I.T. Labs

Gnome Online Documents Manager
Software Architecture Document

Version 5.0

Revision History

Date	Version	Description	Author
12/01/2012	1.0	Initial document	Ishan Thilina Somasiri
09/02/2012	2.0	Minor changes to the package layout	Ishan Thilina Somasiri
16/02/2012	3.0	Minor changes to the package layout	Ishan Thilina Somasiri
08/03/2012	4.0	Minor changes to the package layout	Ishan Thilina Somasiri
26/01/2012	5.0	Added more details to the document	Ishan Thilina Somasiri

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Software Architecture Document

Introduction

Purpose

This document provides a comprehensive architectural overview of the system, using a number of different architectural views to depict different aspects of the system. It is intended to capture and convey the significant architectural decisions which have been made on the system.

Scope

This Software Architecture Document applies to the project Gnome Online Documents Manager.

Definitions, Acronyms, and Abbreviations

GUI – Graphical User Interface

References

Not Applicable.

Overview

The rest of the document has been structured as follows.

Section 2: This section describes what software architecture is used for the current system, and how it is represented.

Section 3: This section describes the software requirements and objectives that have some significant impact on the architecture and also captures the special constraints that may apply.

Section 4: This section lists use cases or scenarios from the use-case model.

Section 5: This section describes the architecturally significant parts of the design model and for each significant package, its decomposition into classes and class utilities.

Section 6: Describes the system's decomposition into processes.

Section 7: This section describes one or more physical network (hardware) configurations on which the software is deployed and run.

Section 8: Provides a description of the major dimensioning characteristics of the software that impact the architecture, as well as the target performance constraints.

Section 9: A description of how the software architecture contributes to all capabilities of the product is provided in this section.

Architectural Representation

The product is based on client-server architecture. The following views are elaborated in this document.

Use case view:

Describes the actors and how they interact with the system. An actor might be a person, a company or organization, a computer program, or computer system hardware, software, or both. Also the boundary of the system is described.

Logical view:

The logical view includes many levels of abstraction, from the large grained components down to the detailed interaction between objects. It describes the software structure and is used to identify major design packages, capsules, and classes.

Process view:

The process view deals with the dynamic aspects of the system and addresses the concurrent aspect of the system at runtime: tasks, threads, or processes, and their interactions.

Deployment view:

Illustrates the distribution of processing across a set of nodes in the system, including the physical distribution of processes and threads

