Next Gen Campus Collaboration
Recommendation

A REPORT ON THE CAL POLY PATH TO THE NEXT GENERATION ENVIRONMENT SUPPORTING COLLABORATIVE LEARNING FOR STUDENTS, FACULTY AND STAFF

OFFICE OF THE CIO
INFORMATION SERVICES
CAL POLY
2014
Executive Summary

Cal Poly has employed a comprehensive, university-wide approach to email and calendaring services for many years. Different solutions have been implemented over time to meet the needs of the campus. Changes in technology and the maturing collaboration needs beyond those of email and calendar functionality of students, faculty and staff are driving the iteration into the next solution.

Over the course of 2013, an extensive technical analysis was conducted, first focusing on identifying candidates, and then on comparative evaluation of three selected candidates. Candidates were narrowed down to our incumbent solution, Zimbra, and two cloud providers, Google and Microsoft’s cloud based offerings for higher education.

Starting in the spring of 2013 through summer and then into fall quarter, stakeholder feedback was collected through interactive sessions, on-line surveys as well as offering stakeholders to experiment in the Google and Microsoft environments.

The detailed results of the engagements, surveys and technical analysis are contained within this report.

The conclusion presents decision factors and a recommendation to move forward with a migration from the present Zimbra environment to a Microsoft 365 Education cloud-based offering, including Office 365, for all user populations.

If this recommendation is accepted by the university leadership, timing of the migration would need to be coordinated to present the least impact to campus users. Possible approaches could be rolling out file sharing services first and then the migration of email and calendar services to align with the academic calendar. It may not be possible to complete a migration by the end of the existing Zimbra support contract ending September 30, 2014. Rather than risk going out of support in the midst of the migration the Zimbra support contract should be extend for an additional fiscal year.
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Introduction

The following document summarizes a campus consultation and evaluation of current and selected potential collaboration suite products for campus use.

Periodic review of collaboration services, focusing on email, calendar and document sharing, is appropriate as the services offered and the context for their use changes over time. This review has been scheduled such that, if a new collaboration product is chosen, sufficient time should be available to migrate existing email, calendar, contact and document content to a new system, before the current product support contract ends in September 2014.

Underlying this effort were certain driving considerations, namely:

1. Campus engagement is critical to this effort, helping to define and prioritize requirements and key functionality needed for email, calendaring and document collaboration at Cal Poly;
2. Products would be evaluated for their ability to support and enhance collaboration at all levels of campus;
3. Product comparisons would focus on features and functionality that differed and distinguished each product. Essential operations that are similar and equitable across products, such as sending and receiving email, would not need explanation or in depth discussions
4. Cost, while important, would not be the sole criteria in product selection, and represents one of several factors in the product evaluation.

Many parts of campus were involved in the consultation, but the primary team responsible for facilitation of the stakeholder engagement as well as the extensive technical investigation has been the Enterprise Applications group within Information Services. Enterprise Applications supports and administers the present enterprise communication platforms including Zimbra and the email distribution list system.

Cal Poly Current Email and Calendar Services

Email and calendaring are integral communications tools at Cal Poly, allowing for one-to-one and one-to-many communication, as well as coordination of personal events, meetings and resource scheduling. The current system also supports contact management, task tracking, and includes basic document storage and management.

Email and calendar use has evolved at Cal Poly over the past ten years; during which time three successive email and calendar systems have been implemented. From the late nineties until 2005, the OpenMail email and OpenTime calendar systems, both developed by HP, served campus employees and students. Each had a web browser interface, as well as a desktop client for calendar, a MAPI connector for Outlook. The system supported a Pine interface accessed
via central UNIX accounts. HP sold OpenTime to Steltor, which supported the product until Steltor was itself purchased by Oracle Corporation in 2002. As this system aged, email performance became a critical issue. Calendar services were implemented on a separate server, and as such, were not impacted by ongoing performance issues. Quotas for employees were 250 MB and 50 MB for students. At the time Cal Poly transitioned from OpenMail, no other universities were known to still be using this software, though many still used the calendar product.

From 2005 until 2008, Cal Poly employed Oracle Collaboration Suite (OCS), which included email, calendar, and content services. The product included a set of features not implemented at Cal Poly, including RTC and web conferencing. OCS featured a Dynamic HTML web interface, continued support for a desktop calendar client, as well as Oracle Connector for Outlook. Performance was improved over OpenMail benchmarks, but still saw impact from bugs and changes that were introduced to the system through upgrades. Quotas at this time were increased from MB to GB scales, with 1 GB for employees and 250 MB for students. Oracle Collaboration Suite, due in part to their purchase of the calendar product, was implemented wholly or in part at several universities nationwide. Cal Poly was represented along with Duke, Stanford, and University of Chicago on Oracle’s higher education committee for OCS.

Zimbra followed with email implemented in 2008, and calendaring in 2009, and introduced an AJAX client, and the first major change of calendaring at Cal Poly. The previous calendaring product stored calendar items in a central proprietary database, with changes and updates modifying calendar objects directly. Calendaring in Zimbra is message based, a more common, if less fault tolerant, method of implementation. Also included in the suite, users could upload files to their Briefcase; manage Tasks, Contacts, and preferences. Quotas increased again, to the current 3 GB and 1 GB for employees and students respectively. Zimbra had at one point introduced beta versions of document, spreadsheet, and presentation apps, but these were later pulled from the Zimbra product and product roadmap.

Overall performance and general uptime improved greatly for users as a result of the Zimbra implementation. Mass mails could now be sent without concern that they would impact system performance, and upgrades and patches have become more routine, with little to no unforeseen issues. Campus support has moved towards a web-based interface, foreshadowing somewhat today’s industry standard of cloud-based access to email, calendaring, and other content. Furthermore, a common web-based interface reduced the support needs and costs to the campus for what had been many varied desktop clients. Personal device support has also become easier and more dependable, in part due to the change of device focus from hardware to software; previously this depended on vendor supplied lists of supported hardware devices, which has moved significantly to an OS-focused and software view of devices.

The Zimbra product was implemented without the Archiving and Discovery components, which would it was deemed to be financially prohibitive, particularly when other tools included in the product were sufficient to meet the litigation needs of the campus. To supplement the capabilities of the platform and to meet the needs of the campus, several workarounds have been developed over the current implementation period.
Zimbra, at the time it was chosen, was expanding in the higher education segment, and was the product provided to all Comcast customers.

**September 2014 License Expiration**

Cal Poly's current Zimbra support contract expires on September 30, 2014. Cal Poly owns the software, and could opt to continue with the free, community version of Zimbra, though this lacks not only support for trouble tickets submitted to Zimbra, but the backup and restore functionality of the Zimbra server.

**Email Delivery Addresses: Where do campus users read their mail?**

Campus users at Cal Poly have a choice as to where they receive and read their email. At Cal Poly, this model includes what is called an Email Delivery Address or EDA. Cal Poly is not alone in using this model, as other universities allow email forwarding in a similar manner. While each user is provided with a consistent email identity, of the form `username@calpoly.edu`, the system allows the flexibility of changing where mail is delivered, by routing mail to an address chosen by the user. This could be the account offered and supported by campus, or it could be a private off-campus address owned and managed by the user. The `@calpoly.edu` form is used in the campus directory for email lookups and addressing. Thus, the campus has an easily understood mechanism of officially contacting users, but also allows users the flexibility to independently manage where they wish to receive their communications.

Staff and faculty most commonly receive mail in their campus provided email account (88% and 85% respectively). For emeritus who have accounts, many choose to continue use of their campus provided email account.

Students will, as applicants, supply an off-campus email address as their EDA, as applicants are not provisioned with a campus email account. Once applicants become matriculated students on campus, they often continue using their off-campus EDA, rather than switch delivery to a campus account, though as a student employee or through other campus functions they may it preferable to choose their campus account, as it allows better coordination of calendars and sharing with state staff and faculty.

It is worth noting that since all calendar options currently under consideration are message based, including Zimbra, the calendar system is tightly linked to its corresponding messaging system. While calendar invites can be sent to other systems via email, the status of attendees meeting acceptance can typically best be viewed if the calendaring and messaging system is by the same vendor; when the calendaring and email systems differ, attendee status can only be confirmed via email response, and without the appropriate response, status is indeterminate.

The following charts show EDAs by domain for students, state faculty, state staff, and emeritus. While students arrive on campus with the EDA they set as applicants, employees select their EDA only once hired. Employee adoption of the campus collaboration offering is much higher than students, largely in part as it is easier to collaborate when using the same system other employees are using, and it separates their personal and professional accounts to some extent.
As emeritus, once the campus collaboration is no longer needed, they then adopt a slightly more diverse number of accounts for their EDA.

**Figure 1 - Student Email Delivery Addresses by Domain**

- gmail.com: 13%
- yahoo.com: 16%
- cpmail.calpoly.edu: 19%
- hotmail.com: 5%
- aol.com: 3%
- Other: 4%

**Figure 2 - State Faculty Email Delivery Addresses by Domain**

- cpmail.calpoly.edu: 85%
- gmail.com: 4%
- yahoo.com: 1%
- hotmail.com: 1%
- aol.com: 1%
- Other: 1%
Challenges: Missing Enterprise Collaboration Features

The current system includes a component called a ‘Briefcase’. Like a real-world briefcase, this improves document portability, moving selected items off any particular desktop to a location that can be accessed at work, home, labs, and by devices. It includes a preview option, but any editing requires opening documents in a third-party application, such as those offered by...
Microsoft Office – Word, Excel or PowerPoint. Version control is limited. Access to individual folders can be granted to others on campus.

What is mainly lacking in this component is any sort of web or cloud-based editing of documents. The requirement to download and upload documents is comparatively cumbersome and time consuming when user demand for ease of use and access has increased. Document compatibility with common document software packages requires that the download destination have such software available. No co-authoring functionality exists in the current system.

These difficulties have lead campus users to develop other solutions that, in turn, present their own challenges. For example, it can be easier to share a document by simply emailing it as an attachment, since positioning the same document in the Briefcase adds no functionality in terms of editing, tracking changes or review. Email, however, is not a version control system, nor does it offer access control. Emailing documents as attachments leads to email bloat, and increased pressure on user quotas; the document as an attachment counts against the recipient’s quota, whereas documents stored in a Briefcase count against the document owner’s quota.

Other collaboration features that would improve collaboration at Cal Poly include chat, also known as instant messaging or Real Time Collaboration (RTC). Lightweight, informal and brief, tools like chat can facilitate quick question and reply, notification, and group conversations. When tied to a presence server, which uses indicators to show the availability of chat participants, person-to-person contact can be improved; conversations take place when needed, instead of waiting for response to a voice mail or other asynchronous communication. Again, campus users have devised workarounds, with pocket groups in a department or work area signing up for external providers like Yahoo chat, Google Talk, or Microsoft Messenger. But, user names are inconsistent, protocol security cannot be enforced, and such communications are leaving campus and returning via their hosted channels, under the risk that not all such conversations should leave campus and the secure environment for campus information that it provides. Most of all, the individual groups of users are not connected, and many Cal Poly users who could benefit from chat are not being served at all.

