

Google Apps including Webauthing

Barry Cornelius

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Google Apps including Webauthing

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Oxford University Computing Services

June 2007

http://www.oucs.ox.ac.uk/oucsweb/gapps/



Summary

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Summary: what is GAFYD?

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 Google Apps include: Gmail, Calendar, Docs and Spreadsheets.

- Google Apps For Your Domain enables an organization to make these Apps available to their users (using the organization's own domain name in URLs).
- Google says it's providing GAFYD to 'meet the needs of different organizations: ... a small business, a Fortune 500 company, a group or a school'.
- They provide three different editions of GAFYD.
 One of these is for educational establishments.
- OUCS is using the domain gapps.oxuni.org.uk for an experiment with GAFYD.



Summary: managing users

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 When using GAFYD, each user in the organization has a separate account, where they can store their messages, calendars, documents and spreadsheets.

- Google provides the administrator of the domain with facilities for managing the users.
- If the organization already uses a Single-SignOn system, the domain can be configured in Google so that the SSO is used instead of the user having to use a different username-password for their account.
- For gapps.oxuni.org.uk,
 I have configured the domain in Google to use SSO,
 and have implemented this using Webauth.



Summary: which Apps?

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- Google allows an administrator to decide which Apps are available to users of the domain.
- Seeing the University already has an established e-mail system, we wanted our GAFYD to use that. So we chose to exclude GMail from gapps.oxuni.org.uk.
- Our experiment will mainly be concerned with seeing whether Google Calendar provides a useful calendaring system perhaps for use by members of a department/college.



Summary: outsourcing applications

Google Apps including Webauthing

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 Some educational establishments have already outsourced their provision of applications to Google.

- OUCS has produced a checklist of some of the issues to investigate when considering whether to outsource an application.
- So I'll also briefly consider some of the issues involved with outsourcing applications to Google.



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Details about GAFYD

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- ② Details about GAFYD: admin's control panel
- Operation of the property of the second of the property of
- Details about GAFYD: usernames
- Details about GAFYD: getting e-mail delivered



Details about GAFYD: three editions

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• There are three different editions of GAFYD:

	standard	premier	education
price	free	free for 30 days then \$50/user/year	free
SSO	no	yes	yes
provisioning API	no	yes	yes
99.9% e-mail uptime guarantee	no	yes	no
e-mail storage (per user)	2GB	10GB	2GB
ads alongside e-mail	standard	optional	optional

- Each edition allows any number of users.
- Each edition has the same limits for the number and size of documents and spreadsheets: this will be discussed later.



Details about GAFYD: admin's control panel

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 GAFYD provides the administrator of the domain with a control panel for performing admin tasks.





Details about GAFYD: getting to Google Apps

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 GAFYD provides the user with a Start Page which is a bit like a personalized Google page.





Details about GAFYD: getting to Google Apps

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• How does a user get to the Google Apps?

• Suppose the domain is mydomain.com

 A user can go to their Google Start Page using the URL http://start.mydomain.com

 A user can instead reach each of the Google Apps using URLs like http://mail.mydomain.com, http://calendar.mydomain.com and http://docs.mydomain.com

 The administrator of the domain has to arrange to use CNAMEs in the DNS to route each of these addresses to ghs.google.com



Details about GAFYD: usernames

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- Each user of the domain has a username.
- If the domain is SSO-enabled, this will be an SSO username.



Details about GAFYD: getting e-mail delivered

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 A user has an e-mail address which is username@domainname, e.g., barry@mydomain.com

- If the domain has Gmail enabled, then, for incoming e-mail to work, the DNS has to be configured with a MX record so that messages to mydomain.com are routed to ASPMX.L.GOOGLE.COM.
- If this is done, then messages to addresses like barry@mydomain.com will be delivered to the Gmail inbox that the user has in the domain mydomain.com



Details about GAFYD: getting e-mail delivered

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- Even if the domain has Gmail disabled, each user still has an e-mail address because Apps such as Google Calendar might want to invite a user to a meeting.
- So, if Gmail is disabled, the machine handling the mail for the domain has to be configured to route messages to username@mydomain.com to some appropriate e-mail address.
- As has already been mentioned, gapps.oxuni.org.uk has Gmail disabled. The OxMail machines are configured so that messages to username@gapps.oxuni.org.uk are routed to the user's preferred e-mail address.



