



Google Apps  
including  
Webauthing

Barry  
Cornelius

# Google Apps including Webauthing

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Barry Cornelius

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

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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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- 4 Details about GAFYD: usernames
- 5 Details about GAFYD: getting e-mail delivered





# Details about GAFYD: three editions

- 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

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

The screenshot shows the Google Apps admin control panel for the domain gapps.oxuni.org.uk. The browser window is titled "Google Apps - Firefox" and the address bar shows the URL "https://www.google.com/a/cpanel/gapps.oxuni.org.uk/Dashboard?AuthEventSource=550". The page header includes the Google logo, the domain name "Google Apps for gapps.oxuni.org.uk - Education Edition", and the user email "oucsga01@gapps.oxuni.org.uk" with links for "Calendar", "Help", and "Sign out". A search bar is also present. The main navigation bar includes "Dashboard", "User accounts", "Domain settings", "Advanced tools", and "Service settings-". Below this, there are two announcements: "API access is enabled. Any updates you make via this control panel will not transfer to your user management system. [Learn more](#)" and "New! Email Migration - Move your existing email archives into Google Apps - [Get started](#)". The "University of Oxford" section displays "Manage account information", "9 users", and a "Create new users" link, with a note that up to 1000 user accounts can be created. The "Service settings" section includes links to "Add more services" and lists several services: "Start Page" (Active, http://start.gapps.oxuni.org.uk), "Calendar" (beta - Active, http://calendar.gapps.oxuni.org.uk), "Docs and Spreadsheets" (beta - Active, http://docs.gapps.oxuni.org.uk), "Chat" (beta - Active, Users can sign in by downloading Google Talk), and "Web Pages" (beta - Active, http://www.gapps.oxuni.org.uk). The footer contains links for "Terms of Service", "Privacy policy", "Suggest a feature", and "Google Home", along with the copyright notice "©2007 Google Inc."



# 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.

Personalized Start Page - Firefox

File Edit View History Bookmarks Tools Help

http://partnerpage.google.com/gapps.oxuni.org.uk

## Google Apps for Oxford University

[Add stuff »](#) barry@gapps.oxuni.org.uk | [Sign out](#)

Web [Images](#) [Video](#) [News](#) [Maps](#) [more »](#)

Google Search

Advanced Search  
Personalized  
Language Tools

Powered by

### Calendar

June 2007						
Su	M	Tu	W	Th	F	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7
8	9	10	11	12	13	14

### Weather

**Oxford**  
73°F  
Clear  
Wind: N at 0 mph  
Humidity: 65%

Today: 73° | 53°  
Sun: 75° | 55°  
Mon: 71° | 59°  
Tue: 69° | 55°

### BBC News

- [Six dead in attack on Iraq prison](#)
- [Israel 'tests' Syria peace aims](#)
- [Cathedral row over computer war game](#)

### Oxford University News

- [Ticks challenge climate theory](#)
- [DNA damage to stem cells is central to ageing](#)
- [Largest ever study of genetics of common diseases published](#)

### News from Computing Services

- [50 Years of Computing in Oxford Exhibition](#)
- [ACDT - Send us your project suggestions!](#)
- [Could you build a new Oxford University?](#)

### OUCS IT Learning Program

- [Flash level 2: An introduction](#)
- [Flash level 3: Further techniques](#)
- [Social Networking: Facebook for Academia](#)

[Google Privacy](#) - [Google Terms of Service](#) - [Help](#) - [OUCS Gapps Wiki](#)



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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.



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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`



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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.



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# Details about the Apps: Gmail

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**Archive** Archived conversations are searchable and easily accessible in 'All Mail'

**Starred** Identify important messages by starring them

**All Mail** The holding place for all the messages you've sent or received, but not deleted

**Spam** Email that has been marked as spam

**Quick Contacts**  
The people you email most often show up automatically. Customize this area to email and IM the friends you want with just one click

**Labels** Identify conversations with one or more labels instead of filing them in folders

**Search Mail/Search Web** Quickly access the information in your email and on the web

**Create a filter** Set filters for messages to bypass the inbox or be automatically labeled or trashed

**Settings** Change settings, such as your reply-to address

**Help** Access help information or the Gmail support team

tester@gmail.com | [Settings](#) | [Help](#) | [Sign out](#)