Architectural Goals and Constraints

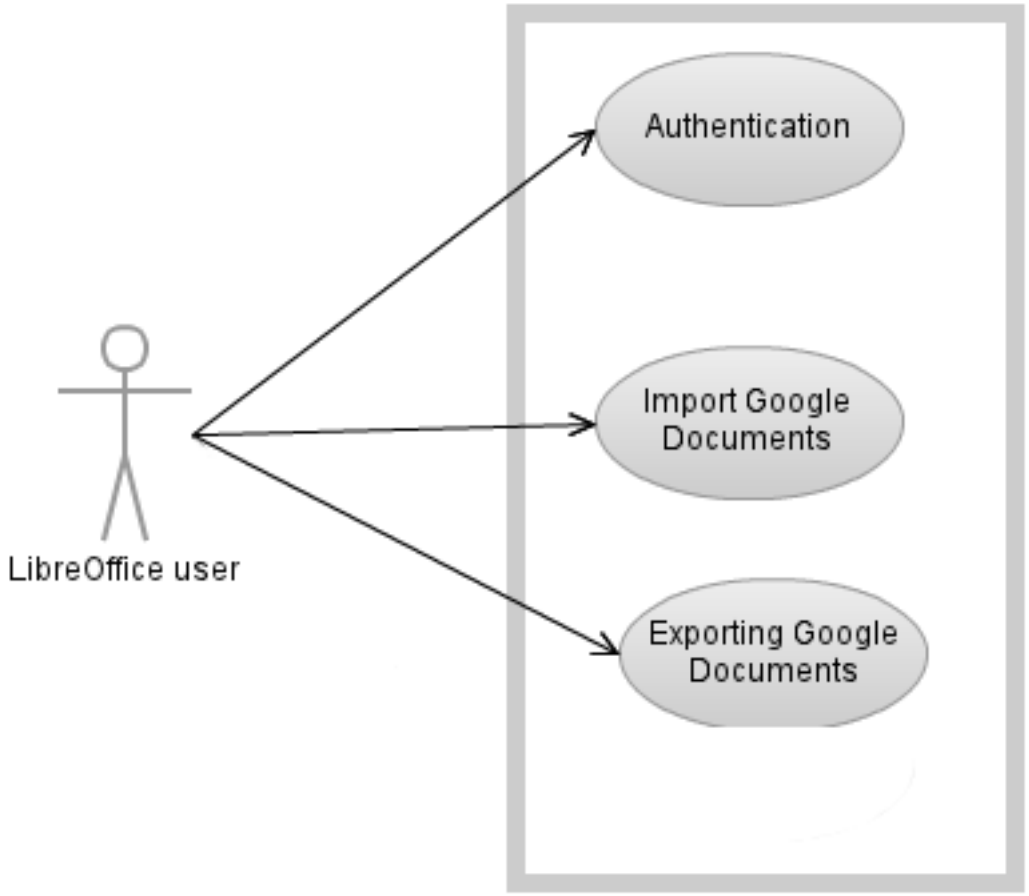
Security

To maintain good security, the extension will be using the services provided by the Gnome Online Accounts service. So the architecture of the extension is designed to comply with the needs that arise due to the usage of those services.

LibreOffice Integration

The projects main idea is to provide a Google Documents editor for the Gnome environment. Since an editor for documents is required to edit documents it was decided to use LibreOffice as the editor because LibreOffice is one of the most used office packages under the Gnome desktop environment with versatile features. So the product is built as a LibreOffice extension. This affects the design of the architecture a lot.

Use-Case View



Use-Case Descriptions

Authentication

In order to retrieve Google Documents the user should have a valid Google account. And this Google account should be linked to Gnome Online Accounts Service. So the user should do these tasks before proceeding to use the extension.

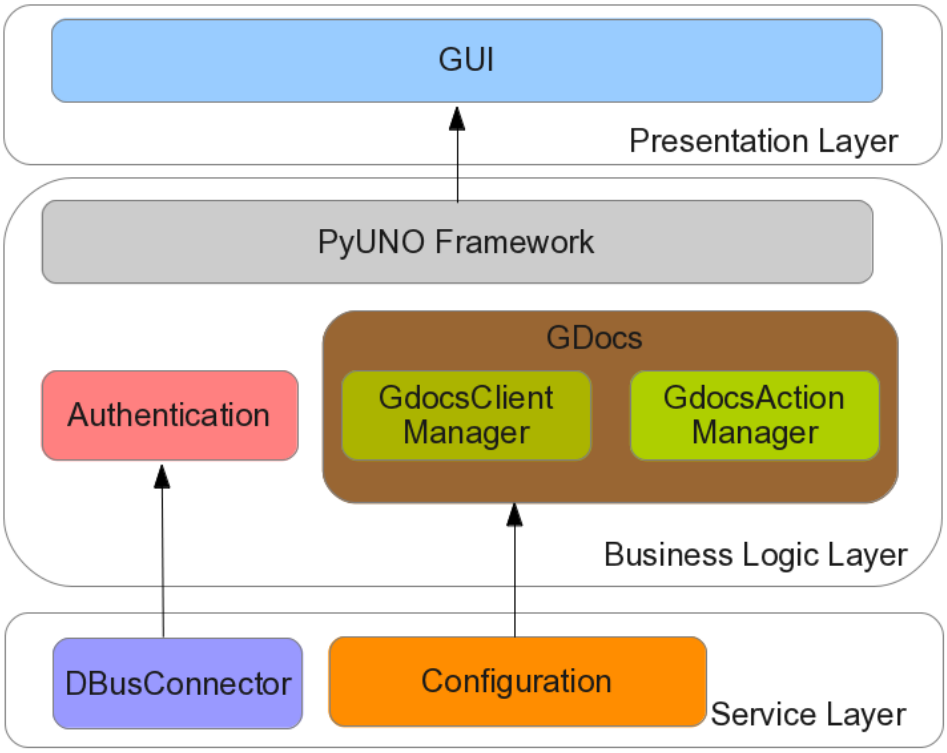
Import Google Documents

The users can import the documents which are stored in Google Documents and view/edit them in LibreOffice.

Export Google Documents

The users can export the documents which were created or edited in LibreOffice to Google Documents using the extension.

Logical View



Overview

Service Layer

This layer provides the access to the services which are run by other external entities.

Business Logic Layer

This layer handles the actual logic of the extension. The behaviour of the extension largely depend on the Business Logic layer. Since the business logic layer seperates the true logic an application from the rest the application can often withstand modifications or replacements of other tiers.