Similarly, the campus would benefit from an enterprise web conferencing system. While most web conference systems include chat, they also typically feature desktop and desktop application sharing, audio and/or visual communications channels, attendance authorization and session recording. An existing system is currently being support by the College of Business in partnership with the College of Engineering, but significant budget and support constraints would need to be overcome to make this a campus service. This system is also not integrated with any other collaboration system on campus, nor is it integrated with the Cal Poly infrastructure, which would support provisioning and user authentication for application access.
Challenges: Quota

As noted in the previous section, document and other attachments increase the size of individual emails; over time, this consumes the user quota, both for the sender if the message is kept in their Sent folder, and for the recipient. The contrasts of the current campus implementation with Google and other consumer products, which have much larger quota and storage allocations – strongly supported by ad revenue – are dramatic. But this distinction of limited, campus budgeted storage versus externally funded commercial storage is difficult to communicate, and some users remain frustrated with quota warning messages and account storage limitations.

A related issue is the changed approach in how users manage their mail; while some have continued to move and file email, mimicking paper content management, the large storage allocations of consumer products has altered user behavior, and more campus users are leaving all their mail in their Inbox, relying on product search capabilities to find and retrieve messages they need. A direct side effect is that mail is less managed and groomed by the user, creating Inbox bloat. Inboxes with over 10,000 messages is more common than it had once been, as well as accounts with thousands of unread messages.

Challenges: Storage

By extension, as user quotas grow, the collective system storage must also grow in size. Hardware must be purchased, which can maintain key I/O performance thresholds and sustain system growth. Extensive planning is involved to reduce SAN competition conflicts with other campus applications and databases, and to manage for campus storage resources.

Challenges: Backups

With increasing storage demand comes increased backup demand. The continuous growth of the current system has increased the complexity of maintaining reliable and manageable backups. The size of the backups has influenced the method and implementation of off-site storage for backups, and required increased monitoring over time, as weekly backups crossed a critical threshold; they began to take longer than a week to perform. A direct result would be that any disaster recovery effort would grow in complexity and time to complete. A skeleton system could be restored in a reasonable time, but restoration of account data could take as long as a backup or longer.

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1 In the present environment, 1.8% (575) of all users are over 80% of their allotted quota; inversely, 98.2% of all users are using less than 80% of their allotted quotas. If the population is narrowed to only faculty and staff, the percentage using more 80% or more of their quota increases to 8% of all faculty/staff.
Candidates for Next Generation Collaboration

The following summary descriptions highlight the selected candidates considered during this consultation. They reflect the best choices of modern collaboration platforms that present a range of options across the constraints and challenges of maintaining an effective campus collaboration platform.

**Google Apps For Education (GAFE)**

Google released their free online email service, Gmail, in 2004. As Gmail’s popularity increased, Google added other applications, such as Google Calendar and Google Docs (later renamed Google Drive). In 2006 Google launched Google Apps for Education (GAFE), allowing educational institutions to use a custom domain name (such as @calpoly.edu) while using the Google Applications. There is no charge to the university for GAFE, although Google does offer extra services to institutions for a fee, including discovery services and commercial grade spam filtering. At this time Cal Poly is only considering the free services offered. GAFE includes email, calendar, contacts, tasks, instant messaging, web conferencing and drive. Google Drive supports document storage and collaboration. It allows the uploading and storage of any file format, but any files that are in the proprietary Google file formats do not count against individual account quotas. Drive includes web applications, which support creation and editing of documents, spreadsheets, forms and presentations collaboratively within the web browser. Users can simultaneously work on the same Google-format file in the web browser and see changes made by other users in real time. GAFE offers users a 30 GB combined quota for all supported applications, including Drive and Email content.

**Office 365**

Microsoft launched Hotmail, a free email service, in 1997. Hotmail was re-designed in 2012 to look similar to their Microsoft Outlook desktop email client and the product was renamed Outlook.com. Also in 2012, Microsoft began offering an online collaboration suite called Office 365 to educational institutions free of charge. As with GAFE, there are other services that can be purchased from Microsoft for a fee, but Cal Poly is currently only considering the free offering. Office 365 includes email, calendar, contacts, tasks, instant messaging, web conferencing and drive. Office 365’s SkyDrive offers online file storage and collaboration. Unlike Google Drive, SkyDrive includes access to web versions of Microsoft’s Office suite of programs (Word, Excel, PowerPoint and OneNote). The web versions of the programs have a very similar look and functionality to the desktop versions. As with GAFE, Office 365 supports co-authoring; users can simultaneously work on the same MS Office document in the web browser and display changes made by other users by clicking a button. Office 365 offers users a 50 GB quota covering all applications, including SkyDrive and Email content.

**Zimbra 8**

Zimbra is Cal Poly’s current collaboration suite. The existing implementation is Zimbra version 7, though this will be upgraded to version 8 in December. Cal Poly migrated to Zimbra in 2008. Zimbra has maintained use of Open Source components to support their products, releasing an
Open Source or ‘community’ edition of their products as well. Customers and partners have the ability to suggest and vote on requests for enhancements and bug fixes. As such, this has benefitted Cal Poly by allowing campus requirements and suggestions to have a direct and increased impact on the features that Zimbra has added and changed over the years. Cal Poly purchased the Network Edition of Zimbra, which includes features that are not included in their free version, and includes enterprise support. Zimbra components include email, calendar, contacts, tasks and briefcase. Cal Poly is responsible for providing storage for the campus implementation of Zimbra. Currently staff and faculty receive a 3 GB quota and students receive a 1 GB quota for all content.

Campus Consultation

A summary of the campus communications and materials regarding the Campus Collaboration Evaluation include:

- Two Introductory Campus Presentations in May
- Email Communications to Faculty, Staff and Students
- LAN Coordinator Announcement and Invitation to Participate
- Cal Poly Report (Spring, Summer and Fall Announcements)
- Service Desk Web Site with Project Information, Timelines, Presentation Materials and Extensive Product Comparison Documentation

Campus Outreach

Specific outreach, which included demonstrations, hands-on sessions, and individual access to product candidates, include the following events:

- Summer – Staff focus
  - AFD Focused Presentation (Demo)
  - Academic Affairs Focused Presentation (Demo)
  - LAN Coordinators (Announcement and Demo)
  - Demos (3 sessions) with Focused Demo for Campus Administrative Assistants
  - Hands-on Sessions (3 sessions in Library labs)
- Fall – Faculty and Student focus
  - SC3 Meeting (Demo)
  - FACT Meeting (Demo)
  - Demos (6 sessions)
  - Hands-on Sessions (6 sessions in Library labs)
- Presentation Survey Sent to Summer and Fall Session Attendees
- Additional IS Survey Sent to All Staff
- Additional FACT Survey Sent to All Faculty
Table 1: Next Gen Campus Collaboration Session Attendance – 152 Total Attendees

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Next Gen Campus Collaboration Presentations
Session Attendance - Summer 2013

Table 2: Next Gen Campus Collaboration Presentations Summer Session Attendance
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Next Gen Campus Collaboration Presentations
Session Attendance - Fall 2013
SWOT Analysis by Candidate

The following sections aim to highlight the critical features and issues found with each candidate in the course of this evaluation. The elements identified through the technical investigation and directly from user consultation.

There are general trends worth mentioning. All of the characteristics, e.g., account quotas, features, functionality, are all very much moving targets, as all the vendors constantly update and modify their offerings. There should be the expectation of rapid development in a hotly contested space over the next couple of years, especially as the battle for the education audience share continues between Microsoft and Google.

Also worth noting, each candidate has a fully functional web application, though there can be preference for a particular browser depending on the product. Device and OS support appears to be sufficient for each; this is critical to the campus as iOS and Mac adoption is over 50% according to Portal access statistics, and higher among some demographics. Individual candidates generally support native device applications and may also have custom apps available for use on multiple device platforms.

Google Apps for Education – User Experience

Strengths and Opportunities

Many campus constituents -- students, faculty and staff -- are already familiar with the Gmail interface. A GAFE account would give them a significant increase in their account quota and allow large (25MB\(^2\)) attachments to be uploaded, an increase over the current 20 MB attachment limit in Zimbra (N.B.: this is configurable and could be increased for Zimbra as well. The principle reason for any constraint is sufficient physical storage to support the limit).

Mail sent from GAFE would appear to be from the Cal Poly email domain. Access to a GAFE account is through a web browser, a third-party desktop client such as Outlook, Mac Mail or other IMAP or POP client, or a mobile device. In addition, Google supports the option for HE institutions to provide Google Alumni accounts, allowing alumni to continue using a Google account associated with their alma mater. Alumni accounts would have ads present in the account interface, unlike student, faculty or staff accounts in GAFE.

Google Drive includes the Google Docs applications: Documents, Presentations, Spreadsheets, Forms and Drawings. The Google Docs applications are expected to be sufficient for student use, allowing students to collaborate on projects or assignments with ease and familiarity. That said, feedback was received that most written assignments on campus are expected in Word or Excel, while Google Docs use was especially useful for collaborative editing for group work, with a much smaller user population.

\(^2\) This is an email attachment limit, managed by GAFE. Uploads to the drive can presently be up to 10GB each.
Many staff use complex folder hierarchies for organization. In GAFE, labels replace folders. Multiple labels can be applied to an email, much like Tags in Zimbra.

The GAFE web client provides mail and calendar designate support, an important requirement for calendar group scheduling.

**Threats and Weaknesses**

The calendaring component of GAFE has multiple identified bugs. The creation of a calendar entry is similar to Office 365 and Zimbra, and like them, calendaring in GAFE is message based. However, any modifications to an entry in a recurring series result in the series being split. In addition, changes made to a meeting instance can inadvertently overwrite previous modifications that were made to other instances in the series.

These calendaring issues are of particular concern because campus administrative support staff regularly create recurring meetings that are frequently modified as a result of an individual’s availability or other circumstances. The importance of having a calendar that truly reflects one’s schedule has become paramount. The identified flaws in the modification of recurring meetings in GAFE would be a significant issue for support staff that routinely perform complex group scheduling and the administrators they support.

The Google Docs applications are not as sophisticated as the Microsoft Office Suite. The import of a Microsoft Office file into the applicable Google Drive application is often less than perfect, resulting in formatting errors.

Email Templates allow the same email to be sent out on a recurring basis and can include text in addition to input fields. Google does not have a template feature incorporated into its core email service. However, there is a template feature within Google Labs, which is a library of experimental new features that can be activated within Google.

Mail delegation can be performed in GAFE. However, the sharing of a GAFE label requires the entire Inbox to be shared. This removes the ability that many Cal Poly power users routinely use in their own accounts to share only a specific folder with colleagues.

Google Apps relies on browser tabs to provide access to multiple Google components. When another component in GAFE is opened – such as email or calendar – another browser tab is opened. The opening of multiple browser tabs within a web application has repeatedly been a source of confusion for campus users.

A potential disadvantage of any hosted solution is that Cal Poly will not be in control the changes to the system. Updates to the system by the vendor could occur at times that could disrupt university business. Many of the current GAFE implementers analysed as part of this exercise have run into this constraint and are resolving themselves to it, but this has in part influenced many of those sites to restrict implementation to their student populations.
Sending limits have the potential to require significant change to current business practices on campus. These limits are not proportional, for example a small campus and a larger university are bound by the same limits. They are also fairly complex, and would require substantial training and process changes on campus.

