.3 million.**
- **The daily average of processed jobs is 6,254 compared to 6,242 in the prior year.**
- **The monthly average of processed jobs is 190,252 compared to 189,854 in the prior year.**

9 SYSTEM IT HELP DESK

- System IT Help Desk team provides support for the System Office as well as support on enterprise-wide systems and Wide Area Network support for the System as a whole.
- Requests through the help desk include a spectrum of inquiries ranging from programming, job scheduling and infrastructure to email, phone, video conferencing and network assistance.
- The desk is a single point of contact for all requests for System IT specific assistance.
- Standard desk hours are from 7:00 AM to 5:30 PM, Monday through Friday.

System IT Help Desk Statistics

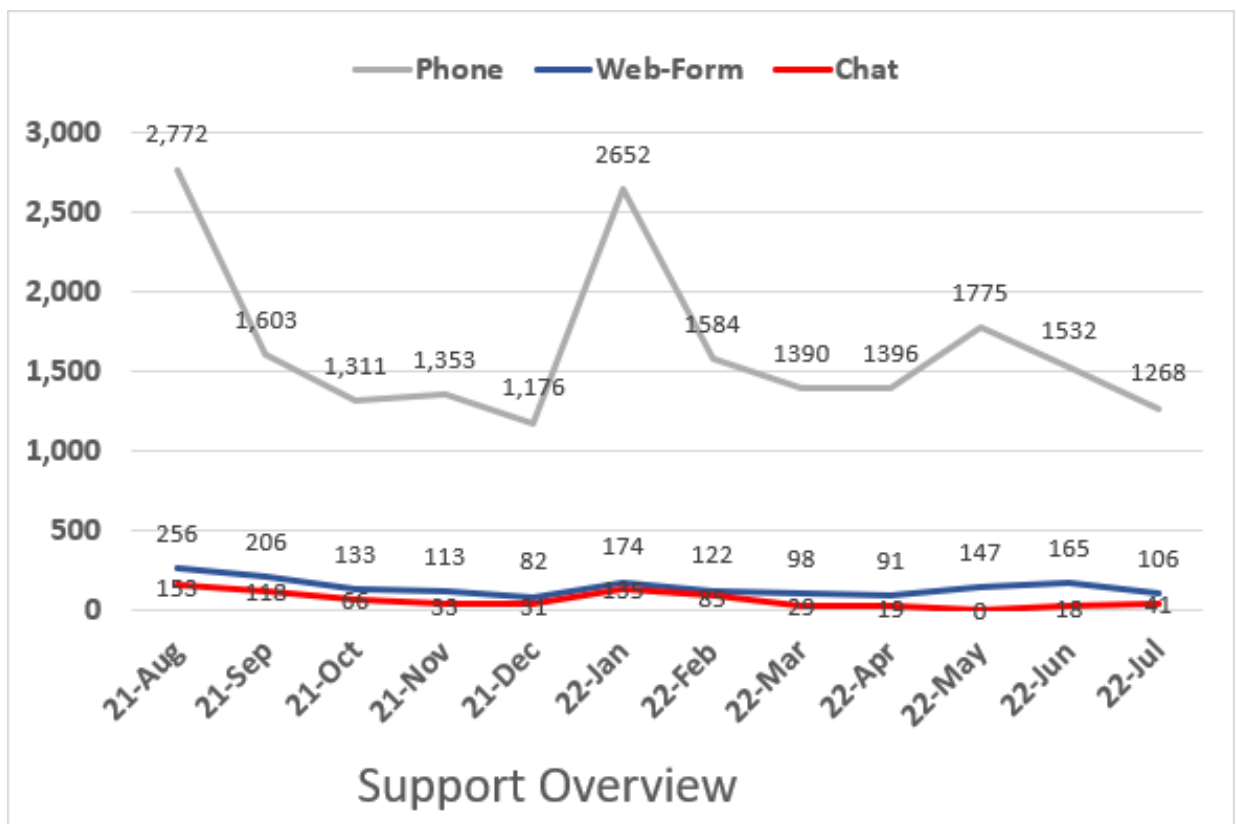
Month	Incoming Emails	Incoming Calls	Tickets Created	Tickets Closed
Jun-21	3,718	113	613	487
Jul-21	3,932	155	657	528
Aug-21	4,065	194	636	558
Sep-21	3,706	134	575	466
Oct-21	3,011	109	582	495
Nov-21	2,760	129	520	413
Dec-21	3,019	88	520	409
Jan-22	4,116	142	641	502
Feb-22	3,559	109	473	394
Mar-22	4,044	152	525	437
Apr-22	3,642	130	570	460
May-22	4,531	171	538	446
Total	44,103	1,626	6,850	5,595

- A ticket is created whenever the help desk staff is contacted. If the help desk staff is unable to answer or resolve the issue the ticket is escalated to other IT staff.
- 45,729 help requests were received during the last fiscal year which is 2.4% lower than the previous year.
- Around 85% of the help requests were resolved or answered by the help desk staff without a need to escalate. Help Desk staff resolved 1 percentage point fewer issues without escalation than the prior year.
- The System IT help desk is busy throughout the year with an average of 3,811 requests per month.
- Around 82% of the tickets were closed successfully before the end of May 2022 (the remaining are in process). Sixteen percent of tickets were closed on first contact.