Details about the Apps

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Objective Details about the Apps: Docs

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Details about the Apps: Gmail

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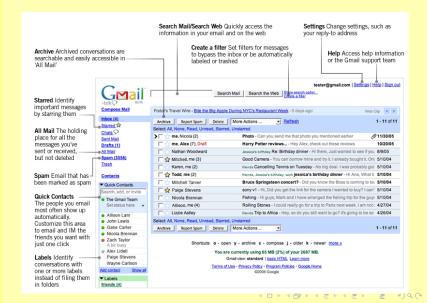
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Details about the Apps: Gmail

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• A user has an e-mail address which is username@domainname, e.g., barry@mydomain.com

- The user has 2GB/10GB of space for messages.
- Gmail has:
 - searching
 - personal aliases
 - personal lists
 - ...
- Gmail has virus, spam and phishing protection.
- You can access your Gmail using POP (but not IMAP). Confusingly, if the domain is SSO-enabled, POP access uses a password that is different from the SSO password.
- You can download a client for a Blackberry smartphone that enables access to your Gmail.





Details about the Apps: Gmail

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Demonstration:

 There is no demonstration, as Gmail is disabled for gapps.oxuni.org.uk



Details about the Apps: Calendar

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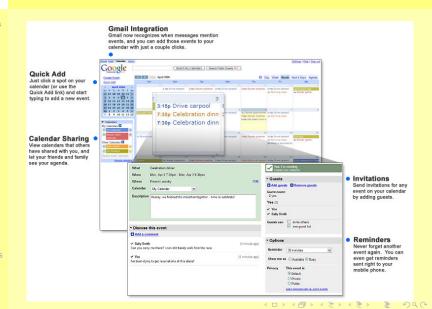
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Details about the Apps: Calendar

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- You can keep your calendar private, share it with others in the domain or share it with anyone.
- Calendars can be created for your organization/team where each person can view/edit.
- Google Calendar shares the same contacts list as Gmail.
- You can import/export calendars using the iCalendar format.
- You can also access your Google Calendar from a program using the Calendar API.



Details about the Apps: Calendar

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Demonstration:

- Log in to http://calendar.gapps.oxuni.org.uk using the SSO username barry.
- Use a different browser/PC to log in to http://calendar.gapps.oxuni.org.uk using the SSO username barry2.
- Make an appointment in barry2's calendar and invite barry to the meeting.
- Display barry's calendar in barry2's calendar and vice versa.
- Get barry2 to extend the meeting and watch all the references to it change.
- Get barry2 to move the meeting to another day.



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Check spelling ▼

ability to analyze the "back links" pointing to a given website. Larry, who had always enjoyed tinkering with machinery

No one else is editing this document. Add collaborators



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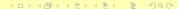
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Here's what Google says you can do with documents:

- 'Upload Word documents, OpenOffice, RTF, HTML or text (or create documents from scratch).'
- 'Use our simple WYSIWYG editor to format your documents, spell-check them, etc.'
- 'Invite others (by e-mail address) to edit or view your documents and spreadsheets.'
- 'Edit documents online with whomever you choose.'
- 'View your documents' and spreadsheets' revision history and roll back to any version.'
- 'Publish documents and spreadsheets online to the world, as web pages or post documents to your blog.'
- 'Download documents to your desktop as Word, OpenOffice, RTF, PDF, HTML or zip.'
- 'Email your documents as attachments.'





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- Each document can be up to 500K, plus up to 2MB per embedded image.
- Each user has a limit of 1000 documents and 1000 images.



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Demonstration:

- Get barry2 to create a new document, write a line to it, save it.
- Write another line, save it. Repeat. Show revisions.
 Revert back to an earlier version.
- Within docs, barry2 invites barry to collaborate. Go to barry's e-mail. Click on the link for the doc. Get barry to edit the doc. See the change immediately turning up in barry2's copy.



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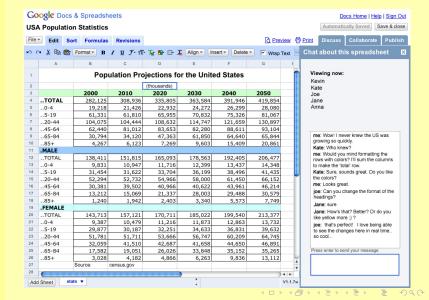
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Here's Google's feature list for spreadsheets:

- 'Import and export .xls, .csv and .ods formatted data (with export functionality for .pdf and .html).'
- 'Enjoy intuitive navigation and editing, like any traditional document or spreadsheet.'
- 'Use formatting and formula editing in spreadsheets so you can calculate results and give your data the look you want.'
- 'Chat in real time with others who are editing your spreadsheet.'
- 'Embed a spreadsheet, or a piece of a spreadsheet, in your blog or website.'
- You can also access a spreadsheet from a program using the Spreadsheet API.



