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Federated Login Developer's Guide

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Smoothwall publishes this guide in its present form without any guarantees. This guide replaces any other guides delivered with earlier versions of Federated Login.

For more information, contact: docs@smoothwall.net

Trademark notice

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Federated Login contains graphics taken from the Open Icon Library project http://openiconlibrary.sourceforge.net/

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About This Guide

This guide explains how to create and deploy a Google App Engine™ application which enables Smoothwall users to use Federated Login to authenticate themselves using their Google credentials.

Audience and Scope

This guide is aimed at administrators deploying network authentication using Federated Login.

This guide assumes the following prerequisite knowledge:

- An overall understanding of the functionality of the Smoothwall System
- Familiarity with using web browsers
- Familiarity with programming languages

Organization and Use

This guide is made up of the following chapters and appendices:

Conventions

The following typographical conventions are used in this guide:

Item	Convention	Example
Key product terms	Initial Capitals	Unified Threat Management
Cross-references and references to other guides	*Italics*	Refer to the *Unified Threat Management Administration Guide*
Filenames and paths	`Courier`	The `portal.xml` file
Variables that users replace	`Courier Italics`	`http://<my_ip>/portal`

To save paper, this guide is designed for double-sided printing.

1 Introduction to Federated Login

About Federated Login and Smoothwall

Federated Login enables users of the Smoothwall authentication service to authenticate themselves using third party authentication systems, such as a Google application, using their Google user credentials.

To use Federated Login, a program or script is needed to bridge the Smoothwall Federated Login API and the third party authentication system. In this document, we go through a worked example using the Google App Engine™, however, the example is equally applicable to other systems.

Note: Federated Login only provides authentication. It does not provide directory (group) functionality, that is, you only get a username and do not get group mapping. To map users to policies, you could, for example, export and use your local user list.

2 Working with Federated Login

This chapter describes how to create a Google App Engine application, including:

Prerequisites

To create a Google application, you must have:

- A Google account

  You can find more information here: https://accounts.google.com/SignUp
- Downloaded and installed the Google App Engine SDK for Python

  For more information, see https://developers.google.com/appengine/downloads

The steps entailed are as follows:

- Decide on a unique identifier for your Google application and register it
- Create the application
- Upload the application and set any exceptions

Further Information

At the time of writing, Google™ makes available the following guides and FAQs about working with Google applications:

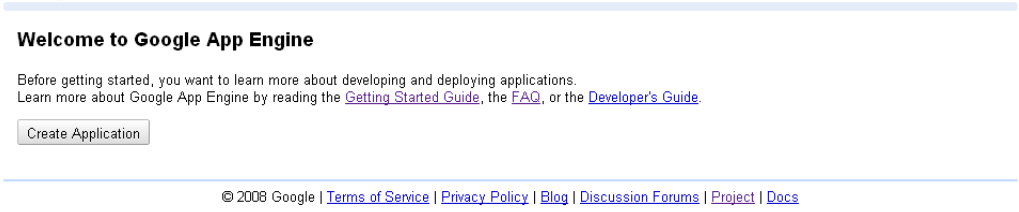
- Getting Started Guide: https://developers.google.com/appengine/docs/python/gettingstarted/
- Developer's Guide: https://developers.google.com/appengine/docs/
- FAQs: https://developers.google.com/appengine/kb/

Registering Your Google App Engine Application

As your Google app must have a unique identifier, the first step is to decide what you want to call it and then register it.