10 24X7 SUPPORT DESK STATISTICS

- CCCOnline works on behalf of CCCS colleges to assure the 24x7 Support Desk agents provide the proper service.
- The 24x7 Support Desk offers support to all students and instructors within CCCS.
- Students and instructors may request help through telephone, e-mail or chat. The 24x7 Support Desk assists with the college portal, D2L, Office 365, e-mail, printing, browser troubleshooting, and Banner-related issues.
- The 24x7 Support Desk offers a self-help website (<https://help.ccs.edu>) where students and instructors may find how-to and troubleshooting articles.
- The 24x7 Support Desk is provided by a third-party vendor, Istonish.



- **24X7 Support Desk is busy throughout the year.**
- **22,232 help desk requests were received from August 2021 through July 2022.**
- **The beginning of the fall and spring terms are usually busier than the rest of the year.**



10.1 24X7 SUPPORT DESK STATISTICS - Call Metrics

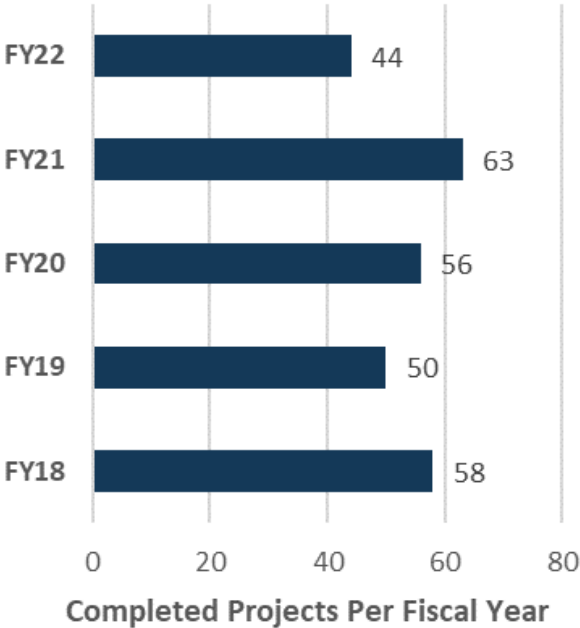
Call Metrics

	Number of Calls Answered: Target: 85% of call answered	Average Speed to Answer: Target: 80% answered within 90 seconds	Average Handle Time: Target: 9-10 minutes
Aug-21	68.14% [↓]	76.88% [↓]	9:05 Min [↑]
Sep-21	78.62% [↑]	85.38% [↑]	10:15 Min [↑]
Oct-21	83.46% [↑]	86.17% [↑]	9:08 Min [↓]
Nov-21	93.66% [↑]	94.84% [↑]	8:31 Min [↓]
Dec-21	96.51% [↑]	97.17% [↑]	7:26 Min [↓]
Jan-22	91.18% [↑]	93.80% [↓]	8:16 Min [↑]
Feb-22	94.51% [↑]	96.56% [↑]	8:15 Min [↓]
Mar-22	88.46% [↓]	96.99% [↑]	8:06 Min [↓]
Apr-22	90.07% [↓]	95.81% [↓]	7:31 Min [↓]
May-22	87.54% [↓]	94.50% [↓]	7:31 Min=
Jun-22	91.77% [↑]	94.20% [↓]	8:41 Min [↑]
Jul-22	91.89% [↑]	96.68% [↑]	8:07 Min [↓]
Monthly Average	87.22%	92.42%	8:25 Min

11 PROJECTS COMPLETED June 2021 through May 2022

- The following table shows the total number of projects completed during June 2021 through May 2022.
- Most of these projects were reviewed by the VP IT Governance Committee.

Functional Area	Number of Projects
Accounts Receivable	9
Advancement	2
All	8
CCOnline	1
Finance	3
Financial Aid	3
Human Resources/Payroll	6
Student	12
TOTAL	44