**Search Mail** **Search the Web** [Show search easier](#) [Create a filter](#)

**Compose Mail** **Archive** **Report Spam** **Delete** **More Actions ...** **Refresh**

Select: All, None, Read, Unread, Starred, Unstarred

From	Subject	Date
me, Nicola (2)	Photo - Can you send me that photo you mentioned earlier	11/30/05
me, Alex (7), <b>Draft</b>	Harry Potter reviews... - Hey Alex, check out these reviews	10/20/05
Nathan Woodward	Jessica's birthday Re: Birthday dinner - Hi there, Just wanted to see if you	8/9/05
Mitchell, me (3)	Good Camera - You can borrow mine and try it. I already bought it. Or	5/10/04
Karen, me (2)	friends Cancelling Tennis on Tuesday - No big deal. I was probably goi	5/10/04
Todd, me (2)	friends, Jessica's birthday, work Jessica's birthday dinner - Hi Ana, What	5/10/04
Mitchell Tarver	Bruce Springsteen concert? - Did you know the Boss is coming to to	5/10/04
Paige Stevens	sony v1 - Hi, Did you get the link for the camera I wanted to buy? I can	5/10/04
Nicola Brennan	Fishing - Hi guys, Mark and I have arranged the fishing trip for the guys	5/10/04
Allison, me (4)	Rolling Stones - I could really go for a trip to Paris next week. I am not	4/27/04
Lizzie Asley	friends Trip to Africa - Hey, so do you still want to go? It's going to be so	4/26/04

Select: All, None, Read, Unread, Starred, Unstarred

**Archive** **Report Spam** **Delete** **More Actions ...**

Shortcuts: o - open y - archive c - compose j - older k - newer [more >](#)

You are currently using 85 MB (2%) of your 2687 MB.  
Gmail view: [standard](#) | [basic HTML](#) | [Learn more](#)

[Terms of Use](#) | [Privacy Policy](#) | [Program Policies](#) | [Google Home](#)

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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.



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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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## Quick Add

Just click a spot on your calendar (or use the Quick Add link) and start typing to add a new event.

## Calendar Sharing

View calendars that others have shared with you, and let your friends and family see your agenda.

## Gmail Integration

Gmail now recognizes when messages mention events, and you can add those events to your calendar with just a couple clicks.

The screenshot displays the Google Calendar web interface. At the top, there's a navigation bar with 'Google', search fields, and links for 'Settings', 'Help', and 'Sign out'. The main calendar view shows a month of April 2006. A 'Quick Add' popup is visible in the center, allowing users to add events by clicking on a date. Below the calendar, an event details view for 'Celebration dinner' is shown, including fields for 'When', 'Where', 'Calendar', and 'Description'. The event is scheduled for Monday, April 3rd, from 7:30pm to 9:30pm at 'French Laundry'. The details view also includes sections for 'Guests', 'Options', and 'Discuss this event'.

## Invitations

Send invitations for any event on your calendar by adding guests.

## Reminders

Never forget another event again. You can even get reminders sent right to your mobile phone.



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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.



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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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Google Docs & Spreadsheets

[Docs Home](#) | [Help](#) | [Sign out](#)

Report on Google

Save

Save & close

Discard changes

File

Edit

Insert

Revisions

Edit HTML

Preview

Print

Email

Collaborate

Publish

Undo Redo Copy Paste Bold Italic Text color Background color Bulleted list Numbered list Decrease indent Increase indent Text color Background color Style Change

## Google: The History of a Search Engine

Google is a play on the word **googol**, which was coined by Milton Sirota, nephew of American mathematician Edward Kasner, and was popularized in the book, *Mathematics and the Imagination* by Kasner and James Newman. It refers to the number represented by the numeral 1 followed by 100 zeros. Google's use of the term reflects the company's mission to organize the immense, seemingly infinite amount of information available on the web. - [Google.com/corporate/history.html](http://Google.com/corporate/history.html)

1995 - 1997

### Back before Google? Aye, there's the Rub.

According to Google lore, company founders [Larry Page](#) and [Sergey Brin](#) were not terribly fond of each other when they first met at Stanford University graduate students in computer science in 1995. Larry was a 24-year-old University of Michigan alumnus on a weekend visit; Sergey, 23, was among a group of students assigned to show him around. They argued about every topic they discussed. Their strong opinions and divergent viewpoints would eventually find common ground in a unique approach to solving one of computing's biggest challenges: retrieving relevant information from a massive set of data.

I like this paragraph, but I'm not sure how the title relates. -Ksystrom 1/25/07 3:57 PM

By January of 1996, Larry and Sergey had begun collaboration on a search engine called BackRub, named for its unique 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](#)

[Check spelling](#)



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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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Google Docs & Spreadsheets

USA Population Statistics

File Edit Sort Formulas Revisions Preview Print Discuss Collaborate Publish

Format B I U F T T Align Insert Delete Wrap Text

Chat about this spreadsheet

Viewing now:  
Kevin  
Kate  
Joe  
Jane  
Anna

me: Wow! I never knew the US was growing so quickly.  
Kate: Who knew?  
me: Would you mind formatting the rows with colors? I'll sum the columns to make the 'total' row.  
Kate: Sure, sounds great. Do you like the colors?  
me: Looks great.  
joe: Can you change the format of the headings?  
Jane: sure  
Jane: How's that? Better? Or do you like yellow more :) ?  
joe: that's perfect! I love being able to see the changes here in real time.. so cool...

