

Project Title: UC Managed File Transfer Project

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Program Sponsors

Rachael Nava – UCOP Executive Vice President & COO
Dan Russi – UCOP Deputy Chief Information Officer

Names of project leader(s) and team members – listed below

The UC Manage File Transfer effort directly impacted

- ▶ UCOP Technology Development Services (TDS), Business Information Systems (BIS), Institutional Research and Academic Planning (IRAP), Labor Relations, Accounting, Finance, Payroll, PPS
- ▶ UC Production Control Shared Services Center (PCSSC)
- ▶ UC campuses (10)
- ▶ UCSF Print Center
- ▶ Lawrence Berkeley National Laboratory (LBNL)
- ▶ ASUCLA
- ▶ UC Hastings
- ▶ UC Risk & Safety Solutions
- ▶ UC Medical Centers (5)
- ▶ Unions (17) & Vendors (12)
- ▶ State of California

Every year campus and other business partners share thousands of files with UCOP; these include Student, Payroll and Personnel, Benefit and Financial files through a VSFTP process.

As part of the UC Systemwide cybersecurity initiative, UCOP Information Technology Services collaborated with each campus, other business partners and the UC Production Control Shared Services Center (PCSSC) to migrate all UCOP file transfers off the existing VSFTP.UCOP.EDU server.

Our goal is to improve the security of our UC data being exchanged between the campuses and UCOP, by improving the credentials used, protecting data-in-motion, protecting data-at-rest, improving management and monitoring of data exchanges.

UC PCSSC Managed File Transfer Hub

- GoAnywhere server resides inside our UC firewalls
- Triggers instant migration to destination server
- More cyber secure than VSFTP
- Data does not “rest”, pushed to destination server

- PGP encryption, if required
- Improved credentials by using keys, not passwords

This was a UC collaborative with all of the campuses participating in the migration of files transfers to and from UCOP to the Manage File Transfer Platform. The team participated in the migration of over 200 file group migrations affecting thousands of files annually and securing millions of student and employee records in motion and in transit.

Project Deliverables

- Files are being pushed by the external source organization that creates the files
- Files are now being pulled from UCOP source application servers or pushed from UCOP mainframes
- Every UC location established a single destination server, to receive files from PCSSC
- SSH keys were established with each locations' single destination server
- PGP encryptions are now used on any files being transferred with Personally Identifiable Information (PII) 1 – 3 (see appendix)
- Migrations were completed by file type, for all locations, at the same time.
- We did not make any changes to existing file layouts or content

In addition to securing the data, this project simplified and centralized key management. A good example of this is the encryption of Student Enrollment files, the files are encrypted by the campus with keys managed with PCSSC and then re-encrypted for UCOP consumption.

What is it?

GoAnywhere offers organizations two cybersecurity solutions: GoAnywhere MFT, a secure managed file transfer software, and GoAnywhere Gateway, an enhanced reverse proxy and forward proxy. GoAnywhere MFT allows you to simplify, secure and audit ad-hoc and automated batch file transfers. You can maintain compliance with detailed audit logs and reports. Files can be encrypted wherever they reside. Workflows are setup to transfer, encrypt and process files. GoAnywhere uses industry-standard protocols like SFTP, FTPS, OpenPGP, AS2 and HTTPS to protect files wherever they reside. To maintain compliance with regulations and rules like HIPAA/HITECH, FISMA, PCI DSS, and the GDPR, GoAnywhere tracks all file transfer and administrator activity in a central database. This information is provided through detailed audit logs and reports.

For more on Encryption and Compression:

- Provides [FIPS 140-2](#) compliance mode to meet U.S. Government (NIST) encryption standards
- Encrypts, signs and decrypts files using [Open PGP](#) and [GPG](#) encryption standard
- Automatically [encrypts files](#) (at rest) in targeted folders using AES-256 encryption
- Compresses and decompresses files using [ZIP with AES](#) standard
- Includes integrated [Key Management](#) tools for Open PGP keys, SSH keys and SSL/TLS certificates

Utilizing the GoAnywhere Gateway, file sharing services are retained in our private network. Inbound ports are closed for compliance with PCI DSS, HIPAA, SOX, etc. It hides the identities and locations of our internal systems.