From Google Support

To keep our systems healthy and your accounts safe, Google Apps limits the amount of mail a user can send. The limits restrict the number of messages sent per day and the number of recipients per message. After reaching one of these limits, a user cannot send new messages but can still access his or her account and receive incoming email. The following peak limits apply to Google Apps for Business or Education editions and users in trial domains:

<table>
<thead>
<tr>
<th>Limit type</th>
<th>Description</th>
<th>Business / Education editions</th>
<th>Trial users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Messages per day</td>
<td>Daily sending limit*</td>
<td>2000</td>
<td>500</td>
</tr>
<tr>
<td>Messages auto-forwarded</td>
<td>Messages automatically forwarded from another account; not included in the daily sending limit</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Auto-forward mail filters</td>
<td>Account filters that automatically forward mail</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Recipients per message</td>
<td>Addresses in the To, Cc, and Bcc fields of a single email*</td>
<td>2000 (500 external)</td>
<td>2000 (500 external)</td>
</tr>
<tr>
<td>Recipients per message (sent via SMTP by POP or IMAP users)</td>
<td>Addresses in the To, Cc, and Bcc fields of a single email*</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Total recipients per day</td>
<td>Individual addresses count in every mail sent; 5 emails sent to 10 addresses count as 50 recipients*</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>External recipients per day</td>
<td>Email addresses outside your primary domain, including domain aliases and alternate domains</td>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>Unique recipients per day</td>
<td>Individual addresses count once a day; 5 emails sent to 10 addresses count as 10 unique recipients*</td>
<td>3000 (2000 external)</td>
<td>3000 (500 external)</td>
</tr>
</tbody>
</table>

*applies to both internal and external recipients

The value of these limits may change without notice in order to protect Google’s infrastructure. Limits per day are applied over a rolling 24-hour period (rather than a set time of day).
Google Apps for Education - System Administration

Strengths and Opportunities

GAFE has a simple, easy-to-use Administration Console for system administrators to manage their domains and users.

As Google Apps have been around for around 10 years, there has been additional add-on functionality developed by Google and the user community. This would potentially provide Cal Poly tools to integrate GAFE with other campus applications more readily than Microsoft.

The other obvious benefit of GAFE over a campus-hosted implementation is that upgrades and fixes are performed by Google and rolled out with no downtime. This would allow our campus application administrators to work on other campus projects.

Threats and Weaknesses

The most significant administration weakness of GAFE is the lack of account recovery tools. In the current Zimbra system application administrators have the ability to recover deleted account data for approximately three weeks. Google offers no recovery tools. Once data or an account has been deleted, it is not recoverable.

The campus would have a very limited window to postpone upgrades, following the Google Apps Release cycle. Campuses can either follow the Rapid Release schedule, which implements change and new features as they are available, or the Scheduled Release schedule, which delays changes for approximately two weeks. This would create challenges for campus support staff when training or documentation was required for new features. Google may also independently remove features or apps whether this is desirable by campus or not. This has already occurred over the GAFE product history with some features trialed in Google Labs then being later unilaterally withdrawn from all participating campuses with no forewarning.

System logs for Google are very limited and lack necessary details. This would limit application administrators’ abilities to provide troubleshooting for user issues, resulting in an increased reliance on external Google Support to resolve issues.

Google’s online help documentation, although abundant, is not well organized. Finding out if an issue or enhancement has been reported to Google and what the status might be is also very difficult to determine. Anecdotal reports from other universities indicate on GAFE that more support options are available once you have signed a contract with Google.

Resource calendar creation is convoluted and difficult to set up with Google and the options for controlling scheduling of these calendars appears limited.
Office 365 – User Experience

Strengths and Opportunities

Account quotas in Office 365 are presently 50 GB in size, and are shared between email and the document repository, which is known as Sky Drive. In addition to storing and sharing of files, Sky Drive allows Microsoft Office files to be created and edited in a web version of the application. Files can also be synced from a local computer to Sky Drive.

The Inbox, folders, and calendars can be shared using the Office 365 web application. Calendar delegation can be performed in the web client and there are several options for configuring how delegation is handled. Email delegation in which the delegate sends mail on behalf of the account owner, however, requires Outlook.

Templates allow the same email to be sent out on a frequent basis and can include text in addition to input fields. Office 365 does not have a template feature incorporated into its email web client, although there are workarounds that function similarly to a template. The desktop version of Outlook, however, has template functionality.

There is both an iPhone and iPad Outlook Web Application (OWA) available.

Threats and Weaknesses

Office 365 does not display declined calendar entries. Once an entry is declined, it is moved to the Trash folder. If the Trash folder has been emptied, there is no way to change status from declined to accepted, for the declined entry. Currently, calendar users have been able to change their attendance status on a declined meeting because the entry was still visible on their calendar in a faded color.³

In the Calendar component, a user can add as many calendars as they want to their account. However, one can only view up to five calendars simultaneously. This will be an issue for those performing complex group scheduling.

Microsoft has not announced plans to deliver the Outlook Web Application (OWA) for Android or Windows phones. For Android and Windows phones, Exchange ActiveSync is the protocol used for accessing email.

As discussed for GAFE potential disadvantage of a hosted solution is that Cal Poly can’t control the changes to the system. Updates to the system could occur at times that disrupt university business.

³ A workaround to this issue would be for the attendee to change the meeting status to tentative allowing one to accept the meeting if availability changed.
From Microsoft - Sending limits in Office 365

Cloud-based e-mail accounts have a recipient rate limit, often called a sender limit or sending limit. This limit defines the maximum number of recipients that can receive e-mail messages sent from a single cloud-based account in a 24-hour period. The recipient rate limits for Exchange Online are:

| Microsoft Office 365 for professionals and small businesses | 10,000 |
| Microsoft Office 365 for enterprises | 10,000 |
| Microsoft Live@edu | 1,500* |

* When a Microsoft Live@edu organization is upgraded to Office 365 for Education, the recipient rate limit is increased to 10,000 recipients per day.

The recipient rate limit applies to messages sent to recipients inside and outside your organization. After the limit has been reached, messages can’t be sent from the mailbox until the number of recipients that were sent messages in the past 24 hours drops below the limit. Multiple messages sent to the same recipient are counted separately. For example, if a user sends 10 messages to the same recipient in a 24-hour period, these 10 messages count as 10 recipients towards the recipient rate limit.

Office 365 - System Administration

Strengths and Opportunities

Office 365 has sufficient system administration tools. Upgrades and fixes would be performed by Microsoft and rolled out with no downtime. The Office 365 Support tools were easy to find and use. Microsoft Support was very responsive and helpful on a couple tickets the team submitted with questions and requests.

Threats and Weaknesses

Data and account recovery is more limited than we can achieve with Zimbra. System logging is limited. We would not be able to provide much troubleshooting for user issues and would need to rely on Microsoft Support.

Creating resource calendars is complex and options for managing resource calendars is fairly limited.

Data recovery is limited to a few days, whereas the current Zimbra implementation supports recovery for a 3 week window of time prior to the current date. The current implementation also includes detailed activity and audit logging, tracking both the automated interactions between clients, devices and the system, and manual activity of the users; very little of the same type of logging or tracking is available in Microsoft 365, which could hinder the type of troubleshooting and user assistance currently supported on campus. Microsoft Support would need to be engaged in these cases, potentially delaying problem resolution and adding complexity to support.

Resource calendars are more difficult to create and manage in Microsoft 365. These refer to commonly used conference rooms, physical resources such as projectors and vehicles. The
current implementation has approximately 500 such resources available for scheduling by campus constituents. These would need to be recreated in the new system, and their data, permissions and sharing rights migrated.

**Zimbra 8 - User Experience**

*Strengths and Opportunities*

In July 2013, an announcement was made that Telligent acquired Zimbra from VMware. The acquisition was merged under the Zimbra name. The merging of the two companies combines Telligent’s social collaboration including real-time communication, social networking, instant messaging and online communities with Zimbra’s messaging and collaboration suite.

Zimbra 8 includes many new features in addition to the enhancement of existing features. There is a new **Activity Stream** Inbox filter that helps with Inbox management. There is also new functionality in the Conversation View. The Search feature has been enhanced, allowing for more intuitive searches. The new **Send As** function allows email sent by a designate to appear as if the manager sent it. Images, tables, or spreadsheets can now be pasted into a message window.

There have been several new additions to Zimbra Preferences, including the ability to create an Auto-reply message specific to external addresses, configuring notifications to be sent via text messaging, and the ability to assign folder retention policies.

Enhancements have been made to calendar printing. In addition, tagged appointments change to the color of the tag, allowing for visual differentiation and all-day appointments can now be drag-and-dropped between days.

*Threats and Weaknesses*

Zimbra has limitations in terms of easy file sharing collaboration. Presently the only mechanism is to utilize briefcases, which are difficult for many people to master. Compared to other candidates, there is more required to upload and download files for collaboration. There is no collaborative editing option for documents in Zimbra.

Chat is only available as a plugin in Zimbra and there is would be significant effort to incorporate chat into the current user interface.
**Zimbra 8 - System Administration**

*Strengths and Opportunities*

Zimbra has strong administration tools. Cal Poly can manage the system through the Administration Console in a web browser or use command line tools on the servers themselves.

Zimbra has extensive logging. This allows effective and efficient troubleshooting of user and system issues. Zimbra has extremely strong data and user recovery options that are routinely employed.

*Threats and Weaknesses*

Cal Poly staff must implement all upgrades and patches. Downtime is required during maintenance. Storage must be purchased and maintained by Cal Poly. Backups for disaster recovery must be created and stored by Cal Poly. Zimbra requires space on campus hardware resources to run.
TCO Analysis Summary

<table>
<thead>
<tr>
<th>Constituent</th>
<th># of Accts</th>
<th>Zimbra 3 GB Quota (Storage + License)</th>
<th>Google - Basic 30 GB Quota</th>
<th>MS 365 A2 Plan 50 GB Quota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>22,494</td>
<td>$49,486.80</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Faculty, Staff and Emeritus</td>
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<td>$9,521.60</td>
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<tr>
<td>Auxiliary</td>
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<td>Departmental</td>
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<td>$2,646.60</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
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<td><strong>Subtotal</strong></td>
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<td><strong>$62,891.40</strong></td>
<td><strong>$0.00</strong></td>
<td><strong>$0.00</strong></td>
</tr>
<tr>
<td>Spam/virus mgmt (IronPort)</td>
<td></td>
<td>$43,662.72</td>
<td>$43,662.72</td>
<td>$43,662.72</td>
</tr>
<tr>
<td>Sympa Distribution Lists</td>
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<tr>
<td>Directory Sync</td>
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<td>$7,500.00</td>
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<tr>
<td>Discovery Retention Services</td>
<td></td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$52,149.72</strong></td>
<td><strong>$59,649.72</strong></td>
<td><strong>$59,649.72</strong></td>
<td><strong>$59,649.72</strong></td>
</tr>
</tbody>
</table>

Table 4: Basic Costs for Each Product Candidate

The table above represents the base price for the product candidates, based on the current Zimbra implementation, and the ‘free’ or ‘no-cost’ products offered by Google Apps for Education and Office 365.

Customer support FTE is expected to remain the roughly the same across product candidates. Current estimates of 1.5 FTE include service requests and other direct user support, product testing and documentation, system configuration and management, security configuration and management.

Application infrastructure support, which includes local SAN support, OS support and backup support, could be reduced from 0.15 FTE to <0.1 FTE if all campus users were migrated to either Google Apps for Education or Office 365.

The cost models above reflect costs for the populations noted; this does not include alumni or applicants. Google Apps for Education would require a directory sync server implemented in the Cal Poly ITS data center, and would support authentication for the system. Office 365 can be implemented with a local directory sync server as well, but it does not appear to be a requirement at this point. If a local directory sync server were implemented, Office 365 would be an additional $7,500 per year, matching the Google Apps for Education cost of ownership.
The table above represents the price for the product candidates, based on a substantially increased allocation of quota for Zimbra implementation, and the enhanced products offered by Google Apps for Education and Office 365.