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Each spreadsheet can contain
 up to 10,000 rows, or up to 256 columns,
 or up to 50,000 cells, or up to 20 sheets
 whichever limit is reached first.

- Each user has a limit of 200 spreadsheets.
- The limit on spreadsheets that can be opened at one time is 20.
- You can import spreadsheets of up to approximately 1MB.



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No time for a demonstration.

- However, Spreadsheets are similar to Docs.
- Each time a person updates a cell, the new contents immediately appears in any copy of the spreadsheet that has been opened by another collaborator.
- One big difference: Spreadsheets allows you to Chat to a collaborator (and the conversation appears in the Spreadsheets window).
- Although similar, there are some differences in the user interfaces: the two Apps should be more consistent.



Managing users

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- Managing users: configuring to use SSO
- Managing users: redirect, login, redirect back
- Managing users: the reference implementation
- Managing users: providing an implementation



Managing users: three ways to create users

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- Even if the domain has been configured to use SSO, an account has to be created for each user in your Google Apps domain.
- There are three approaches to managing users:
 - The GUI interface: an administrator can use the control panel to create each user one at a time.
 - Bulk update: an administrator can bulk create new accounts by uploading a CSV file where each line contains the information about a user.
 - Provisioning API: using the provisioning API from a program, an administrator can query whether a user exists, add a new user, delete a user,



Managing users: configuring to use SSO

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 If an administrator wishes to switch to SSO, they need to provide:

• the URL of a login page, e.g., https://auth.gapps.oxuni.org.uk:8443/ gapps/IDP

• the URL of a logout page, e.g., https://webauth.ox.ac.uk/logout

• the URL of a change password page, e.g., https://auth.gapps.oxuni.org.uk:8443/ gapps/CPdecide?acsURL=https://www.google.com

 a public key that can be used by Google to confirm the authenticity of SAML responses that it receives for this domain



Managing users: configuring to use SSO

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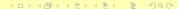
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Managing users: redirect, login, redirect back

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1 What happens when the user uses a browser to go to http://start.gapps.oxuni.org.uk?

- 2 The CNAME routes this to http://ghs.google.com
- 3 Google detects that this is for a GAFYD that has SSO configured. It sends a redirect to the login URL: https://auth.gapps.oxuni.org.uk:8443/gapps/IDP?parameters
- 4 Tomcat is configured to ask for Webauth authentication.
- 5 The user supplies an Oxford username and password.
- 6 The servlet generates a digitally signed response containing the Oxford username and redirects the browser to Google's Assertion Consumer Service.
- 7 The ACS verifies the response using its copy of the organization's public key and redirects to the Start Page of gapps.oxuni.org.uk



Managing users: the reference implementation

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 To help an organization integrate GAFYD with their SSO, Google provides a reference implementation of the code needed by the login page.

- This is a Java servlet (called SAMLTestTool) that
 - receives and parses SAML requests,
 - calls a function to authenticate users (*login function*),
 - generates a SAML response.
- There are more details about the reference implementation at

http://code.google.com/apis/apps/sso/
saml_reference_implementation.html



Managing users: providing an implementation

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 I have slimmed down the code of the reference implementation to what we need.

 For Webauthing, the code uses the Java library contributed to Stanford by Mats Henrikson (ex-OUCS).

- The code has been extended to use the Provisioning API to see if the username exists in the GAFYD.
- If it does not, a web page informs the user:
 - that their username, first name and last name will be passed to Google;
 - that the data they provide for calendars and documents will be stored on a Google server;
 - that when they reach Google's new user screen they will be asked to accept Google's terms and conditions.
- If they are happy to proceed, it creates the account for the user in Google before redirecting the user's browser to Google.



Outsourcing

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Outsourcing: what are the issues?

Outsourcing: who is using Google Apps?