These solutions are supported on Windows, Linux, IBM, AIX, UNIX, and Mac OS systems, as well as on cloud computing platforms like Amazon EC2 and Microsoft Azure.

How does it work?

There were a few ways this was setup.

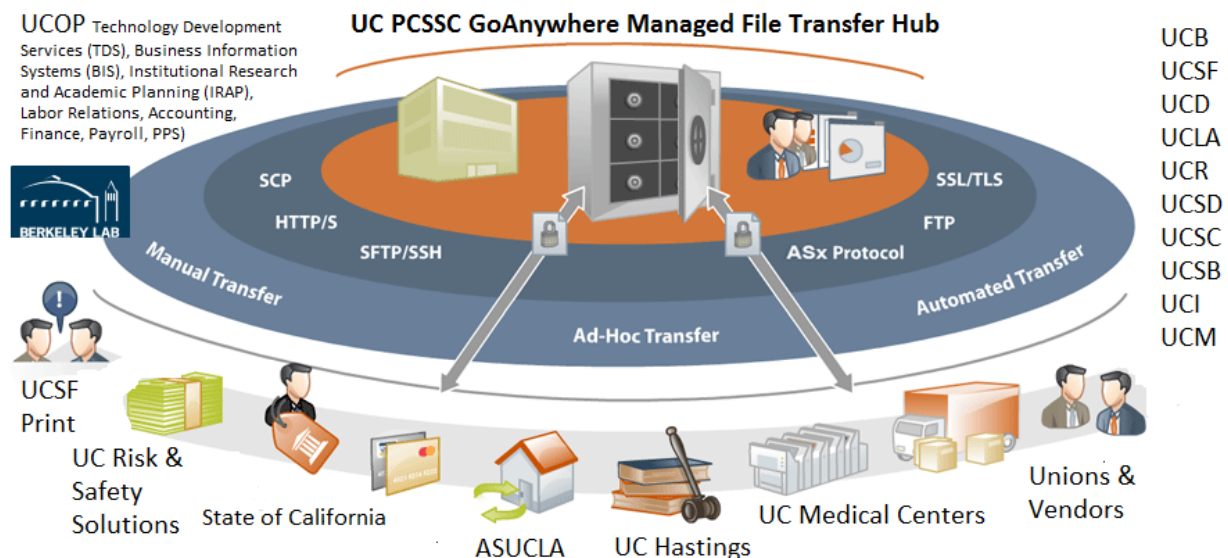
First, Service Accounts were defined and directories were created on the GoAnywhere system where the SSH and PGP keys were stored. Definitions of the sending and receiving systems were defined which allowed connection profiles to be created. Each campus deployed a single campus server.

For files coming from UCOP to a UC location/vendor/union, files were sent to the appropriate directory on GoAnywhere. If the file was encrypted, it was decrypted and re-encrypted for the receiving destination. Triggers were defined looking for specific files in specific directories. Once the trigger was executed, it called Control-M (PCSSC's scheduling software), which in turn called a GoAnywhere project that had the detail definition of the transfer.

For files going to UCOP, the reverse happened. The sending destination would SFTP the file to the directory on GoAnywhere. The same decrypt/encrypt, if appropriate, would happen. The triggers would then execute Control-M/GoAnywhere to transfer the files to the correct UCOP server.

Another method allowed customers to utilize an intuitive browser-based GoAnywhere Web Client where they dropped/picked up files manually.

Exhibit – New UCOP Managed File Transfer Environment



Timeframe

- Late 2016 - Initial assessment
 - TDS estimate (13 months, 4,425 hours, estimated cost \$1.7M)
 - PCSSC estimate (1,715 hours)
 - No estimates from UCOP business clients, campuses or other entities
- May 2017 – Decision Memo submitted
- July 28, 2017 – Decision Memo signed by President
- August 1, 2017 – TDS resources and contractors obtained
- April 30, 2018 – project completed, all campus files migrated (**9 months, actual cost ~\$800K**)

Customer Comments

UC Davis Input:

UC Davis Information and Educational Technology (IET) organization was tasked to migrate all UC Davis file transfers off the old UCOP server. Project requirements were for every campus to have a single location for the files to be delivered from PCSSC. PCSSC delivers files to a single campus server and campus is responsible for any additional file moves.