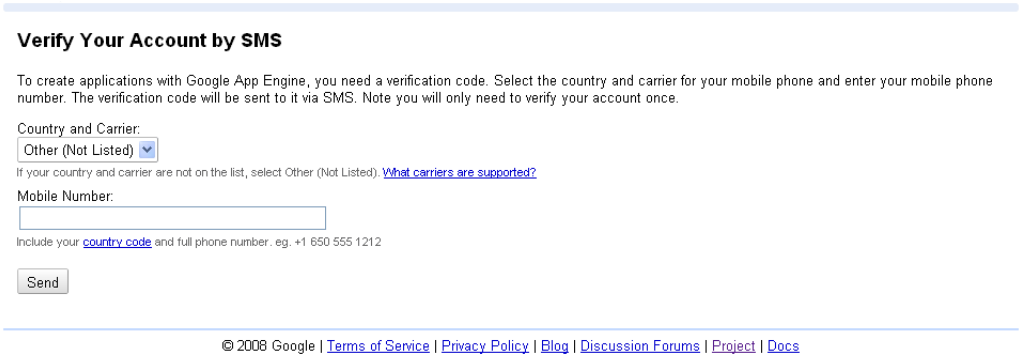
To register your Google application, do the following:

1. Visit https://appengine.google.com/start

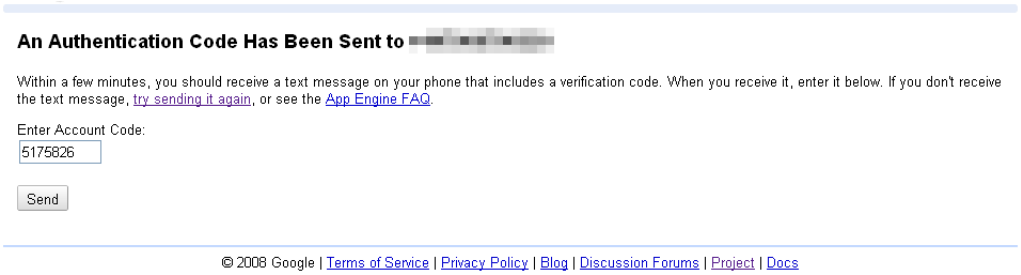


2. Click **Create Application**.

   If you have created Google applications before, go to *step 5.*. If this is the first time, you will be prompted to verify your account.