Customer support FTE is expected to remain the roughly the same across product candidates. Current estimate of 1.5 FTE includes Service Requests and other direct user support, product testing and documentation, system configuration and management, security configuration and management.

Application infrastructure support, which includes local SAN support, OS support and backup support, could be reduced from 0.15 FTE to <0.1 FTE if all campus users were migrated to either Google Apps for Education or Office 365.

The cost models above reflect costs for the populations noted; this does not include alumni or applicants. Google Apps for Education would require a directory sync server implemented in the ITS data center, and would support authentication for the system. As noted previously, Office 365 can be implemented with a local directory sync server as well, but it does not appear to be a requirement at this point. If a local directory sync server were implemented, Office 365 would be an additional $7,500 per year, matching the Google Apps for Education cost of ownership.
The table above represents the price for the mixed implementation models, as have been completed or in progress at other sample universities. In these models, students would be migrated to the base level product for either Google Apps for Education or Office 365, with employees – faculty, staff and emeritus – maintained in a Zimbra 8 implementation much like the one currently in production. Costs shown for employees, auxiliary and departmental accounts are based on a current 3 GB account quota, and includes licensing and other factors. For each GB of additional storage for employees, auxiliary and departmental accounts, a total of 6093 accounts, the additional cost is estimated at approximately $10,000.00. An increase then of 10 GB for all employee, auxiliary and departmental accounts would be approximately $100,000.00, with no increase needed in licensing, FTE support or other base cost already addressed.

Customer support FTE is expected to remain the roughly the same across product candidates. Current estimate of 1.5 FTE includes Service Requests and other direct user support, product testing and documentation, system configuration and management, security configuration and management.

Application infrastructure support, which includes local SAN support, OS support and backup support, could be reduced from 0.15 FTE to <0.1 FTE if all campus users were migrated to either Google Apps for Education or Office 365.

The cost models above reflect costs for the populations noted; this does not include alumni or applicants. Google Apps for Education would require a directory sync server implemented in the ITS data center, and would support authentication for the system. Office 365 can be implemented with a local directory sync server as well, but it does not appear to be a requirement at this point. If implemented, a local directory sync server for Office 365 would be an additional $7,500 per year, matching the Google Apps for Education cost of ownership.
High Level Risk Assessment

What follows is some general discussion on risks, then onto specific cases. This analysis is not considered exhaustive.

Privacy Issues – GAFE

The CSU Master Agreement with Google referenced Customer Privacy Notice and End User Privacy Notice. Information on Google Privacy policies is found at:

http://www.google.com/policies/privacy/

Google collects information in two ways:

- Information Cal Poly would give to Google, such as the information needed to create an account.
- Information Google collects from the use of their services such as device information, log information, location information, local storage, cookies and other unique identifiers.

Google states that it uses this information to provide, maintain, protect and improve their services, and to develop new ones. They also use the information to protect Google and their users.

Google does not share the personal information they acquire with outside companies unless one of the following arises:

- Sharing with a Domain Administrator: A domain administrator will have access to a Google account including email and other data. The domain administrator maybe able to view statistics regarding the account in addition to receive your account information in order to satisfy applicable law, regulation, legal process or enforceable governmental requests.
- For External Processing: Google will provide personal information to their affiliates or other trusted businesses or persons to process, based on their instructions and in compliance with Google’s Privacy Policy and any other appropriate confidentiality and security measures.
- For Legal Reasons: Google will share personal information with companies, organizations or individuals outside of Google if they have a good-faith belief that access, use, preservation or disclosure of the information is reasonably necessary to meet any applicable law, regulation, legal process or enforceable government request.

Google may share aggregated, non-personally identifiable information (information that is recorded about users so that it no longer reflects or references an individually identifiable user) publicly and with our partners – like publishers, advertisers or connected sites. For example, Google may share information publicly to show trends about the general use of our services.

http://www.google.com/policies/privacy/
Privacy Issues - Office 365

http://www.microsoft.com/online/legal/v2/?docid=22&langid=en-us

*Cal Poly data will be provided to Microsoft for account provisioning. However, no end user personal information will be required to be provided.*

The privacy policies do not restrict Cal Poly or Google from collecting, saving and using any data from an end-user subject to applicable laws. Microsoft may also compile, use and disclose end-user membership statistics derived from end-user membership information so long as the disclosure does not personally identify individual end users.

Microsoft may access or disclose end-user information to comply with the law or respond to lawful requests or legal process, or to protect the rights or property of Microsoft employees, customers or the public.

Privacy Issues - Zimbra

The campus has been in compliance of its required privacy policies already. There is no expected change from this stance moving forward. There are no associated issues of shipping user data or content off site.

Advertisements

*GAFE*

The default setting is that ads will not be displayed in GAFE for faculty, staff and students.

However, if Cal Poly chooses to separate different classifications of end users by domain, then Cal Poly must enable the display of ads to that separate domain, e.g., Alumni.

*Office 365*

According to the CSU Master Agreement with Microsoft, Microsoft may display ads in the web interface of the email service for all end users who are not students. (Microsoft contract, section 2.c.i and 2.c.ii.)

Microsoft agrees not to display third party products or services in the web email interface for students. However, Microsoft reserves the right to display information pertaining to Microsoft products and services in the web email interface for students.

*Zimbra*

Because Zimbra is run internally at Cal Poly, there will be requirement to display ads in a Cal Poly Zimbra 8.x.
Security Issues

*GAFE*

Under the CSU Master Agreement, Google must protect all confidential information in the same manner it protects its own. Google will not disclose confidential information except to affiliates, employees and agents who need to know it and who have agreed to keep it confidential.

Each party may disclose the other party’s confidential information when required by law but only after it uses reasonable efforts to notify the other party and gives the other party the chance to challenge the disclosure. Google understands that disclosure may be subject to California Public Records requests.

Google’s business is based on providing highly secure services. Google provides encrypted connections when logged into the Web, with IMAP and using the Google Outlook Connector.

*Office 365*

Microsoft restricts physical data center access to authorized personnel and has implemented multiple layers of physical security, such as biometric readers, motion sensors, 24-hour secured access, video camera surveillance, and security breach alarms. Security also includes seismically braced racks where required and automated fire prevention and extinguishing systems.

Under the CSU Master Agreement, access to the servers used by Cal Poly will be protected via commercially reasonable access control mechanisms and will be limited to designated Cal Poly employees. An encryption key or other credentials will be installed and then either destroyed or locked down in an area of restricted access.

Microsoft also requires that Cal Poly use reasonable cryptographic protocols to protect information sent over the Internet and stay current on vendor security patches, updates or hot-fixes.

Microsoft may disclose personal information, including end-user communication, in order to comply with the law, protect the rights of Microsoft or their customers, or to act on good faith that the disclosure is necessary to protect the personal safety of Microsoft employees, customers or the general public.

*Zimbra*

Zimbra is bound by all campus security policies presently and would continue to be moving forward.

Zimbra is currently housed in the campus ITS data center. Campus perimeter firewalls, security settings on campus load balancers, and firewalls on the individual servers work to maintain security and protect access to the system and user data. Access is only available through secure protocols while unnecessary ports and processes are disabled on each server. While level 1 data is not stored or used in the system, for example as part of identifying factors for accounts,
an assumption is made that any account may actually contain such data as part of valid business functions for campus, and the system is protected accordingly. Students who have opted to set FERPA restriction on their account are protected as appropriate; their information is hidden from searches in the internal application directory.

University Business Requirements
This section looks at other University business requirements that are mandated, including FERPA⁴, HIPAA⁵, ADA⁶. VPAT.

GAFE

FERPA
Google states that they will comply with all laws and regulations regarding FERPA. The GAFE Agreement in regards to FERPA states:

(a) Customer Data may include personally identifiable information from education records that are subject to FERPA (“FERPA Records”); and
(b) to the extent that Customer Data includes FERPA Records, Google will be considered a "School Official" (as that term is used in FERPA and its implementing regulations) and will comply with FERPA.

This clause stipulates that Google is subject to FERPA in the same way as the University is, and must process educational records (such as emails to students) accordingly.

HIPAA
Cal Poly is solely responsible for any applicable compliance with HIPAA.

ADA

http://www.google.com/accessibility/
Google has stated their commitment to accessibility and have posted Section 508 VPAT documents to support compliance.

Google has documented accessibility features in components of Google Apps for Education.

⁴ FERPA: The Family Educational Rights and Privacy Act (FERPA) is a Federal law that protects the privacy of student education records.

⁵ HIPAA is a United States law that applies to healthcare entities that governs the use, disclosure, and safeguarding of protected health information (PHI), and imposes requirements on covered entities to sign business associate agreements with their vendors that use and disclose PHI.

⁶ The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, public accommodations, commercial facilities, and transportation.
Office 365

FERPA

http://www.trustoffice365.com/

Microsoft supports student privacy in Office 365 by complying with use and disclosure restrictions related to student data and by agreeing not to scan emails or documents for advertising purposes.

Microsoft will not allow access to personally identifiable information from education records, other than directory information, except in connection with services to be provided under the agreement.

Microsoft may disclose personally identifiable information from education records in connection with an emergency. In addition, Microsoft may disclose personally identifiable information if a judicial order or lawfully issued subpoena is received. Microsoft will make a reasonable effort to notify the student of the judicial order or subpoena.

HIPAA

http://www.trustoffice365.com/

Office 365 is the first major business productivity public cloud service provider to sign requirements for the HIPAA BAA with all customers.

Microsoft shall not use and/or disclose the protected health information other than as permitted or required by the agreement or as required by law. In addition, the customer (Cal Poly) shall not request Microsoft to use or disclose Protected Health Information in any manner that would not be permissible under HIPAA if done by a Covered Entity (unless permitted by HIPAA).

ADA


Microsoft has documented the accessibility features in virtually all of its products, including Office 365. This is a stronger ADA position than that afforded by the other cloud candidate, GAFE.

Zimbra

As the current system is fully implemented in the campus data center, and is managed and maintained by campus personnel, the campus Zimbra implementation was designed to comply with campus FERPA, HIPPA and ADA requirements. Application operations do not entail sending of information that would violate these requirements to the vendor.
Other Risk Issues

This section seeks to examine other risk factors including comparisons of platform availability, comparing uptime versus the internal benchmark of Cal Poly’s present availability, business continuity plans and contract terms.

System Availability

<table>
<thead>
<tr>
<th>Product</th>
<th>3rd Qtr 2012</th>
<th>4th Qtr 2012</th>
<th>1st Qtr 2013</th>
<th>2nd Qtr 2013</th>
<th>3rd Qtr 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAFE</td>
<td>99.9%</td>
<td>99.9%</td>
<td>99.9%</td>
<td>99.9%</td>
<td>99.9%</td>
</tr>
<tr>
<td>Office 365</td>
<td>99.8%</td>
<td>99.97%</td>
<td>99.94%</td>
<td>99.97%</td>
<td>n/a</td>
</tr>
<tr>
<td>Zimbra</td>
<td>99.86%</td>
<td>99.86%</td>
<td>99.54%</td>
<td>99.63%</td>
<td>99.86%</td>
</tr>
</tbody>
</table>

Table 7: System Availability by Product - Q3 2012 Through Q3 2013

**GAFE**

https://support.google.com/a/answer/139019?hl=en

Google Apps for Education, GMail, Google Calendar, Google Talk, Google Drive, and Google Sites are guaranteed to be available at least 99.9% of the time.