Press enter to send your message

	A	B	C	D	E	F	G	H
1	Population Projections for the United States							
2				(thousands)				
3		2000	2010	2020	2030	2040	2050	
4	..TOTAL	282,125	308,936	335,805	363,584	391,946	419,854	
5	..0-4	19,218	21,426	22,932	24,272	26,299	28,080	
6	..5-19	61,331	61,810	65,955	70,832	75,326	81,067	
7	..20-44	104,075	104,444	108,632	114,747	121,659	130,897	
8	..45-64	62,440	81,012	83,653	82,280	88,611	93,104	
9	..65-84	30,794	34,120	47,363	61,850	64,640	65,844	
10	..85+	4,267	6,123	7,269	9,603	15,409	20,861	
11	..MALE							
12	..TOTAL	138,411	151,815	165,093	178,563	192,405	206,477	
13	..0-4	9,831	10,947	11,716	12,399	13,437	14,348	
14	..5-19	31,454	31,622	33,704	36,199	38,496	41,435	
15	..20-44	52,294	52,732	54,966	58,000	61,450	66,152	
16	..45-64	30,381	39,502	40,966	40,622	43,961	46,214	
17	..65-84	13,212	15,069	21,337	28,003	29,488	30,579	
18	..85+	1,240	1,942	2,403	3,340	5,573	7,749	
19	..FEMALE							
20	..TOTAL	143,713	157,121	170,711	185,022	199,540	213,377	
21	..0-4	9,387	10,479	11,216	11,873	12,863	13,732	
22	..5-19	29,877	30,187	32,251	34,633	36,831	39,632	
23	..20-44	51,781	51,711	53,666	56,747	60,209	64,745	
24	..45-64	32,059	41,510	42,687	41,658	44,650	46,891	
25	..65-84	17,582	19,051	26,026	33,848	35,152	35,265	
26	..85+	3,028	4,182	4,866	6,263	9,836	13,112	
27	Source:	census.gov						
28								

Add Sheet stats V1.1.7w



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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.



# Details about the Apps: Spreadsheets

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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.



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- 3 Managing users: redirect, login, redirect back
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- 5 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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The screenshot shows the Google Apps Admin console interface in a Firefox browser window. The page title is "Set up single sign-on (SSO)". The breadcrumb navigation shows "Dashboard" > "User accounts" > "Domain settings" > "Advanced tools" > "Service settings-". The "Advanced tools" tab is selected. The page content includes a "Sign-in page URL" field with the value "https://auth.gapps.oxuni.org.uk:8443/gapps/IDP", a "Sign-out page URL" field with "https://webauth.ox.ac.uk/logout", and a "Change password URL" field with "https://auth.gapps.oxuni.org.uk:8443/gapps/CPdecide?acsURL=h". A "Verification certificate" section indicates a certificate has been uploaded. At the bottom, there are "Save changes" and "Cancel" buttons. The footer contains links for "Terms of Service", "Privacy policy", "Suggest a feature", and "Google Home", along with the copyright notice "©2007 Google Inc."

Google Apps - Firefox

File Edit View History Bookmarks Tools Help

https://www.google.com/a/cpanel/gapps.oxuni.org.uk/SetupSSO

Google Apps for gapps.oxuni.org.uk - Education Edition

Search accounts

oucsga01@gapps.oxuni.org.uk [Calendar](#) [Help](#) [Sign out](#)

Dashboard User accounts Domain settings **Advanced tools** Service settings-

« Back to Advanced tools

### Set up single sign-on (SSO)

To set up SSO, please provide the information below. [SSO Reference](#)

☒ **Enable Single Sign-on**

**Sign-in page URL \***  
https://auth.gapps.oxuni.org.uk:8443/gapps/IDP URL for signing in to your system and Google Apps

**Sign-out page URL \***  
https://webauth.ox.ac.uk/logout URL to redirect users to when they sign out

**Change password URL \***  
https://auth.gapps.oxuni.org.uk:8443/gapps/CPdecide?acsURL=h URL to let users change their password in your system

**Verification certificate \***  
A certificate file has been uploaded - [Replace certificate](#)

The certificate file must contain the public key for Google to verify sign-in requests. [Learn more](#)

**Save changes** Cancel

---

[Terms of Service](#) - [Privacy policy](#) - [Suggest a feature](#) - [Google Home](#)

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Done [www.google.com](#)



# 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](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.



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# 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?
  - 1 Availability and reliability
  - 2 Continuity of service
  - 3 Support issues
  - 4 Migration issues
  - 5 Domino effects
  - 6 Duplication effects
  - 7 Strategic and legal considerations
  - 8 Rights issues
  - 9 Privacy and confidentiality
  - 10 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 East European University, Macedonia



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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](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>  
Northwestern has 14000 students. UGs will be invited 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.
- 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](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](mailto:webmaster@oucs.ox.ac.uk)



# Questions, comments and resources

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- Over to you: it's time for your questions and comments.
- ...
- ...
- ...
- 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](mailto: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.