Cloud-y with a Chance of Infrastructure

OIT Behind the Scenes
Webinar Series
Setting Expectations

- **Lights!**
  - Camera & Audio

- **Action!**
  - Participatory Activities

- **Camera!**
  - Recorded Session

- **Cut!**
  - Q & A
TODAY’S AGENDA

• General overview of cloud services
• Learn about cloud services at UC Merced: where we started, how it’s going, and how we help bring them to campus
• How to engage with OIT to get cloud services
What Do You Think?
What is the Cloud?

JD Bingham
Endpoint Security and Automation Engineer
WHAT IS “THE CLOUD” AND WHY SHOULD I CARE?
"The Cloud" is a way for OIT to achieve redundancy and efficiency.
As a redundancy example, let’s take CrashPlan.

CrashPlan safeguards the user’s work and data against catastrophic events.
As a cloud-based system, CrashPlan’s backups exist outside your system in case your computer or files get corrupted.

PSA: Install your CrashPlan today!
As for the cloud’s efficiency....
Let’s imagine that your team has a computer that is left on continuously in order to run a necessary digital service for the campus.

Essential Digital Service Setup Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>$1000</td>
</tr>
</tbody>
</table>
Though your computer is ON all the time, the application only uses 20% of the available computing resources.

You don’t necessarily need the equipment, you just need its computing power.
Removing hardware from the solution means you have fewer things that can go wrong…

…and fewer delays when they do.
Now let’s put our heads in the cloud for a moment...

Your team’s essential service needs to be:

- Always available
- Easily recoverable
- Accessible anywhere
Instead of buying that $1,000 computer, your team sends a request to OIT to create a virtual computer for your service.

A virtual computer can run the essential service with just enough processing power and storage to get the job done.
Your virtual system has dynamic resource expandability, so you can keep up with spikes in resource demand as they happen.

And you can make mirrors of your virtual computer in different locations to prevent down time due to disasters.
Cloud computing = lower cost, more reliability, expandability, and no hardware to get in the way.

It makes for an efficient, agile IT solution.
THE END
What Do You Think?
Benefits of the Cloud

Chuck Aby
Operations Management
Redundancy
Redundancy
Redundancy

Availability
Five Nines = 99.999% ‘uptime’
90% agreement = 36 days/year or 16 hours/week

99.999% agreement = 5.25 minutes/year or 6 seconds/week
Redundancy

Availability

Downtime

90% agreement = 36 days/year or 16 hours/week

99.9% agreement = 9 hours/year or 10 minutes/week

99.999% agreement = 5.25 minutes/year or 6 seconds/week
Availability

Redundancy

Reliability
Reliability = measurement of consistent behavior
Access to applications & data
There is no cloud
it's just someone else's computer
Pitfalls of the Cloud

Shane Middleton
UC Merced IT Cloud Engineer
CLOUD SERVICES – PITFALLS OF CLOUD
CLOUD SERVICES, CLOUDY SECURITY

• Complexity & visibility can cause inadvertent security vulnerabilities
• Cloud security is inherently difficult

What We Do:
• Follow industry- and vendor-specific best practices
• Maintain a well-architected framework
VENDOR LOCK-IN

• Not unique to cloud services

What We Do:
• Evaluate potential cloud services carefully
• Ensure data mobility
• Keep important data backed up in multiple locations
What We Do:
• Stay up to date on the specifics of the outage
• Only worry about what we can control
• Align cloud architecture with our cloud service needs
INTERNET NOT INCLUDED?

What We Do:

• Consider hosting important data locally
• Develop backup plans for accessing cloud applications and resources
• Plan accordingly
Current Efforts
Cloud Services Efforts

- Windows patching
- **Bitlocker encryption**
- Windows server upgrades
- Linux administration
- Network configuration
Windows Encryption Effort

Spring 2022 goal: Encrypt all campus-managed Windows desktops & laptops with BitLocker

- Develop code for deployments
- Testing & verification cycles
- Communications plan
- Pilot
- Review & adjust
- Finalize schedule
- Deploy
Windows Encryption Effort

Learn more: https://ucm.edu/encryption
2014: UCMSTOR crash
- Emergency migration of data
- Unlimited capacity for educational customers

2019: Box announces storage caps & additional charges for educational customers

2021: Box announces semi-retraction of 2019 plans
Box: Configuration & Integration

- Configured for access via UC Merced email address
- Integrated with UC Merced Single Sign On
Box: Administration

Capacity
• Users – nearly 25,000
• Storage
  2014 – UCMSTOR: 27 terrabytes
  2022 – Box: 491 terrabytes
  Estimated 1% growth each month

250k photos
250 movies
6.5 mil documents
Box: New Processes

• Address maturing growth
• Avoid escalating costs

• Who is licensed?
• What happens to files?
• Use group/department Box folders
Box: Other Data Storage

• **Alternative Paid Options**
  • CatDrive
  • AWS FSX
  • AWS S3

• **Free to UC Merced users**
  • Microsoft One Drive
    • 5 terabyte cap
    • 250 gigabyte file limit
What Do You Think?
Requesting Services

• Need help? Visit:

https://servicehub.ucmerced.edu

Search for:
• Amazon Web Services
• Box
• Crashplan
• Storage (CatDrive)
COMING SOON

Mar 14 – Research IT
Apr 14 – Technology Procurement
http://ucm.edu/v/oitbehindthescenes
OIT Behind the Scenes: Cloudy with a Chance of Infrastructure was created on location at the University of California, Merced in Merced, California!

Thanks to all the OIT folks who put hard work into this webinar!

Chuck Aby, Subject Matter Expert created such detailed notes that it was easy to manage his absence.
Feel better, Chuck!

Katie Adams Arca, Webinar Coordinator tries to rein in the madness.

JD Bingham, Subject Matter Expert his ipad sketch slide background series is epic.

Edson Gonzales, Webinar Support we make him do a lot of stuff at the last minute.

Nick Hansard, Webinar Support has the most iconic profile picture of all time.
That’s all, folks!