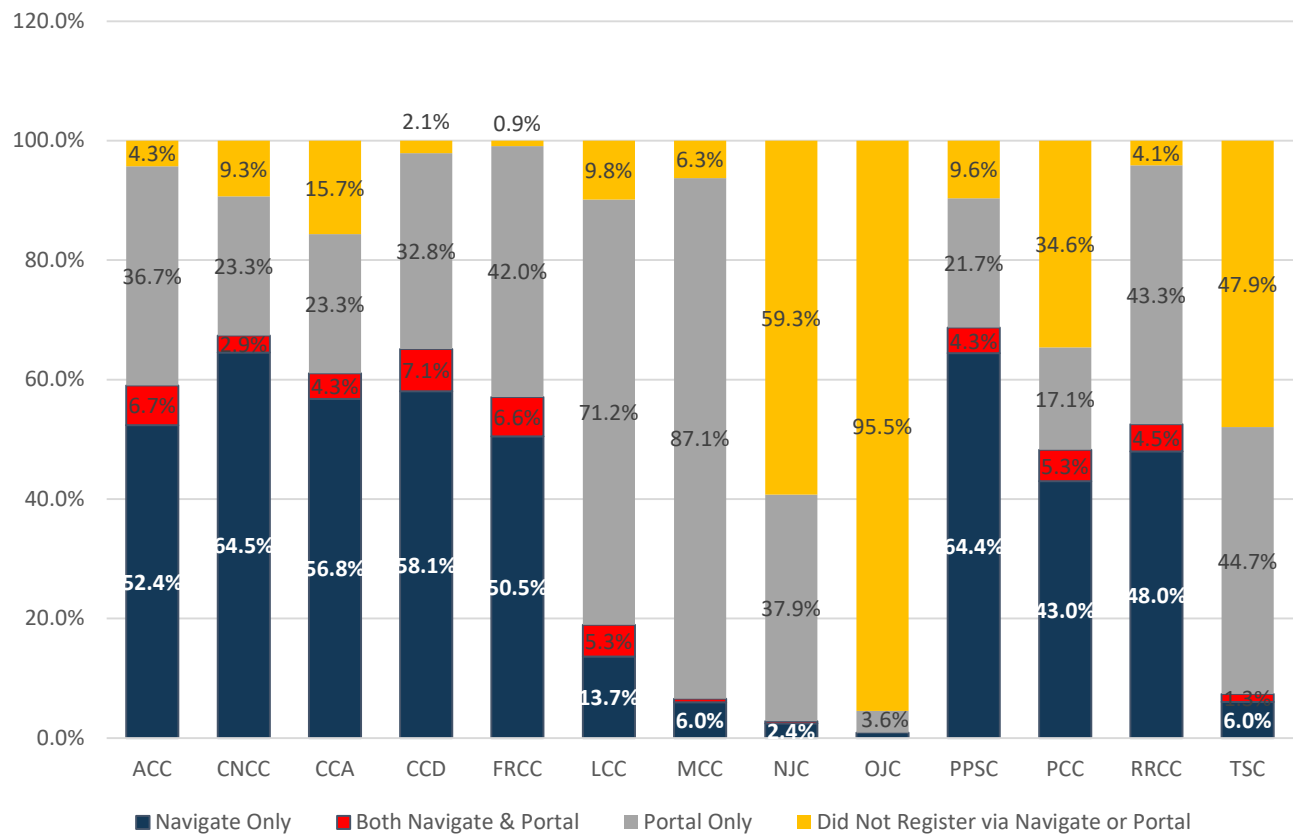


- **44 projects were completed during Jun-21 through May-22. This is nineteen fewer projects than the prior year.**
- **271 projects were completed between FY18 and FY22. On average, 54.2 projects are completed per year.**
- **CCCS-IT has undertaken projects for all functional areas. Student Affair projects (Student and Financial Aid) represents 34% of all completed projects during FY 22.**
- **In addition to these projects, System IT completed the work for 565 Request For Change (RFC) tickets during FY 22. This is more than twice the number completed in FY21.**

12 EAB NAVIGATE – STUDENT UTILIZATION

- A Student Success application that shows our students all the important things they need to do in one easy-to-view path.
- Helps students to pick a major, build a best-fit course schedule, register for classes, find resources on campus, and communicate and/or schedule appointments with their advisor.

Student Navigate Utilization For Fall 2022 Registration



- **Navigate was the most utilized method of registration in Fall 2022.**
- **In Fall 2022, 56% of students (26,836) used Navigate or a combination of Navigate and the portal to register for classes.**

12.1 EAB NAVIGATE – STAFF UTILIZATION

- Navigate for Staff is a web-based student performance monitoring system that provides automated student services to assist with Student Success overall.
- Allows staff to create appointments and appointment summary reports and email and text students.

Navigate Staff Utilization

	Total Number of Appointments Created	Distinct Students with Appointments	Total Number of Appointment Summary Reports	Emails Sent	Text Messages Sent
ACC	18,943	7,943	15,213	527,302	118,724
CNCC	1,682	622	1,252	8,912	10,965
CCA	24,042	5,662	19,990	194,767	122,089
CCD	19,287	7,469	15,602	90,077	79,017
FRCC	55,388	17,738	44,739	109,669	1
LCC	723	359	461	2,984	6,888
MCC	1,946	626	1,465	13,947	1,078
NJC	2,735	417	400	4,372	5,582
OC	2,169	698	1,743	18,463	25,691
PPSC	84,965	19,669	76,058	28,772	6,324
PCC	26,404	7,022	19,018	83,767	68,567
RRCC	23,167	7,377	15,754	417,771	69,769
TSC	1,554	751	115	2,521	1,677
Total	263,005	76,353	211,810	1,503,324	516,372

- **From July-21 through June-22, 76,353 students participated in 263,005 appointments.**
- **On average, each student had 3.4 appointments that were organized via Navigate compared to 3.6 appointments in the prior year.**
- **During the same time period, staff used Navigate to send 1,503,324 emails and 516,372 text messages. That is a 13.4% decrease and 3.9% increase, respectively, over the prior year.**



13 ENTERPRISE SECURITY

CCCS Enterprise Information Security supports and maintains an information security program utilizing people, process, and technology that helps protect CCCS and college information systems. CCCS Enterprise Security's Mission Statement is: "CCCS Information Security collaborates with the Colleges to provide cybersecurity services, oversight, and advisement that assists the colleges and the system in reducing risk and safeguarding the confidentiality, integrity, and availability of CCCS's information assets."

The objectives of CCCS Enterprise Information Security program are:

- Educate Staff and Faculty with awareness and knowledge to protect institutional data and meet compliance obligations.
- Collaborate with colleges to enable the best student outcomes while protecting sensitive and confidential information.
- Information security leadership will be a trusted advisor/expert for institutional leadership.
- A robust set of security operations services that reduce risk while providing an excellent return on investment.

To deliver on this program CCCS has implemented several cybersecurity tools that will be categorized using the NIST CSF (Cyber Security Framework).



13.1 IDENTIFY

In this section we are reporting on activities and products that help System IT security to identify risks so CCCS can be proactive in reducing risk to information assets.

What does identify mean:

- Identify - Develop the organizational understanding to manage cybersecurity risk to systems, assets, data, and capabilities.

13.1.1 CYBER SECURITY POLICY AND PROCEDURES

In 2020 CCCS set out to create comprehensive Cyber Security Policy and Procedures. The Cyber Security Policy has been completed and 21 procedures were approved and published in January of 2021. The policy and procedures are based on several best practices for cyber security such as the NIST Cyber Security Framework and the CIS Critical Security Controls. CCCS Cyber Security Policy and procedures has helped to improve the overall Cyber security posture of CCCS and will be reviewed in 2023.