It is worth noting that on September 23, 2013, beginning at 7:25 a.m., Gmail experienced a service outage that lasted 12 hours. The date is significant since it marked the first day of the Fall 2013 quarter at Cal Poly.

http://www.google.com/appsstatus#hl=en&v=status&ts=1380956399000

**Office 365**

http://www.trustoffice365.com/

Microsoft measures availability as the number of minutes that the Office 365 service is available in a calendar month as a percentage of the total number of minutes in that month. The calculation includes business, government and education services. Microsoft will disclose uptime numbers on a quarterly basis on the Office 365 Trust Center.

**Zimbra**

Zimbra system availability in the table above includes time allocated for an hour or less of downtime during monthly operating system patches, and periodic upgrades to the software. The 2nd quarter of 2013 also includes a period of intermittent performance degradation and access interruption over two days, which was corrected through technical troubleshooting on campus and with the aid of the vendor.
Business Continuity

GAFE

The application and network architecture run by Google is designed for maximum reliability and uptime. Google's computing platform assumes ongoing hardware failure, and robust software fail-over withstands this disruption. All Google systems are inherently redundant by design, and each subsystem is not dependent on any particular physical or logical server for ongoing operation. Data is replicated multiple times across Google's clustered active servers, so, in the case of a machine failure, data will still be accessible through another system. Google also replicates data to secondary data centers to ensure safety from data center failures.

Office 365

Microsoft applies best practices in design and operations, such as redundancy, resiliency, and monitoring. Physical redundancy is at the server, data center, and service levels. Resiliency includes active load balancing and automated failover with human backup. Internal monitoring is designed to drive automatic recovery, helping to keep an organization up and running during a disaster.

Zimbra

The campus Zimbra implementation includes storage for individual account backups, allowing account restoration for a period up to three weeks prior to the current date. The architecture also includes synchronized account backups to CSUMB, tape archival for non-account data and configuration backups, and follows redundancy and best practices to protect the system against system or environmental failure.

Data and Information Authority

GAFE

Customer owns all Intellectual Property Rights in customer data, and Google owns all Intellectual Property Rights in the services.

Office 365

Cal Poly would own our data and retain all rights, title, and interest in the data stored with Office 365.

Zimbra

Cal Poly owns our data and retains all rights, title, and interest in the data stored on our Zimbra servers.
Contractual Term Considerations

_GAFE_

Google will provide Customer access to, and the ability to export, the Customer Data for a commercially reasonable period of time at Google's then-current rates, if applicable, for the Services. After a commercially reasonable period of time, Google will delete Customer Data by removing pointers to it on Google's active servers and overwriting it over time.

_Office 365_

Upon expiration or termination of the Office 365 subscription or contract, Microsoft would provide Cal Poly, by default, additional limited access for 90 days to export your data.

_Zimbra_

Cal Poly is presently licensed with Zimbra for support issues until September 2014. Cal Poly is in the process of determining any requirements for exit out of this platform and contract before that end date is reached.
Survey Results

In addition to the campus outreach sessions, a number of surveys were incorporated to collect stakeholder opinions. Results and analysis of these surveys follows.

SC3 2012 Survey

The 2012 student poll by the Student Campus Computing Committee (SC3) included questions about collaboration tools and the 722 responses were summarized in the SC3 report:

- 88% view email as extremely important or important
- 62% reported that they do not use Zimbra.
- 73% said Document Collaboration and Online file Storage/Retrieval were extremely or very important
- About half of the respondents indicated they used an electronic calendar and two thirds of those that use one reported using Google.

Campus Outreach Attendees Survey

A survey link was sent to 224 people representing all campus LAN Coordinators and attendees of the presentations. It was also posted on the ServiceDesk website under email and calendar support.

The demonstrations and hands-on sessions helped attendees see how each of the options would meet their needs.

<table>
<thead>
<tr>
<th>Option</th>
<th>Positive opinion before session</th>
<th>Prefer to be selected as campus service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zimbra</td>
<td>30%</td>
<td>46%</td>
</tr>
<tr>
<td>Google</td>
<td>44%</td>
<td>39%</td>
</tr>
<tr>
<td>MS Office 365</td>
<td>16%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Table 8: Product Perception Change After Attending Campus Presentations

The survey responses reflected that no one product alone was best for all collaboration services. Google scored the highest for repository and document sharing needs while Zimbra was ranked higher in all other categories. The following chart shows the responses as to which collaboration tool they felt would best meet their needs.
FACT Survey

The Faculty Advisory Committee on Technology (FACT) conducted a survey of faculty to find out what attributes of campus collaboration software are most important to them. Tables below summarize the results of the FACT survey, and the complete FACT memo is included in the Appendix for review. Faculty feedback in the survey also noted dissatisfaction with the rate of technology turnover on campus, with a desire for long periods of technological consistency. The committee also indicated alternate and better methods of campus communication on technological issues is desired, and provided suggestions for improvement in this process.
Results from the FACT Survey from Fall 2013.

<table>
<thead>
<tr>
<th>How important are the following factors in your use of collaboration technology?</th>
<th>Not Important</th>
<th>Important</th>
<th>Moderately Important</th>
<th>Very Important</th>
<th>Total Responses</th>
<th>Respondents who rated Factor as Very or Extremely Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage capacity</td>
<td>10</td>
<td>25</td>
<td>66</td>
<td>86</td>
<td>70</td>
<td>257</td>
</tr>
<tr>
<td>Separating personal and work content</td>
<td>40</td>
<td>61</td>
<td>68</td>
<td>59</td>
<td>27</td>
<td>255</td>
</tr>
<tr>
<td>Ability to share documents</td>
<td>8</td>
<td>13</td>
<td>38</td>
<td>97</td>
<td>101</td>
<td>257</td>
</tr>
<tr>
<td>Ability to collaboratively edit documents</td>
<td>15</td>
<td>23</td>
<td>61</td>
<td>81</td>
<td>77</td>
<td>257</td>
</tr>
<tr>
<td>Ability to track changes, i.e., version control</td>
<td>15</td>
<td>23</td>
<td>63</td>
<td>80</td>
<td>77</td>
<td>258</td>
</tr>
<tr>
<td>Easy access to documents and functions</td>
<td>7</td>
<td>6</td>
<td>32</td>
<td>87</td>
<td>124</td>
<td>256</td>
</tr>
<tr>
<td>Ability to integrate or synchronize with other devices, e.g., laptop, desktop, smartphone, etc.</td>
<td>13</td>
<td>17</td>
<td>46</td>
<td>77</td>
<td>104</td>
<td>257</td>
</tr>
<tr>
<td>Ability to share email with specific groups, e.g., student, faculty, staff, etc.</td>
<td>10</td>
<td>21</td>
<td>45</td>
<td>76</td>
<td>105</td>
<td>257</td>
</tr>
<tr>
<td>Ability to share calendar with specific groups, e.g., student, faculty, staff, etc.</td>
<td>21</td>
<td>26</td>
<td>64</td>
<td>67</td>
<td>78</td>
<td>256</td>
</tr>
<tr>
<td>Ability to automatically populate calendars with academic dates, e.g., registration deadlines, class schedules, etc.</td>
<td>20</td>
<td>28</td>
<td>79</td>
<td>57</td>
<td>74</td>
<td>258</td>
</tr>
<tr>
<td>Ease of integration with portable devices</td>
<td>18</td>
<td>18</td>
<td>55</td>
<td>75</td>
<td>90</td>
<td>256</td>
</tr>
<tr>
<td>Search-ability of email folders</td>
<td>4</td>
<td>12</td>
<td>25</td>
<td>72</td>
<td>145</td>
<td>258</td>
</tr>
<tr>
<td>Blog functionality</td>
<td>120</td>
<td>81</td>
<td>40</td>
<td>10</td>
<td>4</td>
<td>255</td>
</tr>
<tr>
<td>Privacy, e.g., provider having access to faculty content</td>
<td>18</td>
<td>39</td>
<td>65</td>
<td>53</td>
<td>79</td>
<td>254</td>
</tr>
<tr>
<td>Learning curve in adopting new software</td>
<td>23</td>
<td>39</td>
<td>70</td>
<td>69</td>
<td>56</td>
<td>257</td>
</tr>
<tr>
<td>Ease of transition from existing software</td>
<td>26</td>
<td>38</td>
<td>53</td>
<td>63</td>
<td>73</td>
<td>253</td>
</tr>
</tbody>
</table>
Table 9: Summer Survey Responses by Product and Functionality

Next Gen Collaboration Tool Summer Survey Responses (67 respondents)
Campus Preference

A final survey was sent to Staff and Faculty in November, 2013. Their responses are summarized in the chart below:

Q: Which of the following would you want to see selected as the Next Generation Campus collaboration service?

<table>
<thead>
<tr>
<th></th>
<th>Zimbra v8</th>
<th>v8 Google Apps for Education</th>
<th>Microsoft Office 365</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>42% (56)</td>
<td>45% (60)</td>
<td>13% (17)</td>
<td>133 respondents</td>
</tr>
<tr>
<td>Faculty</td>
<td>25% (47)</td>
<td>61% (114)</td>
<td>14% (27)</td>
<td>188 of 259 respondents answered this question. The other 27% did not offer an opinion.</td>
</tr>
</tbody>
</table>

Table 9 - Faculty and Staff Survey Responses

Other Considerations

Migration Effort and timelines for each candidate

Google has tools available to aid account and data migration, as well as third-party tools particular to specific application components or migration needs. Google APIs offer the potential for internal development of software tools for conversion and migration of data for content not covered by Google. The primary approach will be to use standards based data for migration, for example CardDAV, CalDAV, IMAP. Documents from the Briefcase may require individual export and import – but these documents and files will not be converted into Google Doc formats. Timelines for this have been projected to be up to a year-long effort, which includes migration testing for mail, calendar, contacts, documents and tasks, development of training materials, user documentation, development and completion of communication plan, and so on. Time and technical resources will be needed to implement mail routes, application authentication following campus standards and provisioning for person and non-person accounts, resource calendars and system permissions.

Office 365 would most likely involve an IMAP migration for email content, and scripted migration tools for other component contents. There may be tools or processes that have been used by other universities in their migration process that would be available for our use.

There is potential to introduce those features to campus that are non-existing or lacking in the current Zimbra system, such as chat or the drive component from either candidate. This would make available to some or all users a large quota for document storage, collaborative document creation and editing, and make easier the process of document sharing. However,
any effort in this area has the potential to draw on resources needed for actual migration efforts, prolonging the time needed for the project.

Alumni and Emeritus Email Services

Emeritus currently are allowed to have email and related accounts once emeritus status has been granted. Current practice is to preserve and extend any existing accounts, but if the employee did not have an account as part of their work duties, a new account is not created. An account for these individuals is available on request. It is worth noting that employees from non-state organizations on campus, such as CPC or ASI, become state emeritus when emeritus status is granted.

In any new product design, the business rules described above should be changed, such that all emeritus are automatically granted an account, whether they used an email account or not during their employee duties. This would reduce or remove current manual effort needed to manage exceptions, and better extend services to all emeritus.

Alumni at Cal Poly have until recently has the ability to create an alumni forwarding address, of the form username@alumni.calpoly.edu, allowing mail sent to this address to be forwarded to an external account of their choosing. Full accounts have not been offered to Alumni. The current forwarding system has approximately 14,000 users. This model, including how alumni are entered and maintained in the system, is under review.