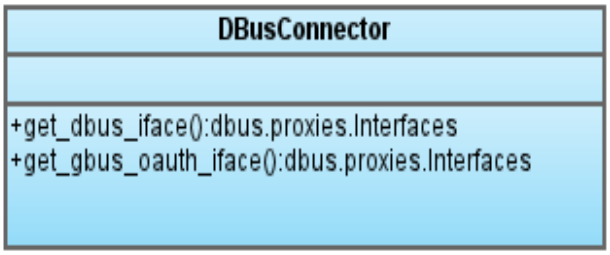
Presentation Layer

This layer handles the presentation logic. It is responsible for handling the extensions GUI.

Architecturally Significant Design Packages

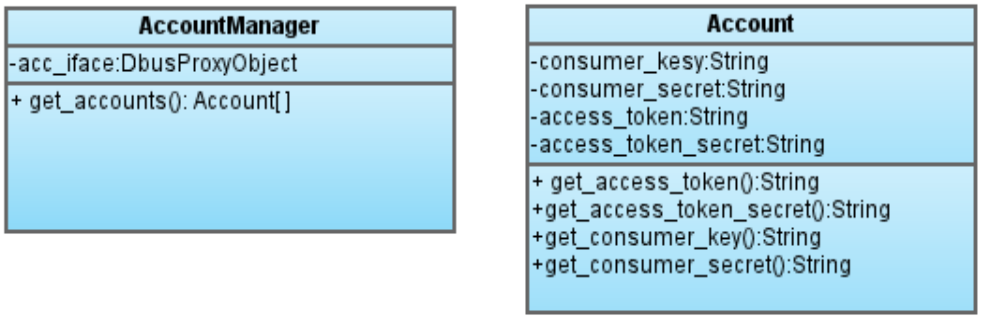
DBus Connector

This package will connect the Gnome Online Accounts access token service with the Authentication Manager package.

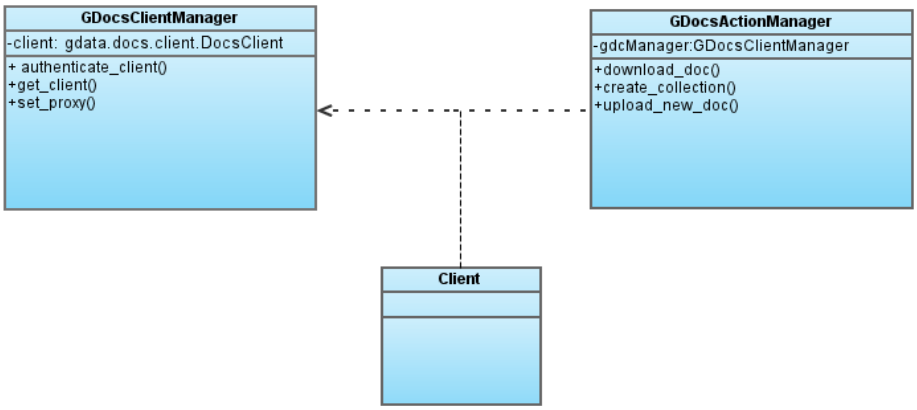


Authentication

This package is responsible for providing the necessary security tokens for the Gdocs client.



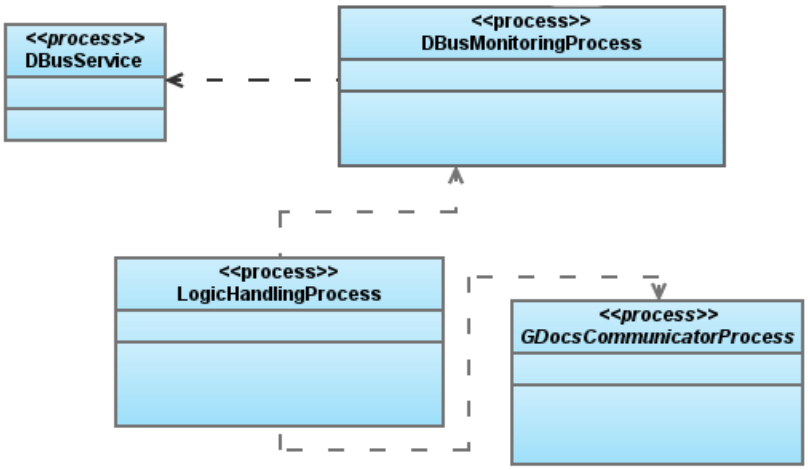
GDocs



This is the package which is responsible for creating, maintaining, and terminating the sessions with the Google Documents servers.