13.1.2 ARCTIC WOLF MANAGED RISK PLATFORM

Built on the industry's only cloud-native platform to deliver security operations as:

- A concierge service—Arctic Wolf Managed Risk enables CCCS to continuously scan Networks, and endpoints, to inventory digital assets quantify digital risks.
- The Arctic Wolf security operations expert from the Concierge Security Team works directly with CCCS to discover risks beyond simple vulnerabilities, benchmark the current state of your environment, and implement risk management processes that harden your security posture over time.

Arctic Wolf delivered services and operations are applied to all of CCCS applications and systems.

CCCS System Office Digital Risk Profile as of September 15, 2022:

Network Risk Summary

Based on the latest set of risks, the following is a snapshot of your companies' risk landscape.



Risk Score Trends



Risks Classification Summary

Summary of risks broken out by Infrastructure Type and Classification Type.

Risks by Classification



Classification	Count
Breach	0
Upgrade	6070
Configuration	1598
Under Investigation	3783



13.2 PROTECT

In this section we examine the performance of products that served multiple purposes under the NIST CSF

- Protect - Develop and implement the appropriate safeguards to ensure delivery of critical infrastructure services.

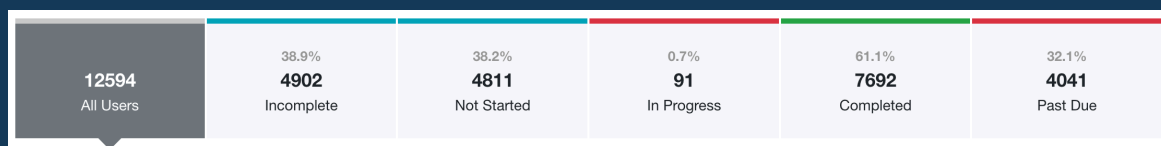
13.2.1 SECURITY AWARENESS TRAINING

Security Awareness Training educates employees about the cyber security landscape. Security Awareness Training helps to raise awareness of cyber security threats, reduce the risks associated with cyber-attacks and embed a culture of security compliance.

In 2022 CCCS delivered mandatory cyber security awareness training to all employees. The training covered the following topics:

- Social Engineering
 - Phishing
 - Pretexting
 - Vishing
 - Smishing (phishing via text messages)
 - Spear Phishing
- Electronic Threats
 - Software-Based Attacks
 - Internet-Based Attacks
 - Mobile Device Security
 - Malware

- **Here is the status of the 2022 information security awareness campaign:**



- **This is comparable to the 2021 training campaign and has continued to improve overall awareness and reporting of suspicious email, which reduces overall cybersecurity risk to CCCS.**



13.2.2 MULTI-FACTOR AUTHENTICATION (MFA)

- Multi-Factor Authentication (MFA) is needed to reduce the risk of email compromise, breach, ransomware, and other cybersecurity threats that take advantage of stolen credentials (login and password). MFA is an electronic authentication method that adds one more "factor" to check in addition to a password.
- CCCS choose the DUO MFA solution to secure applications at significant risk of unauthorized access due to stolen/compromised credentials. The product was procured in July of 2021 and a project was launched to implement MFA across CCCS.
- In 2022 we have implemented DUO on over 200 publicly facing resources including school portals, EAB, Outlook email, and VPN, primarily by leveraging our Single Sign On Solution (SSO).
- In the last 60 days July – Sept DUO has processed over 550k authentications compared to 400k authentications for CCCS in a similar time frame as 2021.

Overview



Success Rate

[See All Authentications](#)



Duo Push

[See Top Auth Methods](#)

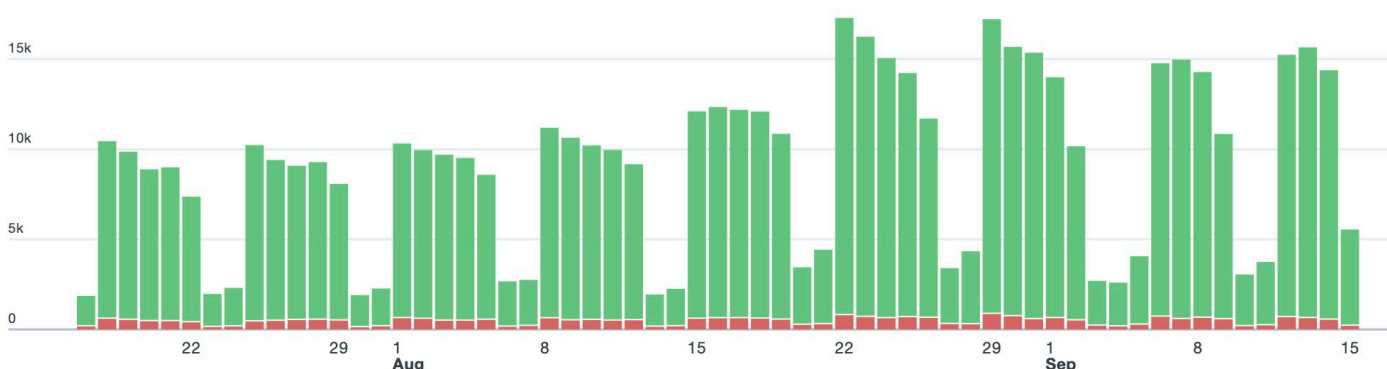


CCCS SSO

[See Top Applications](#)

554.7k Authentications

Shown at every day.