My role on the project was UC Davis Location Coordinator and Project Manager.

The first task was to provide a location for the files that UC Davis would send and receive from UCOP. Most departments used FTP or SFTP servers to exchange critical files with UCOP, and others dropped/picked up files directly from UCOP servers. The next challenge was to find the owners of department files and in some cases transition departmental business process flows to a new process and new technology.

With excellent collaboration between UCOP Technology Delivery Services, UC Production Control Shared Services Center (PCSSC) and UC Davis IET, UC Davis was able to implement new GoAnywhere Managed File Transfer (MFT) solution. This new enterprise level technology solution is used for secure file transfers between UCOP Technology Delivery Services, PCSSC and UC Davis various departments. UC Davis IET is using Go Anywhere MFT as a single point of control to streamline manual processes used by departments to encrypt, compress, monitor and audit file transfers. This provides tremendous cost cutting to UC Davis various departments.

Using the new file transfer enterprise solution, UC Davis had to migrate numerous critical files (55 different file groups) from various departments like Finance, Undergraduate Admission, Graduate Studies, Budget and Institutional Analysis, Financial Aid and Scholarships, Office of Research, Office of Registrar, UC Davis Health, and others. The new robust, scalable, and secure solution allows new customers to get on board quickly to use new solution to transfer files to UCOP (like Student Housing department that is using solution now to transfer payroll files to UCOP) UC Davis is one of the first campuses that migrated off of the old UCOP server.

The success of this project was possible via tremendous collaboration, knowledge sharing, flexibility and commitment by various UC groups like UCOP Technology Development Services (TDS), Business Information Systems (BIS), Institutional Research and Academic Planning (IRAP), Labor Relations, Accounting, Finance, Payroll, PPS, UC Production Control Shared Services Center (UC PCSSC) and outstanding efforts by individuals in these organizations. This project shows that UC organizations can work together as one team and can deliver quality technology solutions to our staff, faculty and students as one UC.