Development of Policies for Acceptable Use of Cloud Email and Collaboration Tools

There would be a requirement to analyze our current AUP and determine what, if any, changes would need to be made to the policy framework to facilitate a move to any cloud based platform. Cal Poly is already working through many of these issues as it experimenting with moving other campus information services into cloud based platforms.
## Other Campus Models

This section lists notable peer campuses with various candidate combinations:

<table>
<thead>
<tr>
<th>Campus</th>
<th>Faculty</th>
<th>Staff</th>
<th>Students</th>
<th>Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal Poly Pomona</td>
<td>Office365</td>
<td>Office365</td>
<td>Office365</td>
<td>Office365</td>
</tr>
<tr>
<td>Fresno State</td>
<td>Zimbra</td>
<td>Zimbra</td>
<td>GAFE</td>
<td>None</td>
</tr>
<tr>
<td>CSU East Bay</td>
<td>GAFE</td>
<td>GAFE</td>
<td>GAFE</td>
<td>None</td>
</tr>
<tr>
<td>CSU Fullerton</td>
<td>MS Exchange</td>
<td>MS Exchange</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>CSU Humboldt</td>
<td>GAFE</td>
<td>GAFE</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>CSU Long Beach</td>
<td>MS Exchange</td>
<td>MS Exchange</td>
<td>Office365</td>
<td>None</td>
</tr>
<tr>
<td>CSU Northridge</td>
<td>MS Exchange - on campus</td>
<td>MS Exchange - on campus</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>San Diego State</td>
<td>GAFE</td>
<td>GAFE</td>
<td>GAFE</td>
<td>None</td>
</tr>
<tr>
<td>CSU San Marcos</td>
<td>Office365</td>
<td>Office365</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>CSU Chico</td>
<td>GAFE</td>
<td>GAFE</td>
<td>GAFE</td>
<td>None</td>
</tr>
<tr>
<td>CSU Stanislaus</td>
<td>Office365</td>
<td>Office365</td>
<td>GAFE</td>
<td>None</td>
</tr>
<tr>
<td>Stanford</td>
<td>Zimbra 8.0.4</td>
<td>Zimbra 8.0.4</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>UC Davis</td>
<td>Collaboration Project Underway</td>
<td>Collaboration Project Underway</td>
<td>GAFE</td>
<td>GAFE</td>
</tr>
<tr>
<td>UCLA</td>
<td>Enterprise Messaging (MS Exchange architecture)</td>
<td>Enterprise Messaging (MS Exchange architecture)</td>
<td>GAFE</td>
<td>Email forwarding</td>
</tr>
<tr>
<td>USC</td>
<td>Office 365</td>
<td>Office 365</td>
<td>GAFE</td>
<td>Email forwarding</td>
</tr>
</tbody>
</table>

Table 10 - Examples of Campus Models from Other California Universities
Recommended Scenarios

The following section lists the three selected scenarios. These scenarios are what has been identified during the technical analysis as candidates that would work. Each has strengths and weaknesses and these are summarized in the corresponding description.

Three factors remain true no matter which scenario is chosen. One is that the campus will still need to retain some ability to house and send mail for some accounts. This is necessary for overcoming sending limits for large populations as well as to provide strategic cover for the campus against any threats that may arise in the future in this fast moving environment.

Secondly, the campus will need to continue to use some for of spam filtering for outbound mail and virus protection for inbound mail. The volume and variety of attacks is always increasing and it is too risky to not protect the campus and its ability to communicate with the outside world (reputation-based filtering). This capability is separate to the present environment and is available as a separate feature from the cloud based providers. It has been factored out of this exercise in order to reduce complexity as well as to separate concerns.

Thirdly, the campus will need to continue to provide sufficient capability to respond to discovery requests and copyright claims. Again, this has been removed from the present scenarios and will continue to be provided for by Information Services in the wider communication service. The costs for these additional factors are removed from this analysis owing to their independence.

**Zimbra Hybrid**

This scenario is a combination of Zimbra email, calendar, contacts and tasks, complimented with a drive offering from either Office 365 or GAFE. Current data housed in Zimbra briefcases for users would ideally be migrated to the featured document drive component. This would introduce a collaboration space for all campus users, allowing co-authoring of documents, implement improved versioning and access controls, and support online editing and access.

This scenario maintains a system with which the campus is familiar while providing a much needed collaboration option for documents, including a large online storage area for each user. This could be implemented with little change to the current system – no need to re-route mail, adjust mail for sending limits under either hosted mail solution or revisit calendaring processes – but would improve collaboration in the shortest amount of time.

No options would be closed to the campus under this scenario, as campus could still fully implement either hosted solution if it were deemed the better way to service Cal Poly email and calendar needs. This does make it critical which document service is chosen; it should be a product that has a sufficiently featured email and calendar system to support campus needs, if selected. Office 365 has a better drive and document offering than Google Apps for Education, taking into account the amount of quota offered, sophistication and interoperability of the
Office document suite, and the familiarity of campus users with Microsoft Office products; the Office 365 email and calendar features and functionality would be sufficient to support campus needs, if production expansion were deemed appropriate.

Provisioning would need to be implemented in the new system, and access methods would need to be documented and established.

Weaknesses in this scenario include a lack of any savings over the current implementation. Constraints in the current Zimbra system would not be resolved in this plan, and the campus would continue to be responsible for data storage, backups and disaster recovery. Potential limitations in the system with regard to integration in other communications mediums such as phones, chat clients, web conferencing.

Email and calendar device support would still be limited to the product support provided by Zimbra, and ITS ability to upgrade as needed. Zimbra is committed to an always-on architecture, as well as an HTML5 client, however a release date for these features is not yet known. It is worth noting, the Zimbra has sold three times since it was first implemented at Cal Poly. While each successive sale has lead to improvements to the Zimbra products, and little in the way of negative outcomes, the current owner is the smallest of the three, and has the least known track record. Assurances from the company to customers have been in the direction that would benefit Cal Poly as one of many continuing customers, but there is still an element of unknown.

**Office 365 (without Discovery)**

Implementing Office 365 for all campus users would support document collaboration and storage, and provide a new email and calendar product for campus collaboration. Email and calendar data would need to be migrated to the new system, and would benefit from migrating at the same time, since both the source and destination calendars are message based. Co-existence would be difficult – that is, having some users on one system and some on the other – and a cutover plan and date for all users would need to be established, with consideration for the University Academic Calendar.

Once implemented, with provisioning and campus standards-based authentication, this product would provide 50 GB of quota for each user, a shared pool for email, calendar, document and other data. The Office OWA client would improve usability on iPads, and other tablet devices. Device configuration would be similar to current documented practices, though use of the Exchange settings would be optimal.

Product releases would be host driven, with support in the form of documentation updates from IS. Current Service Desk and Enterprise Application personnel would have different but similar support roles for the product. However, Operating System support from Enterprise Systems could not be needed, as well as storage and backup support from OPS – these FTEs would then be available for other campus projects and initiatives.

Although this product is less well known than Google Apps, the calendar and email sharing is more in keeping with campus practices, and would better support campus needs. Outlook user
experience could be expected to be best in this scenario, with little to no loss of functionality for device users of all vendors, and for Mac users.

Documents edited online would use cloud-based apps virtually identical to the desktop versions used by campus staff, faculty and students, and would provide the best desktop to cloud support, with little to no loss in the conversion process.

The product continues to improve and change, recently implementing improved sharing and delegation, as well as a substantial quota increase. Even in this flexible context, the product is more mature than GAFE, with better online product integration, more functionality in the cloud applications, and a generally more accessible client interface.

**Google Apps for Education (without discovery)**

A Google Apps for Education implementation would be the third scenario proposed. Like an Office 365 implementation, campus users would soon have an online collaboration mechanism, including document sharing and editing, version and access controls. Each user would have a substantial quota increase.

However, this scenario has multiple limitations and acknowledged concerns. Calendar bugs and problematic implementation of recurring meetings would impact campus users, primarily employees. Email delegation would require training and education, as the feature requires sharing not only a specific folder, but also the entire email account. Document component, while improved over current offering, still has specific limitations in that the document, spreadsheet and presentation applications are less sophisticated than those offered by Microsoft; documents imported into the native Google applications are likely to lose formatting, at the least, and some content, at the worst, if not done correctly.

The different components are less well integrated than their Office 365 counterparts, and while a large number of campus users are familiar with Google’s approach to integration, a large number of campus users are likely to find this frustrating, confusing and time-consuming.

The client is less accessible than either the currently offered products or those offered by Office 365; while Google has improved in this area, they continue to make design choices that are questionable, while offering little in actual improved functionality.

Campus familiarity with the Google products is relatively high, since many employees, and a much higher proportion of students already use Google to support their campus needs. However, if Cal Poly only offers the same product – and there is little difference between the consumer and the campus implemented versions of their offerings – there would be little compelling reason for campus users to actually switch from their personal account to the campus offered account. Not only would the campus account require clear branding to distinguish otherwise very similar products, but switching between accounts, tracking documents in each, and collaboration between personal-account users and campus-account users would be made more difficult.
Product changes in the GAFE are not announced more than a month prior to their implementation, and often sooner. These changes, unlike recent changes to Office 365, are not necessarily improvements, but rather appear to simply be changes in functionality. Some have obvious benefit, but others seem more random, and signify differing design choices, but not ones that actually reflect user needs. Meanwhile, more obvious product problems can go for years without any change or improvement.

As with the Office 365 scenario, email and calendaring migration would need carefully planning and implementation, with little room for a co-existence model. Instead, all users would likely need to cutover at the same time, and for both email and calendaring.
Conclusion

Decision Factors

Determining the next generation of a collaborative environment for Cal Poly is a complex, many faceted problem. To determine the best solution for the campus requires examining trade-offs based on the university’s priorities.

Balancing the needs of four distinct constituent groups:

Students, Faculty, Administrative users, and Alumni have common needs but differing priorities.

**Students:** Over 84% of students choose to redirect their Cal Poly email to an external email provider, half of those using Gmail. Students typically use calendaring to manage their own time, but not necessarily for coordinating their time with others in the campus community. Thus, a consumer based email system like Gmail works well for most students. Students collaborate on documents most often emailing Microsoft documents or using Google Docs. A shared document editing platform is very appealing to students.

**Faculty:** 85% of faculty use Zimbra as their email and calendaring platform. Like students, faculty that do not have administrative duties use calendaring to manage their own schedules and the need for meeting coordination with others is not heavily used. Document sharing, privacy and ease of use across multiple platforms like laptops, tablets and smartphones, as well as easy search functions are some of the more important capabilities described by Faculty.

**Administrative Users:** Administrative Users have a very strong reliance on email and calendar as one of the main productivity tools used to be successful in their jobs. Over 90% of Administrative Users use Zimbra as their email and calendaring platform. A calendar system that works well in an enterprise environment is critical. Many administrative users also rely heavily on the Microsoft suite of applications for documents and communication. Documents are often related to functional / departmental topics so sharing is more often related to broader organizational roles and activities and not as much on an ad-hoc, smaller group basis as with students. This can translate into more reliance on departmental file sharing solutions and less on an individual basis as provided by a collaboration platform like those described here.