COLORADO
COMMUNITY COLLEGE SYSTEM

13.3.3 SOPHOS ENDPOINT PROTECTION (ANTI-VIRUS, ANTI-MALWARE)

Sophos Intercept X employs a comprehensive, defense in depth approach to endpoint protection, rather than relying on one primary security technique. This layered approach combines modern and traditional techniques to stop the widest range of threats.

Stop Unknown Threats

- Deep learning AI in Intercept X excels at detecting and blocking malware even when it hasn't been seen before. It does this by scrutinizing file attributes from hundreds of millions of samples to identify threats without the need for a signature.

Block Ransomware

- Intercept X includes advanced anti-ransomware capabilities that detect and block the malicious encryption processes used in ransomware attacks. Files that have been encrypted will be rolled back to a safe state, minimizing any impact to business productivity.

Prevent Exploits

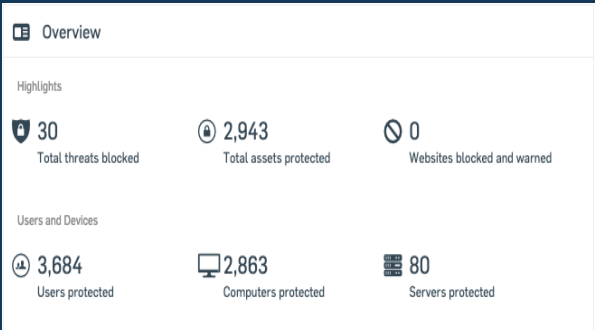
- Anti-exploit technology stops the exploit techniques that attackers rely on to compromise devices, steal credentials, and distribute malware. By stopping the techniques used throughout the attack chain Intercept X keeps your organization secure against file-less attacks and zero-day exploits.

Layered Defenses

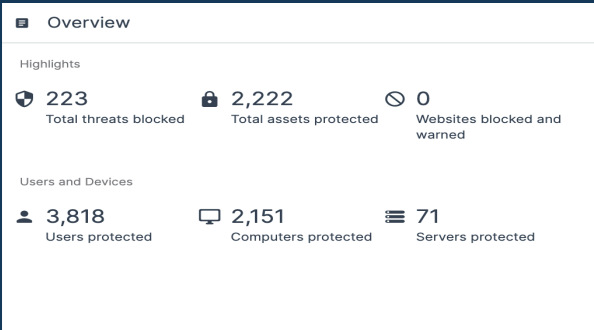
- In addition to powerful modern functionality, Intercept X also utilizes proven traditional techniques. Example features include application lockdown, web control, data loss prevention and signature-based malware detection. This combination of modern and traditional techniques reduces the attack surface and provides the best defense in depth.

Here are a few sample statistics on how Sophos endpoint protection is preventing threats across CCCS.

PPSC in 2021 (Oct 12 – Nov 11):



PPSC in 2022 (July – Sept):



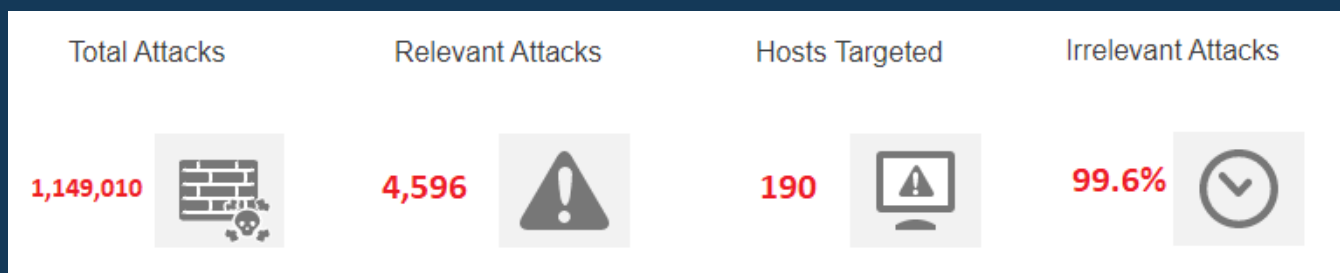
13.3.4 UMBRELLA

- Cisco Umbrella is a cloud-based security platform that provides multiple levels of defense against internet-based threats and enables users to extend protection from network to branch offices to roaming users.
- Over the last 30 days, Cisco Umbrella blocked over 60k cyber threats.

13.3.5 CISCO FIREPOWER THREAT DEFENSE (FIREWALL)

- Cisco Firepower (Firewall) is an integrated suite of network products that provide a comprehensive suite of security features such as firewall capabilities, monitoring, alerts, intrusion detection and prevention, application control, and anti-malware and URL filtering capabilities.

- **In the last year the Cisco Firepower firewalls observed and blocked over 1.1 million attacks.**



13.4 DETECT, RESPOND

In this section we examine the performance of products that served multiple purposes under the NIST CSF

- Detect - Develop and implement the appropriate activities to identify the occurrence of a cybersecurity event.
- Respond - Develop and implement the appropriate activities to take action regarding a detected cybersecurity event.