Campus # or Location	Location	Role	Team Member
UCOP	VSFTP Migration Project Team	Program Owner	Al Course
UCOP	VSFTP Migration Project Team	Project Manager	Bob Fraysse
UCOP	VSFTP Migration Project Team	Technical Project Manager	Mitchell Richman
UCOP	VSFTP Migration Project Team	Technical Project Manager	Sundar Thiru
UCOP	VSFTP Migration Project Team	UCOP Enterprise Architect	Jerome McEvoy
UC PCSSC	UC PCSSC	UC PCSSC Lead Manager	Laurie Graham*
UC PCSSC	UC PCSSC	Liaison	Matthew Valenzuela
UC PCSSC	UC PCSSC	Liaison	Mike Branaman
UC PCSSC	UC PCSSC	Liaison	Mike Sorensen
UC PCSSC	UC PCSSC	Tool Admin	Jeff Foster
UC PCSSC	UC PCSSC	Tool Admin	Rob Taber
UC PCSSC	UC PCSSC	Production Control Coordinator Manager	Beatrice Cardona
01	UC Berkeley	Campus MFT SPOCs	Laurie Graham*
02	UC San Francisco	Campus MFT SPOCs	Luke Hones
03	UC Davis	Campus MFT SPOCs	Ilvana Mesic
03	UC Davis	Campus MFT key contacts	David Callaway
03	UC Davis	Campus MFT key contacts	Nathan Affleck
04	UC Los Angeles	Campus MFT SPOCs	Don MacLeod
04	UC Los Angeles	Campus MFT key contacts	Jason Zhu
04	UC Los Angeles	Campus MFT key contacts	Makoto Tanaka
05	UC Riverside	Campus MFT SPOCs	Mike Kinsey
05	UC Riverside	Campus MFT key contacts	Dave Cahill
06	UC San Diego	Campus MFT SPOCs	Doug Meserve
07	UC Santa Cruz	Campus MFT SPOCs	Glenn Blackler
07	UC Santa Cruz	Campus MFT key contacts	David Wasmuth
07	UC Santa Cruz	Campus MFT key contacts	Michael Siladi
07	UC Santa Cruz	Campus MFT key contacts	Monique Leduc
08	UC Santa Barbara	Campus MFT SPOCs	Gregory West
08	UC Santa Barbara	Campus MFT key contacts	Rich Kildare
08	UC Santa Barbara	Campus MFT key contacts	Shajan Kay
09	UC Irvine	Campus MFT SPOCs	Mike Story
10	UC Merced	Campus MFT SPOCs	Julie George
10	UC Merced	Campus MFT key contacts	Jeff Pedro
10	UC Merced	Campus MFT key contacts	Michael Parrino
94	LBNL	Campus MFT SPOCs	Karthik Jayabalan
97	ASUCLA	Campus MFT SPOCs	Kamran Mehdian
97	ASUCLA	Campus MFT key contacts	Jason Lin
98	UC Hastings	Campus MFT SPOCs	Ronald Proschan
UCOP	Applications Delivery & Data Base Support Services	Systems Administrator	Bobby Cook
UCOP	Data Base Support Services	Data Systems Analyst	Vyacheslav Pankov
UCOP	Enterprise Application Services (EAS)	Sr. Application Manager	Donna Yamasaki
UCOP	EAS Distributed Applications	Supervisor	Lisa Hart
UCOP	EAS Reporting	Application Programmer	Hemalatha Ramaiah
UCOP	UCRS	Application Programmer	Jay McGehee
UCOP	UCRS	Application Programmer	Richard Rowe
UCOP	UCRS	File Net ECM Designer/Architect	Kai Deng
UCOP	UCRS	Information Systems Analyst	Leonid Litvak
UCOP	Mainframe Support Systems	Manager	Ray Vierregger
UCOP	Mainframe Support Systems	Systems Administrator	Phung Pham

UCOP	Network and Enterprise Operations Center (EOC)	Production Control Analyst	Steve Cavalli
UCOP	OS & Middleware Support Services	Manager	Tim Hanson
UCOP	OS & Middleware Support Services	System Administrator	Ashley Gould
UCOP	OS & Middleware Support Services	System Administrator	Colin Thompson
UCOP	OS & Middleware Support Services	System Administrator	Patrick Ryan
UCOP	Payroll, Personnel and Effort Reporting Systems	Sr. Application Manager	Larry Delaney
UCOP	PPS Hosted Applications	Manager	Christopher Scott
UCOP	PPS Hosted Applications	Applications Programmer	Norm Flynn
UCOP	PPS Hosted Applications	Applications Programmer	Latheef Kottal
UCOP	PPS Analysis & Architecture	Information Systems Analyst	Nadine Schumaker
UCOP	Data Services & Web Application Services (WAS)	Director	Candace Jones
UCOP	Data Services - UCDW	Applications Programmer	Tom Dudziak
UCOP	Data Services - UCDW	Information Systems Analyst	Chris Handy
UCOP	WAS - Application Programming	Applications Programing Manager	Patrick Rogers
UCOP	WAS - Application Programming	Applications Programmer	Brandon Wong
UCOP	WAS - Application Programming	Applications Programmer	Cynthia De Los Santos
UCOP	WAS - Application Programming	Applications Programmer	Rick Kehret
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UCOP	WAS - Support Services	Applications Programmer	Becky Farmer
UCOP	WAS - Support Services	Applications Programmer	Karla Holmberg
UCOP	WAS - Support Services	Information Systems Analyst	Gregory Boyer
UCOP	WAS - Undergraduate Admission Systems	Applications Programmer	Erika Hom
UCOP	WAS - Undergraduate Admission Systems	Applications Programmer	William Guinto
UCRSS	UCRSS	Campus MFT SPOCs	Jay Ballinger

In addition, the VSFTP team would like to thank the countless behind-the-scenes campus and other UC location resources who spent countless hours working on the UCOP file migrations

*Dual Role