**Alumni:** It is important for Cal Poly to maintain relationships with students once they have left the university. Document collaboration and calendaring is of limited use with this constituent group, while maintaining contact information is critical to enabling future contributions to the campus by Cal Poly alumni. A life-long Cal Poly email address is one possible way to remain connected to alumni. Alumni must be incentivized to use this as a means of communication so that it does not become stale with disuse. Options for using a continued @calpoly.edu address to communication with alumni are being considered through a parallel effort outside the scope of this project.
After examining the functionality of the product suites and constituent requirements it was determined that administrative users are most affected by the campus’ decision due to the calendaring and email management requirements. Zimbra, Microsoft or Google could serve the needs of students and faculty with non-administrative duties. However, Google could not meet the requirements presented by administrative users for managing recurring meetings and account delegation functionality. Therefore, only Zimbra or Mircosoft Office 365 can service the needs for email and calendaring functionality for administrative users. Many constituents surveyed were not familiar with Microsoft Office 365 Education however those presented with the information agreed that it could meet their needs.

**Point Solutions vs. a Comprehensive Environment:**

Collaboration software vendors tend to focus on certain features over others to differentiate them from their competitors, thus providing different strengths and weaknesses depending on the user’s viewpoint. As described above, our constituent groups use these tools in different ways resulting in differing feature priorities. In some cases, the functionality is there but may not be the way someone is used to achieving the same goal. No one tool set is a perfect fit to meet the comprehensive needs of all the Cal Poly constituent groups. Cal Poly can choose to:

- utilize certain feature sets of many platforms. This provides the best “point” solution for a particular function, say calendaring. This approach can create a cumbersome and confusing environment when using multiple platforms for different functions by various constituent groups. It also requires support overhead for multiple product lines.
- utilize one comprehensive solution. This provides the ultimate transparency and consistency when using the various functions, like email, calendaring and file sharing. However, this will likely create limitations for specific feature sets for some of our campus constituency.
- Utilize one main solution with options to access other “point” solutions as needed.

While not all constituents need to utilize all, or even a portion of a campus supported solution, Cal Poly should continue to offer a comprehensive collaboration platform. An enterprise-based collaborative solution ensures everyone has a core toolset available to them. This approach also offers the most efficient use of IT support resources since multiple solutions do not need to be maintained.

Both Microsoft and Google provide email, calendaring, large file storage capacity, ad-hoc file sharing capabilities and simultaneous editing of documents between multiple users. Microsoft also provides access to the Microsoft Office suite of products commonly used on campus. Zimbra does not offer a collaborative document editing solution and storage costs to the campus for a Zimbra based solution would be significant.

Solutions that provide additional functionality can be integrated into the Cal Poly ITS service offering based on demand and resource availability. Cal Poly should continue to provide options for our constituents to utilize non-Cal Poly branded systems if they so choose, just not supported by ITS resources.
Keeping a connection with Alumni not only will depend on traditional email outreach, but also through other types of customer relationship management mechanisms such as social and professional networks as well as portals into Cal Poly related events and services. Over time Alumni will self-identify their preferred methods for staying connected to Cal Poly and their specific areas of interest.

*The Impact of Change on the Campus Community:*

Because email, calendaring and file sharing are a large part of the productivity tools used at Cal Poly, changes to the tool set can have varied impacts on the campus community.

Students tend to connect more through peer groups and to a lesser extent through formalized Cal Poly organizational structures. And, as stated earlier, a large majority chooses to use software provided by others outside of the Cal Poly provisioned service. Therefore, the general student population has shown to be the most adaptable to change and self-sufficient when it comes to support.

Almost all faculty and administrative users, on the other hand, use the collaboration software supported by Cal Poly and utilize formalized, enterprise based communications and collaboration structures such as class-lists, departmental email lists, calendar resources like conference rooms and file sharing between campus initiative-based team members. Thus, their daily work processes are more reliant on the Cal Poly provided collaboration solution. Implementing new collaboration solutions can have large impacts on users, both positive and negative, especially for administrative users and calendar functionality.

Conversion to a different collaboration platform would certainly impact faculty and administrative users until they became familiar with the different look and feel of the solution. A relatively small number of students would be affected since 84% redirect their Cal Poly addressed email to a non-Cal Poly account. Campus users utilizing an Outlook client would see little change. ITS estimates, based on previous email/calendar tool conversions, that with effective training and communication plans the impact of change could be minimized to acceptable levels. Selecting the best time during the academic year also lowers the impact of change.

*Understanding the long term directions of the Collaboration technology space and how best to position Cal Poly to take advantage of them.*

Workplace productivity tools like email, calendaring and file sharing are so critical to the administrative functions of the campus that whatever solution we choose it must be highly available, perform reliably, is secure, intuitive to use, can support business functions beyond those in the consumer space and can evolve in the fluid world of technology.

Microsoft and Google take advantage of a large customer based to gain economies of scale in order to offer highly reliable and highly available services. Microsoft and Google both offer no charge solutions to Higher Education users with significantly more storage capacity than what
we have available using Zimbra. In addition, their solutions include document editing and collaborative editing capabilities as part of the application suite. For ITS to provide similar file storage services for all our students, faculty and staff would cost a minimum of $375,000. While a hybrid solution combining Zimbra and one of the other options for file storage is an option, Zimbra uses 10% of our computing capacity, 20% of our storage infrastructure and requires over 39 hours to perform backups each week. These existing resources would be recovered for other purposes if email and calendar functionality was moved to a cloud provider as well.

These cloud solutions are at “no charge” but of course nothing is really ever “free”. Using their solutions will mean less flexibility around when we implement new versions and increased support coordination with the vendor to troubleshoot problems. ITS has determined that accepting these “costs” is worth it in order to increase the service levels and reduce the support overhead of an on-site solution.
Recommendation

Based on the decision factors above:

- Microsoft or Zimbra can meet the functionality requirements identified.
- Microsoft or Google offers the expansion of file storage and sharing services within their collaboration suite of applications, creating a cohesive user environment.
- Cal Poly has successfully changed to other email/calendar platforms in the past. With proper attention to change management, we can do it again.
- Microsoft or Google can provide increased service reliability, especially in the event of a major disaster and incrementally lower IT infrastructure support costs over time.

Therefore, ITS recommends **Microsoft Office 365 Education** as the solution that

- meets the functional needs of the university students, faculty and staff,
- expands our collaborative environment with personal file storage, document sharing and collaborative editing, and
- provides increased service reliability and storage capacity without additional capital investment.

In addition, ITS recommends

- Maintaining the ability to redirect @calpoly.edu email to a non-Cal Poly email address. Users can continue to forward their email to an external account, like Google, if they choose.
- Integrating other offerings into the Cal Poly environment in the future, like specific Google Apps, based on demand, compatibility with Cal Poly applications and resource availability to support the integration.
- Coordinating the migration to the new system rather than just providing the account and having users migrate their own information. This would mean a longer implementation period but significantly reduces the impact on users. Ideally, Faculty, Staff and Student Zimbra accounts would be migrated to the Microsoft 365 Education by ITS.
Appendices

Appendix I

Links to the survey results.

- Summary Report
- Appendix A - Open-Ended Responses: Email Likes and Dislikes
- Appendix B - Open-Ended Responses: Calendar Likes and Dislikes

Appendix II – AFD Submission

ITS Enterprise Applications,

AFD Network and Technology Services has thoroughly tested and worked with the three solutions that campus is evaluating for next collaboration software. Our primary focus was on features that are important to our users’ business needs. While all three solutions can function as an email and calendaring solution, our testing has shown us that Zimbra 8 is the best solution for our users.

Some people that have been at Cal Poly since we migrated to Zimbra unfortunately "hate" it. We feel that this will also likely happen with any other solution campus chooses to go with, due to the fact that change is inconvenient. Zimbra’s primary technical short-coming appears to be the lack of storage space (this may be mitigated with a chargeback structure or other fiscal realignment). Despite this drawback and the image issue, Zimbra meets most of our business needs including that it has a powerful email template plugin that is currently being used by multiple departments for internal and campus wide- notifications.

Office 365 is our secondary recommendation if Zimbra 8 is not an option. Office 365 provides excellent integration and support for Outlook 2010, but is dramatically lacking in its web interface’s usability. In our opinion, Office 365 has tried to have such a clean interface that it has resulted in a less functional user experience. A major downside of a hosted solution is that we can't control changes to the system, they can happen at inconvenient times that disrupt business. SkyDrive provides some very nice document sharing features but it is also a concern that there is a loss of control by departments to centrally control access to documents. We were not able to find a solution in Office 365 that would meet the needs we currently have for standardized and branded notifications, the loss of this feature will require development time to build an alternative solution.

We feel Google Apps for Education would cause a substantial loss of functionality for our users and a negatively impact the business productivity of the University. A common issue we ran into with Google Apps is that each piece of the software suite operates in its own tab and causes confusion to users. Just like Office 365, Google Apps is a hosted solution that has a major downside in that we can't control changes to the system, changes can happen at inconvenient times that disrupt business. Google Drive provides powerful collaborative document editing and sharing but it is also a concern that there is a loss of control by departments to centrally control access to documents.

Our overall impression is that we are already using the best of the three systems for our users’ needs. Any changes will require a significant amount of time and resources to manage the change, provide
training, and field support questions. Below we have included what we have found in our testing that are positive and negative items for each of the solutions, we have not included any observations that were the same across the board. Thank you for giving us the opportunity to thoroughly test the products and provide you feedback. Please reach out to us if you have any questions or need clarification.

Sincerely,
Scott R. Tucker
3125-6625
(805) 440-7904
SRTucker@CalPoly.edu

AFD: Key Observations

1 - Zimbra 8

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
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<tbody>
<tr>
<td>• Familiar for users</td>
<td>• Small server storage forcing the use of .pst for heavy email users</td>
</tr>
<tr>
<td>• Powerful calendaring and sharing</td>
<td>• Using Zimbra briefcase is cumbersome.</td>
</tr>
<tr>
<td>• No training necessary for power users</td>
<td></td>
</tr>
<tr>
<td>• Cal Poly controls updates and changes</td>
<td></td>
</tr>
<tr>
<td>• Access to logs for trouble shooting</td>
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</table>

2 - Office 365

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
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<tbody>
<tr>
<td>• large storage size</td>
<td>• Storage is offsite</td>
</tr>
<tr>
<td></td>
<td>• We can't control when changes are made</td>
</tr>
<tr>
<td></td>
<td>• SkyDrive has major security issues</td>
</tr>
<tr>
<td></td>
<td>• How can the security audits be completed if users have the ability to create their own data shares without oversight</td>
</tr>
<tr>
<td></td>
<td>• Could be alleviated by delegation of management rights to departments</td>
</tr>
<tr>
<td></td>
<td>• Interface has been made so &quot;clean&quot; that the user experience seems less functional</td>
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3 - Google Apps

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
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<tbody>
<tr>
<td>• large storage size</td>
<td>• Storage is off-site</td>
</tr>
<tr>
<td></td>
<td>• We can't control when changes are made</td>
</tr>
<tr>
<td></td>
<td>• Major security issues with applications like Google Drive</td>
</tr>
<tr>
<td></td>
<td>• How can the security audits be completed if users have the ability to create their own data shares without oversight</td>
</tr>
<tr>
<td></td>
<td>• Could be alleviated by delegation of management rights to departments</td>
</tr>
<tr>
<td></td>
<td>• Mobile setup more difficult for users</td>
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</tbody>
</table>
### AFD: All Findings