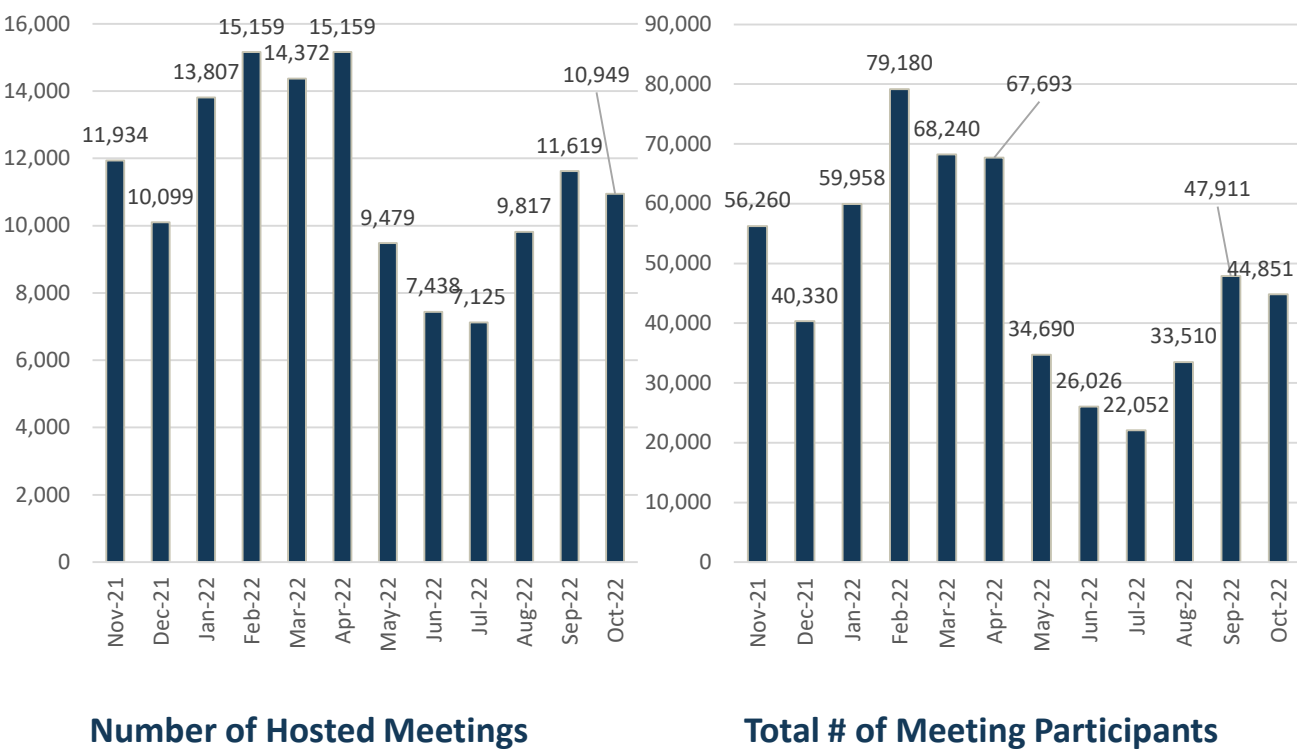
13.4.1 ARCTIC WOLF MANAGED DETECTION AND RESPONSE

- Arctic Wolf Managed Detection and Response (MDR) solution provides 24×7 monitoring of your networks, endpoints, and cloud environments to help you detect, respond, and recover from modern cyber-attacks.
- The Arctic wolf MDR service helps the CCCS information security team evaluate and respond to cyber threats by weeding out all the noise so the security team can respond to threats that can cause the most damage. This service has been invaluable in protecting CCCS digital assets.



14 CISCO WEBEX

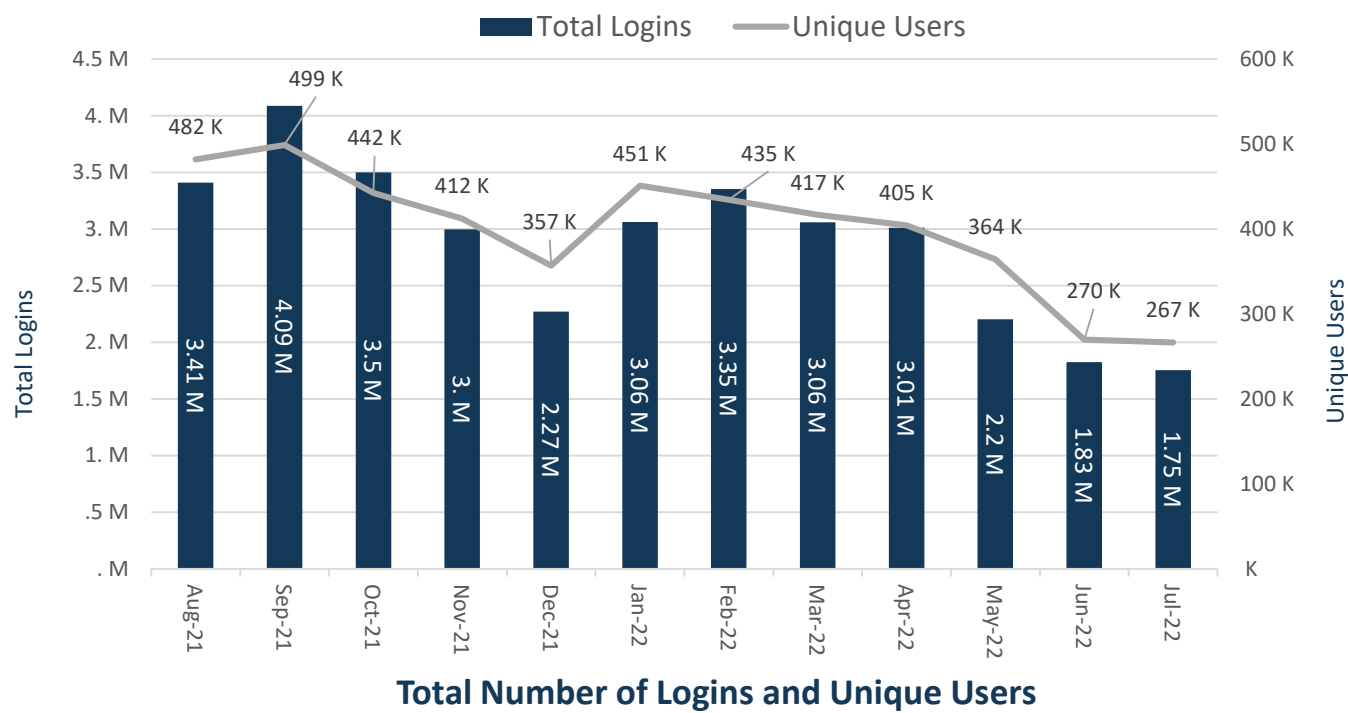
- Cisco WebEx is web conferencing and collaboration tool that includes products such as WebEx Meetings, WebEx Teams and WebEx Events.
- All WebEx products are hosted in the cloud and System IT supports various integrations between WebEx products, VoIP, E-Mail and D2L.