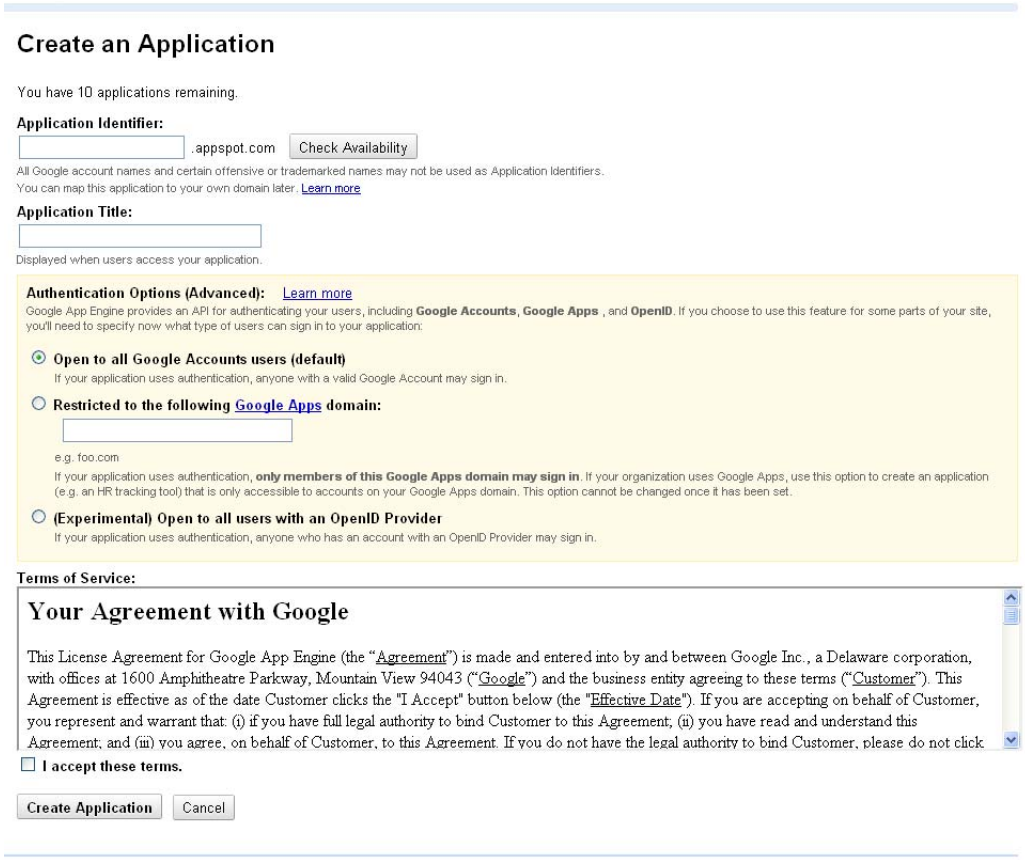


3. Enter your mobile number and click **Send**.



4. When you receive the authentication code, enter it and click **Send**.

   Google displays the following screen:



5. Enter the following information:

Field	Description
Application Identifier	Enter a unique app ID for your Google app.
Application Title	Enter a name for the app which will be displayed to app users.
Authentication Options	Select **Restricted to the following Google Apps domain** and enter your domain name.

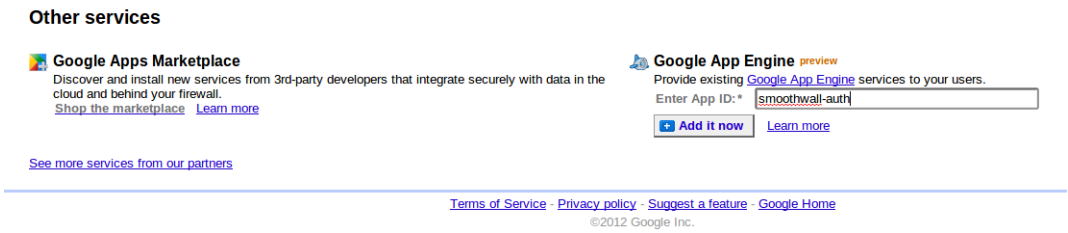
6. Click **I accept these terms**, and then click **Create Application**. Google registers your app.

Configuring Access to Your Google Application

In order to restrict access to your Google application to members of a particular Google Apps domain, you must add the application ID to your Google Apps account using the Google Apps control panel.

To configure access to your Google app, do the following:

1. Browse to https://www.google.com/a/<Your Domain>/SelectServices



2. Enter your application's unique ID, and click **Add it now**.
3. When prompted, read and accept the Google App Engine terms and conditions, and click **Activate this service**.

Creating Your Google App Engine Application

How you create your Google app and configure its settings file depends on your environment. Microsoft Windows and Apple Mac users can use the graphical user interface provided with their Google App Engine SDK, or use the command line interface. Linux and other platform users can only use the command line interface (CLI).

To cover all users, the following sections explain how to write your application, and configure settings using the CLI.

Note: Programming language Python version 2.7 is required.

Creating the Google App Engine Directory

You must create a directory to store your Google application, and its settings file.

To create a Google App Engine directory, do the following:

- In your `google_appengine` directory, create a <*`your_app_id`*> directory.

Note: You do not need to use the application's ID as the directory name, or create it in the `google_appengine` directory, but doing so makes it easier to identify and maintain applications.

The next step is to create the your Google application's configuration file.

Creating the Configuration File

Settings for your Google application are stored in the configuration file `app.yaml`, located in the *<your_app_id>* directory. The file specifies runtime configuration, such as, how URL paths are associated with request handles, and static files. It also specifies information about the application code, such as, application ID, and version number.

You can either download an example file from http://smoothwall.com/en-gb/get-support/product-manuals/federated-login-guide, or create your own using a text editor. For an example of the `app.yaml` configuration file, see *app.yaml* on page 15.