#### 1 - Zimbra 8

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
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</thead>
<tbody>
<tr>
<td><em>Minimal user training</em></td>
<td><em>small storage size</em></td>
</tr>
<tr>
<td><em>Access to logs for troubleshooting</em></td>
<td><em>causes people to use offline storage (backup &amp; offsite access issues)</em></td>
</tr>
<tr>
<td><em>No Impact to business operations due to no change</em></td>
<td><em>People 'hate' Zimbra (has an image problem)</em></td>
</tr>
<tr>
<td><em>Users have the ability to have multiple address books that can be shared</em></td>
<td><em>Briefcase functionality is poor</em></td>
</tr>
<tr>
<td><em>Data is all on-site</em></td>
<td>*Email - <em>No Delivery/read receipt function (failed in testing)</em></td>
</tr>
<tr>
<td><em>Settings are all located in the same location</em></td>
<td><em>Calendar not as familiar for non-users and more difficult to learn</em></td>
</tr>
<tr>
<td><em>Easy to use email templates</em></td>
<td><em>Calendar not as clean and simple to quick add events</em></td>
</tr>
<tr>
<td><em>Can send email as delegated users</em></td>
<td><em>Outlook is very slow on first load.</em></td>
</tr>
<tr>
<td><em>More customizable UI</em></td>
<td><em>Outlook GAL sync is slow</em></td>
</tr>
<tr>
<td><em>Has the ability to have shadow undelete email</em></td>
<td><em>Zimbra 7 has had problems with mounted calendars in outlook (could not test fully)</em></td>
</tr>
<tr>
<td><em>Calendar is very familiar to staff, hardly changed from Zimbra 7, proven effectiveness and feature set</em></td>
<td></td>
</tr>
<tr>
<td><em>Calendar has spell check</em></td>
<td></td>
</tr>
<tr>
<td><em>Can view user directory and search when adding attendees to meetings</em></td>
<td></td>
</tr>
<tr>
<td><em>Robust finding and adding of resources to meetings</em></td>
<td></td>
</tr>
<tr>
<td><em>Quickly see scheduling when editing event</em></td>
<td></td>
</tr>
<tr>
<td><em>Optional SMS and email reminder options for events</em></td>
<td></td>
</tr>
<tr>
<td><em>Outlook is simple to set-up</em></td>
<td></td>
</tr>
<tr>
<td><em>Can edit server side rules from outlook</em></td>
<td></td>
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<tr>
<td><em>Outlook signatures sync with web client</em></td>
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</tbody>
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#### 2 - Office 365

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Large storage size</em></td>
<td><em>Delegation is convoluted</em></td>
</tr>
<tr>
<td><em>The integrated &quot;Groups&quot; like Sympa list is great.</em></td>
<td><em>Terminology can be confusing between platforms</em></td>
</tr>
<tr>
<td><em>Email Layout is same for users familiar with Hotmail/Outlook.com</em></td>
<td><em>Finding where to change settings is confusing</em></td>
</tr>
<tr>
<td><em>Delivery/Read receipt functions</em></td>
<td><em>Cant share address books from web</em></td>
</tr>
<tr>
<td><em>Calendar has a clean and simple interface that is easy to learn</em></td>
<td><em>can’t get a print view in web for contacts</em></td>
</tr>
<tr>
<td><em>Calendar has a rich text editor bar for descriptions</em></td>
<td><em>can’t import/export contacts from web client</em></td>
</tr>
<tr>
<td><em>Sophisticated scheduling assistant, while not as quick to see other’s schedule as Zimbra, it is more robust for finding times that match your attendees and resources</em></td>
<td><em>No support for email templates</em></td>
</tr>
<tr>
<td><em>Could not find a way to sort email</em></td>
<td><em>Could not find a way to sort email</em></td>
</tr>
<tr>
<td><em>Cannot draft events</em></td>
<td><em>Cannot disable accept/deny responses to meetings</em></td>
</tr>
<tr>
<td><em>No required/optional attendance for meeting in web client</em></td>
<td><em>Cannot view user directory when adding attendees to a meeting, but can search</em></td>
</tr>
<tr>
<td><em>Calendar events - No attach button, though drag and drop works</em></td>
<td></td>
</tr>
</tbody>
</table>
**Outlook is simple to setup**
- Outlook has delegation fully supported

- Cant search for resources, just auto-complete
- Outlook syncing signatures with the web is not supported
- Editing server side rules is not possible in outlook
- Changes for options such as 'Reading Pane view' or 'Plain text/HTML' are buried a few levels in Settings (gear icon)

### 3 - Google Apps

<table>
<thead>
<tr>
<th>Pro</th>
<th>Con</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Large storage size</td>
<td>• Security concerns with Drive</td>
</tr>
<tr>
<td>• 2-factor authentication is possible</td>
<td>• Opening new tabs can be irritating</td>
</tr>
<tr>
<td>• If you open a system contact and edit it you when you save it, it is added to your address book.</td>
<td>• Right clicking does not bring up menus for the web app</td>
</tr>
<tr>
<td>• People use for personal email</td>
<td>• Only 1 address book per person</td>
</tr>
<tr>
<td>• Can set chrome web app as default mail program</td>
<td>• No view only access to an address book, if you share it they get full access</td>
</tr>
<tr>
<td>• Calendar is familiar to many users (not as true for AFD staff though)</td>
<td>• contacts changed in a different window do not apply until it is refreshed</td>
</tr>
<tr>
<td>• Can have an email sent to you for a meeting reminder</td>
<td>• Cannot send an email to a person from a shared address book and your own at the same time.</td>
</tr>
<tr>
<td></td>
<td>• Contact auto save on edits, there is no cancel or undo</td>
</tr>
<tr>
<td></td>
<td>• Can’t auto-complete from a shared address book</td>
</tr>
<tr>
<td></td>
<td>• Email templates are not available by default</td>
</tr>
<tr>
<td></td>
<td>• Delegated email accounts show in new window</td>
</tr>
<tr>
<td></td>
<td>• No email delivery/read receipt function located during testing</td>
</tr>
<tr>
<td></td>
<td>• Does not handle complex email file structures well. (labels are not the same as folders that people are use to)</td>
</tr>
<tr>
<td></td>
<td>• No email preview pane</td>
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<tr>
<td></td>
<td>• Delayed email sending function not enabled</td>
</tr>
<tr>
<td></td>
<td>• Cant share a folder or &quot;label&quot; of email with another user</td>
</tr>
<tr>
<td></td>
<td>• Calendar - No work week view</td>
</tr>
<tr>
<td></td>
<td>• Calendar - No right click context menus</td>
</tr>
<tr>
<td></td>
<td>• Calendar - No search for users or directory view</td>
</tr>
<tr>
<td></td>
<td>• Cannot forward an event via email</td>
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<td>• Cant search for resources, just auto-complete</td>
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<td>• Outlook has a convoluted setup</td>
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<td></td>
<td>• Editing server side rules is not possible in outlook</td>
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</table>
Appendix III – DRC Feedback on Candidates

GOOGLE:

Mail: Interface is not intuitive, and has very poor contrast. Instructions and other popups overlay existing text. There is a high-contrast theme, but it is still difficult to understand which messages are read and which are unread; there is no apparent symbol indicator to assist with this process. If the interface relies on color change to signify a message has been read, it will be indiscernible to color-blind users on campus.

Calendar: Calendar printing allows for larger fonts than in the current Zimbra (Zimbra 7), and therefore is an improvement. The options to change the interface, such as changing to the high-contrast theme, are not intuitive or obvious.

Overall: Google Apps for Education is not as intuitive as Zimbra or Office 365 to set up the personal account environment, and is more difficult to add items to the account. There is an increased difficulty in finding interface options to change the interface itself, or to interact with content on the page.

MS:

Mail: Concern noted about possible difficulty with folder operations, though more thorough testing may mitigate this concern.

Calendar: Difficult to read portions of the interface, as the font is small and tightly spaced. No obvious way to increase the font for calendar printing.

ZIMBRA:

Zimbra: New features of Zimbra 8 are improvements over Zimbra 7, and interface is regarded favorably. Can differentiate between read and unread mail. Contrast is workable and there are font controls available. Some concerned expressed not only about the training overhead needed and personal effort to establish a working method with a new product, but there has not been as much training as would be desired for the current system, after upgrades.
Appendix IV – FACT Submission

To: ITS
From: Faculty Advisory Committee on Technology (FACT)
Subject: Collaboration Suite Software
Date: Nov. 18, 2013
Enclosure: Survey results

The Faculty Advisory Committee on Technology (FACT) conducted a survey of faculty to find out what attributes of campus collaboration software are most important to them. The survey was conducted between Nov. 8 and 14, 2013, with 259 faculty member responses (attached). FACT met on Nov. 15, 2013 to discuss the results and input collected by committee members. Based on this exercise we have formulated the following recommendations to ITS on the proposed upgrade of campus-wide collaboration software.

On the collaboration tools:

1) The survey identified the key features most important to faculty that any collaboration suite adopted by Cal Poly should contain. The committee recommends that ITS ensure the following are included with whatever tool is chosen:
   a. The ability to share documents
   b. Easy access to documents and functions
   c. Ability to easily integrate or synchronize with other devices and applications, e.g. laptop, desktop, smart-phone, mail programs, etc.
   d. Ability to share email with specific groups, e.g. students, faculty, staff, etc.
   e. Searchability and sortability (on date, sender, recipient, subject, etc.) of email

2) Based on the general trend away from personal storage (e.g. on hard-drives or optical media such as DVDs) to cloud repositories, we also recommend that adequate storage capacity for videos, files, etc. be provided either within the chosen collaboration suite or through an additional service (e.g. Dropbox). In addition, a strategy should be developed so that the capacity keeps pace with the data growth trends from e.g. online education, where storage and delivery of media for flipped classrooms will require significant resources.

3) Although a significant number of respondents indicated that they felt unable to answer the question about which product to choose, because they had no basis for comparison, the majority of survey respondents (61%) indicated a preference for Google Apps for Education. After deliberation within the committee, we feel that ITS should review the three product options and ensure that they can equally
address the priorities outlined in items 1 and 2. If Google Apps for Education is determined to satisfy these requirements, then in accord with the survey results, the committee recommends its adoption for Cal Poly.

4) If none of the three product options adequately satisfies the requirements outlined in items 1 and 2, we recommend that further investigation of alternative collaboration products be pursued.

On campus technology turnover:
The free response portion of the survey indicated that many faculty are unhappy with the rate of turnover of technology (e.g. Oracle→Zimbra, Blackboard→PolyLearn, Zimbra→??) at Cal Poly and indicated that they would prefer things remain consistent for longer periods.

Improving communication with Faculty:
The committee feels that better communication with faculty on important campus-wide technology issues are needed. We recognize our committee’s role in this communication pipeline and plan to work with ITS to address the breakdown.

The free response portion of the survey highlighted the fact that many faculty were unaware of the proposed transition to a new collaboration suite. Nor were they aware of the open forums held recently for them to evaluate the collaboration tools (33/89 responses specifically indicate this). It would appear that Cal Poly Report announcements and emails directly from ITS do not succeed in communicating with faculty. Therefore, we recommend exploring alternative means to reach faculty, such as directly targeting specific subgroups like college-wide technology committees, or allowing representatives from this committee (who have direct connection with the constituents) to advertise and convene college-level open forums, among others.

Jennifer Klay, Chair/COSAM
Francisco Fernfiores, Academic Senate
Sean Hurley, CAFES
Kimi Ikeda, Office of the Provost
Anika Leithner, CLA
Franz Kurfess, Academic Senate
Patricia McQuaid, OCOB
Patrick O’Sullivan, CTLT
Jesse Vestermark, Library
Jason Williams, CLA, Past Chair