- **The total number of hosted meetings since Nov-21 is 136,957 with 580,701 participants; this represents a 45.2% and 57.9% decrease, respectively, over the prior year. This decline is likely to due to increased in-person work as well as increased usage of other web conferencing tools such as Zoom and MS Teams.**
- **The average number of participants per meeting dropped from 5.52 in FY21 to 4.24 in FY22, a 23.2% decline.**

15 ETHOS - SINGLE-SIGN-ON

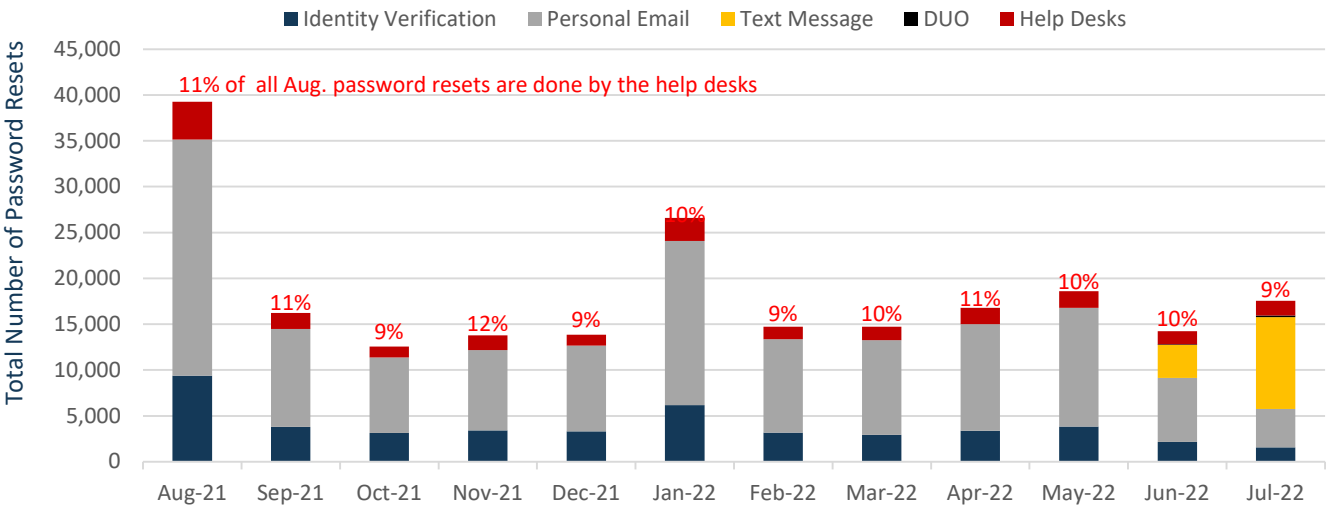
- Ellucian Ethos Identity is used for authentication and Single-Sign-On (SSO) for most of CCCS enterprise applications, such as Portal, D2L, Banner, Student Email, EAB, and others (130 applications total).
- Ethos is hosted within the System IT data centers and maintained and supported by the CCCS Portal Team.
- The School Portal Admins help maintain and support the branded sign-on pages for their school.
- System IT customized some of the Ethos functionalities and built new ones to meet CCCS requirements.
- Ethos support various SSO protocols and that made it easier to implement and support many SSO integrations.



- **Unique users are counted based on the browser cookies/cache. When a user clears their browser cookies/cache, they will be treated as a new user.**
- **Over the last 12 months, Ethos processed over 34.6 million logins with an average of 2.9 million logins per month.**
- **Ethos processed more than 4.8 million unique users' successful logins with an average of 399,958 unique users per month.**
- **Ethos processed around 700K more logins than the previous year and that is due to around 20 more SSO services added during this year.**

16 PASSWORD RESETS

Password Reset Options for Students	Password Reset Options for Faculty and Staff
Personal Email, Text Message, Identity Verification, or Call the 24X7 help desk	Personal Email, Text Message, DUO, or Call the college IT help desk



Number of Password Resets done by Self-Reset Tools Vs. Help Desks

- The total number of password resets from Aug. 21 through Jul. 22 is 219,567, around 15% more than the previous year.
- Over 90% of all password resets are done via the password self-reset tools.
- The monthly average of password resets are 3,856 via Identity Verification, 11,415 via Personal Email, and 6,820 via text message, 107 via DUO, 1,823 via the 24X7 and school Help Desks.
- On average, 540 password resets are done daily by all password self-resets tools and 60 by the 24X7 and school Help Desks.
- 39,274 password resets took place during Aug. 21 and it is common to see this large number of password resets during the beginning of the academic year and new terms, .
- Password self-rest via text message feature was implemented in Jun. 2022 and it is quickly becoming the most used password self-reset feature (around 60% of all password self-resets done in Jul. 2022).