You must customize the `app.yaml` configuration file as follows:

- Ensure you add the application's unique ID as:

  `application: <your_app_id>`
- Ensure you add the application's version number as:

  `version: <version>`
- To only allow authorized users to reach the application, add

  `login: required`

Tip: Indentations are vital in Python scripts. Confirm that the indentations are exactly as they are in the example above.

Creating Your Google App Script

You must create the authentication script that handles the federated login for the Google App Engine application. The script must be named `main.py`, and be located in the *<your_app_id>* directory. You can either download an example file from http://smoothwall.com/en-gb/get-support/product-manuals/federated-login-guide, or create your own using a text editor. For an example of a `main.py` file, see *main.py* on page 16.

The following must be considered:

- A pre-shared key must be set:

  `psk='<pre-shared_key>'`
- Use a GET request to pass through the parameters:

  `id`, `clientid`, `timestamp`, `loginurl`, `targeturl`, and `hash`
- A check should be made to ensure received data is real, and not modified:

  `valdiate_hash`

  The md5 hash must consist of `id`, `clientid`, `timestamp`, `loginurl`, `targeturl`, and `psk`

- A new md5 hash must be generated to allow the Smoothwall System to check received data validity

  The md5 hash must consist of `id`, `timestamp`, `clientid`, `email`, `userdata`, `timesetamp`, and `psk`

- Encode the parameters to send:

  `encode_url`

- Send parameters as:

  `u` = user's email address

  `o` = target URL

  `d` = user data

  `f` = new Federated Login hash

3 Deploying Federated Login

This chapter describes how to enable Federated Login, including:

Uploading Your Google App Engine Application

You must upload your Google App Engine application, and add any exceptions needed.

Note: You may need to add a new or change existing exceptions for `accounts.google.???`, where `???` is determined by the country you are in; for example, in the UK, `accounts.google.co.uk`.

Two factor authentication will require you to create an application-specific password for the app temporarily to upload the files to Google Apps. Alternatively, you can use `--oauth2`.

When you deploy the application to Google, use an unfiltered connection. Do not go through Guardian.

To upload your Google application and add exceptions:

1. On the command line, use: `appcfg.py update <your_app_id>_directory`
2. If you are behind a proxy, add exceptions for:

   `<your_app_id>.appspot.com`

   `google.com`

   `accounts.google.com`.

Enabling Federated Login

You must configure your Smoothwall System to use Federated Login.

To enable Federated Login, do the following:

1. Using the command line interface (CLI) of your Smoothwall System, change to:

   `/modules/auth/settings/ssllogin/`

2. Using a text editor, create a new file called `federated.json`.

3. Edit `federated.json` as follows:

```
[
    {
        "id" : "google",
        "type" : "basic",
        "url" : "http://<your_app_id>.appspot.com/ourlogin",
        "name" : "Test federated login",
        "psk" : "this is a secret"
    }
]
```

   where:

   - `"url" : "http://<your_app_id>.appspot.com/ourlogin"`

     links to where your application is located

   - `"name" : "Test federated login"`

     determines what text is displayed on the SSL login page, for example:

   - `"psk" : "this is a secret"`

     matches what `psk` is in the script. For more information, see *Creating Your Google App Engine Application* on page 8.

Using More Than One Federated Login Provider

It is possible to define more than one Federated Login provider.

To do so, add a list element to your `federated.json` file, with the same data structure for each provider. For example, for two Federated Login providers, add:

```
[
        {
                    "id" : "google",
                    "type" : "basic",
                    "url" : "http://<your_app_id>.appspot.com/ourlogin",
                    "name" : "Test federated login",
                    "psk" : "this is a secret"
        },
        {
                    "id" : "google2",
                    "type" : "basic",
                    "url" : "http://<another_page>.appspot.com/
ourlogin>",
                    "name" : "another federated login",
                    "psk" : "this is a secret"
        }
]
```

For three providers, add a third list element, and so on.

Logging on Using Federated Login

When you have created your Google application, and enabled and tested Federated Login, it is ready for you and your users to use.