Outsourcing: users use external sources

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In an internal OUCS paper, Lou Burnard writes:
 In addition to such familiar web-based services as email, shopping, and banking, Oxford IT users are increasingly likely to take advantage of freely available websites offering any person or group such services as

arranging a meeting date (http://www.meetomatic.com)

• carrying out a questionnaire (http://www.surveymonkey.com)

 managing a project (http://basecamphq.com) (http://www.hosted-projects.com)

• storing, managing, and disseminating photos (http://www.flickr.com)

videos (http://youtube.com) etc

 developing and maintaining networks of contacts (http://www.facebook.com)

• managing complex interactive simulations (http://www.secondlife.com)



Outsourcing: what are the issues?

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 Suppose we are considering whether to outsource some service. What are the areas where we should ask questions?

Availability and reliability

Continuity of service

Support issues

Migration issues

Domino effects

Duplication effects

Strategic and legal considerations

Rights issues

Privacy and confidentiality

Cost implications

 So, if we were to adopt GAFYD, perhaps just for calendaring, we would need satisfactory answers in each of these areas.



Outsourcing: who is using Google Apps?

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 Google's list of customers of Google Apps is at: http://www.google.com/a/help/intl/en/ admins/customers.html

- Under the Education heading they have:
 - Arizona State University, Arizona
 - Lakehead University, Ontario, Canada
 - Northwestern University, Chicago
 - Thunderbird School of Global Management, Arizona
 - San Jose City College, San Francisco Bay Area
 - Cambria-Rowe Business College, Pennsylvania
 - Faculty of Management Studies, Delhi University
 - Hofstra University, Long Island
 - Wyzsza Szkola Biznesu National Louis University
 - Manhattan Christian College, Manhattan, Kansas
 - Victoria Junior College, Singapore
 - Prem Tinsulanonda International School, Thailand
 - Politéico Grancolombiao University, Colombia
 South Fast European University Macedonia





Outsourcing: who is using Google Apps?

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 Arizona State University started to adopt Google Apps for students' email in October 2006:

http://www.asu.edu/news/stories/200610/20061010_asugmail.htm

The article says that the transition for its 65000 students will complete in January 2007.

• Lakehead University (Thunder Bay, Ontario) migrated in November 2006: http://communications. lakeheadu.ca/news/?display=news&nid=310 The article says that they moved '38000 student, faculty, staff and alumni email accounts from existing systems to Google Apps' in a week.



Outsourcing: who is using Google Apps?

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 'Northwestern University is partnering with Google to provide e-mail and other services to students ...':

http://www.it.northwestern.edu/
transitions/google.html

to sign up in June 2007. It is estimated it will be the default e-mail service for incoming UGs by December. They will have the option of keeping accounts post graduation. Graduate students will be provided access sometime in 2007-2008.

Northwestern has 14000 students. UGs will be invited

 Not mentioned in the above list, Trinity College Dublin has adopted Gmail for its students:

```
http://www.tcd.ie/Communications/news.php?headerID=551&vs_date=2007-3-1
```

The article says that the transition for its 15000 students should be completed by October 2007.



Conclusions

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Conclusions: Google Apps

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 Google are providing some significantly useful applications.

- They are likely to add to this portfolio. Currently, Presentations are planned to appear in Summer 2007.
 I wonder whether they will add a CMS to GAFYD.
- Because Google Apps are accessed through the web, your messages, calendars, documents and spreadsheets are available to you anywhere in the world.
- They are providing extras as standard:
 - user-controlled access to documents and calendars;
 - multiple-user access to documents and calendars;
 - versioning of documents, and reversion;
 - APIs to access the data from programs;
 - sophisticated user management;
 - branding of the site.





Conclusions: SSO and outsourcing

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 The Google Apps SSO is complicated to set up but, if your organization uses SSO, then setting it up means there's one less password for your users to manage.

- I think outsourcing of an institution's e-mail is fraught with problems. Probably the same could be said about documents.
- Maybe one role for GAFYD is to use it in addition to what you currently provide, perhaps for use on specific projects.
- OUCS is experimenting with using GAFYD for calendaring.
- We would interested in a few departments/colleges joining this experiment. If you are interested, please send a message to webmaster@oucs.ox.ac.uk



Questions, comments and resources

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Questions, comments and resources

Over to you: it's time for your questions and comments.

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...

 The slides for this talk are available at http://www.oucs.ox.ac.uk/oucsweb/gapps/

 If your department/college is interested in taking part in our experiment with GAFYD, please send a message to webmaster@oucs.ox.ac.uk

 An 18 minute video of Rajen Sheth (Product Manager, Google Apps) demonstrating Google Apps is at http: //www.youtube.com/watch?v=wY2bpr1TAA4
 I recommend this video as it's succinct and helpful.