17 CISCO IRONPORT

- **Cisco IronPort** is an email security system that provides centralized reporting, message tracking, and virus, spam and other protection services.
- It is used to gain insight into email traffic, and provide protections from potential email threats.
- It incorporates the following features:
- **External Spam Protection:** Label spam and suspected spam messages for end users, and allow end users to review messages that are flagged as spam.
- **Virus and Advanced Malware Protection:** Detects and quarantines messages with virus or malware payloads, keeping them from users' mailboxes.
- **Malicious URL Detection:** Detect and quarantine messages with known bad URLs that would send users to malicious web sites.
- **Reputation Filtering:** Find and block messages from known bad actors on the Internet based on their IP, Domain, or DMARC reputation.
- **Advanced Content Filtering:** Stop messages that are known by IT to be coming from bad actors who have created well crafted spear phishing messages.
- **Advanced Graymail Tagging:** Identify and tag messages that are known to come from marketing, social media, or bulk mailings so users can quickly make informed decisions.

Outgoing Mail Summary (July 2021 – June 2022):

Outgoing Mail Summary		
Message Processing	%	Messages
Spam Detected	0.0%	604
Virus Detected	0.0%	34
Detected by Advanced Malware Protection	0.0%	12
Messages with Malicious URLs	0.0%	7
Stopped by Content Filter	0.2%	46,707
Clean Messages	99.8%	28,218,325
Total Messages Processed:		28,265,689

Incoming Mail Summary (July 2021 – June 2022):

Incoming Mail Summary		
Message Category	%	Messages
Stopped by IP Reputation Filtering	78.4%	118,107,358
Stopped by Domain Reputation Filtering	0.9%	1,412,914
Stopped as Invalid Recipients	0.2%	375,529
Spam Detected	1.9%	2,817,762
Virus Detected	0.0%	440
Detected by Advanced Malware Protection	0.0%	521
Messages with Malicious URLs	0.0%	15,059
Stopped by Content Filter	0.2%	241,788
Stopped by DMARC	1.5%	2,281,672
S/MIME Verification/Decryption Failed	0.0%	0
Total Threat Messages:		81.6% 122,971,371
Marketing Messages	4.4%	6,619,999
Social Networking Messages	0.4%	645,147
Bulk Messages	3.6%	5,376,023
Total Graymails:		8.4% 12,641,169
S/MIME Verification/Decryption Successful	0.0%	0
Clean Messages	10.0%	15,034,622
Total Attempted Messages:		150,647,162

18 DISASTER RECOVERY/BUSINESS CONTINUITY

The significant flooding across the Denver metropolitan area in 2013 prompted the Colorado State Board of Colleges and Occupational Education to approve a specified spending authority to create a disaster recovery program to maintain continuity of operations in the event of significant weather or other events that could disrupt operations at the Lowry datacenter. After extensive research by System IT and consultation with Oracle and other key partners, System IT created an IT disaster recovery plan that encompassed the wide-area network, email, telecommunications, identity services, and Banner-related components. Planning and implementation of the System IT disaster recovery / business continuity project took place in FY17 and FY18. The culmination of this work included a detailed plan for disaster recovery and business continuity testing.

The software applications and infrastructure environment supported by System IT are constantly evolving to support the changing needs of the Colorado Community College System. Common changes include implementation of new software products, software upgrades, security patches, in-house developed solutions to meet new business needs, and enhancements to the underlying server systems and networks.

To ensure that the System IT disaster recovery and business continuity plan remains current, disaster recovery planning is built into all new projects. Failover tests are conducted six times a year to exercise the plan and highlight any required changes. Each test involves approximately 30 staff from System IT and CCCOnline. Four of these tests are conducted in a test environment and two tests are conducted in the live, production environment. Tests include a failover from our primary to secondary datacenter, followed by a failback from the secondary to the primary. Application testing is conducted at each step to ensure that systems remain operational. Each test requires between six and eight hours to complete. Prior to 2022, the testing process required eight to ten hours. Investments in automation have reduced the time required for failover and failback by approximately 30%. Currently, this testing process requires approximately 1,200 person hours every year.

The goal of the disaster recovery and business continuity program is to restore access to critical business systems within three hours of a catastrophic failure. System IT made additional investments in FY21 and FY22 to operate critical services like authentication, telephony, internet access, and wide-area networking in a highly available (HA) configuration. This enables these services to fail over to the alternate datacenter with very little service interruption. Other applications such as email and collaboration tools have been moved to hosted cloud providers which make them independent of any System IT datacenter.

System IT and CCCOnline are committed to the ongoing success of the disaster recovery and business continuity program. System IT continuously evaluates new techniques and technologies to enhance the disaster recovery and business continuity program with the goal of ensuring that systems are available to the System Office and colleges as close to 100% of the time as is possible.

CONCLUSIONS

Technology is ubiquitous in our world today and most of us could not do our jobs without it.

System IT Success Measures is a compilation of the end results of our technology, from registered students, to tuition payments collected, to paid employees, to malicious emails blocked and to help desk tickets. These are the activities that are assisted by our technology or are the result of our technologies. Hopefully this report sheds some light on the quantity and quality of services provided by System IT and demonstrates the extent to which our technologies and the work of System IT impact the colleges and system office.

System IT strives to be a model information and technology organization recognized for proactive leadership, collaboration, innovation, transparency and responsive customer service. Our complex technology environment as well as our support and governance structure has served as a model for other large institutions and systems.

We would appreciate your feedback on this report and well as on our technology and services.



COLORADO
COMMUNITY COLLEGE SYSTEM