To log in using Federated Login, do the following:

1. When prompted to log in when trying to access content, click the link as specified in the `"name"` parameter of the `federated.json` file — see *Enabling Federated Login* on page 12.
2. When prompted, enter your Google credentials to log in.

   In log files, usernames are in the form of their email address.

Note: When logging out, users must log out of both the SSL Login page and Google to ensure they are logged out fully. To help users log out from Google, we suggest making this link: https://www.google.com/accounts/Logout available to users, for example, as a bookmark.

Using External Proxy Clients

You can allow users to authenticate using Federated Login from outside the network.

To successfully enforce this, you must configure your Smoothwall System to accept the hostname in redirect requests, using a hostname which refers to the external public IP address of the system, and the private IP address if also being used internally.

You do this as follows:

1. Using the command line interface (CLI) of your Smoothwall System, change to:

   `/settings/main/`

2. Using a text editor, edit the `settings` file.

   You may want to create a backup of this file first.

3. Add the following line:

   `USE_HOSTNAME_IN_REDIRECTS=on`

4. Save and exit your text editor.
5. Reboot your Smoothwall System.

Appendix A: Google App Engine Files

This appendix describes each Google App Engine application file available for download from http://smoothwall.com/en-gb/get-support/product-manuals/federated-login-guide, including:

app.yaml

This is the configuration file for your Google App Engine application:

```
#Edit this section########
application: <your_app_id>
##########################
version: 1
runtime: python27
api_version: 1
threadsafe: true

handlers:
 - url: /ourlogin
   script: main.app
   login: required
   secure: always
```

main.py

This is the authentication script that handles the federated login for the Google App Engine application:

```
import webapp2
from google.appengine.api import users
import hashlib
import urllib2

#Edit this section####
psk='this is a secret'
######################

class RequestHandler(webapp2.RequestHandler):
    #retrieve params from GET
    def get_params(self):
        params = {'id': self.request.get('id'),
            'clientid': self.request.get('clientid'),
            'timestamp': self.request.get('timestamp'),
            'loginurl': self.request.get('loginurl'),
            'targeturl': self.request.get('targeturl'),
            'hash': self.request.get('hash')}
        return params

    def validate_hash(self, params):
        h = hashlib.md5(params['id'] + params['clientid'] +
            params['timestamp'] + params['loginurl'] +
            params['targeturl'] + psk).hexdigest()
        if h == params['hash']:
            return True
        else:
            return False

    def encode_url(self, s):
        return urllib2.quote(s.encode("utf8"))

    #genearate federated token
    def generate_hash(self, return_params):
       return return_params['id'] + ',' + return_params['timestamp'] + \
            ',' + hashlib.md5(return_params['clientid'] + \
            return_params['email'] + return_params['userdata'] + \
            return_params['timestamp'] + psk).hexdigest()

    #prepare parameters to send back
    def get_return_params(self, params):
        return_params = {'id': params['id'],
            'email': str(users.get_current_user().email()),
            'targeturl': params['targeturl'],
            'userdata': '',
            'timestamp': params['timestamp'],
            'clientid': params['clientid']}
        return_params['f'] = self.generate_hash(return_params)
        for i in return_params:
```

```
            return_params[i] = self.encode_url(return_params[i])
        return return_params

    #Send confirmation back to Smoothwall
    def send_params(self, return_params, goto):
        url = "%s?u=%s&o=%s&d=%s&f=%s" % (goto, return_params['email'],
            return_params['targeturl'], return_params['userdata'],
            return_params['f'])
        self.redirect(str(url))

    def get(self):
        params = self.get_params()
        if self.validate_hash(params):
            return_params = self.get_return_params(params)
            self.send_params(return_params, params['loginurl'])
        else:
            #throw error 403 ( Forbidden )
            self.abort(403)

app = webapp2.WSGIApplication([('/ourlogin', RequestHandler), ],
debug=True)
```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