Process View

DBus



Service

This is the DBus service run by the Gnome Online Accounts service. This process will provide information such as authentication and online account changes.

DBus Monitoring Process

This is a process to monitor the changes in the DBus service. This process can inform the Logic Handling process about these changes.

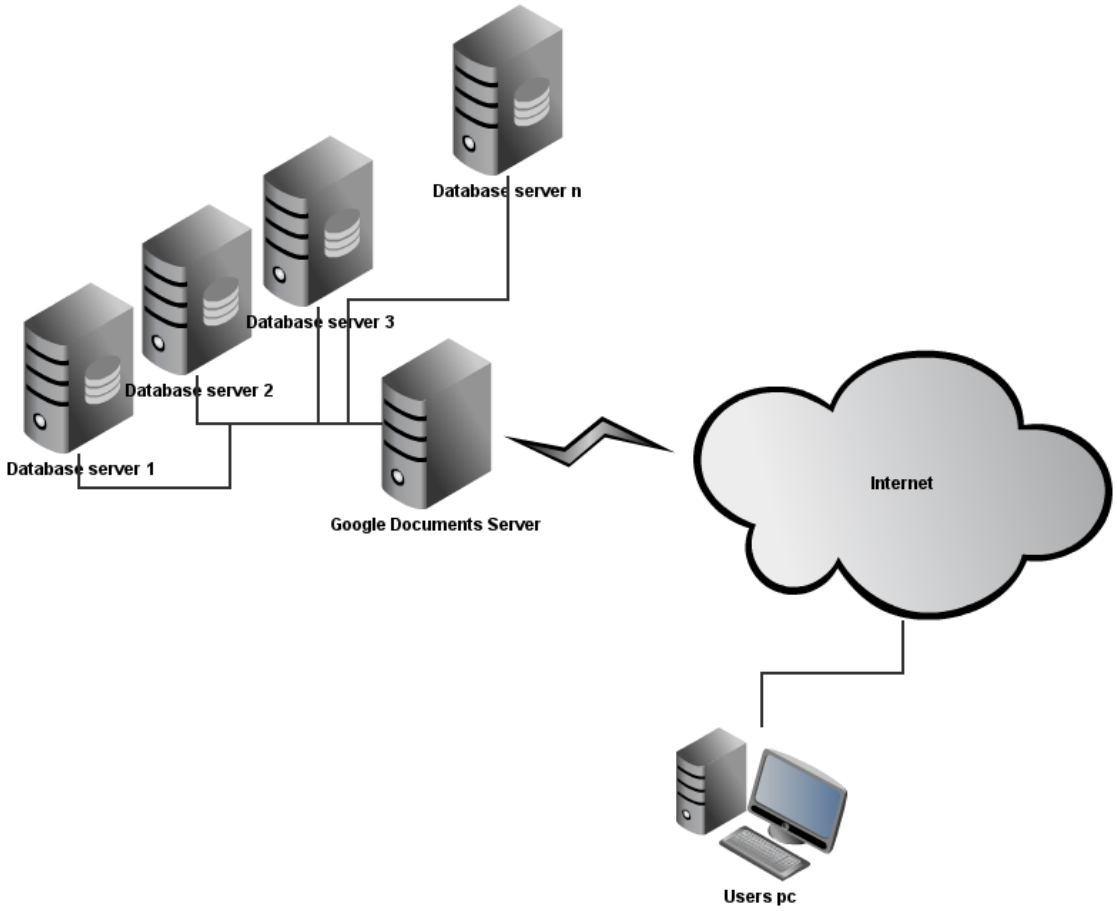
Logic Handling Process

This is the process where all the core logic happens. It coordinates the actions between the processes and executes necessary tasks for those actions.

GDocs Communicator Process

This is the process responsible for the communication between GDocs servers and the Logic Handling process. It creates, maintains, and ends sessions between the servers and the local process.

Deployment View



All the processes which were discussed in section 6 (Process view) are running in the User's PC.

Data View (optional)

Not Applicable.

Size and Performance

- The extension will be able to handle documents with less than 1,024,000 characters(regardless of the number of pages or font size). Also uploaded document files that are converted to Google documents format can't be larger than 2MB.
- Spreadsheets cannot have more than 400,000 cells, with a maximum of 256 columns per sheet .Uploaded spreadsheet files that are converted to Google spreadsheets format can't be larger than 20MB
- Presentations created can be up to 10MB (which is about 200 slides). Uploaded presentation files that are converted into Google presentations format can also be up to 10MB

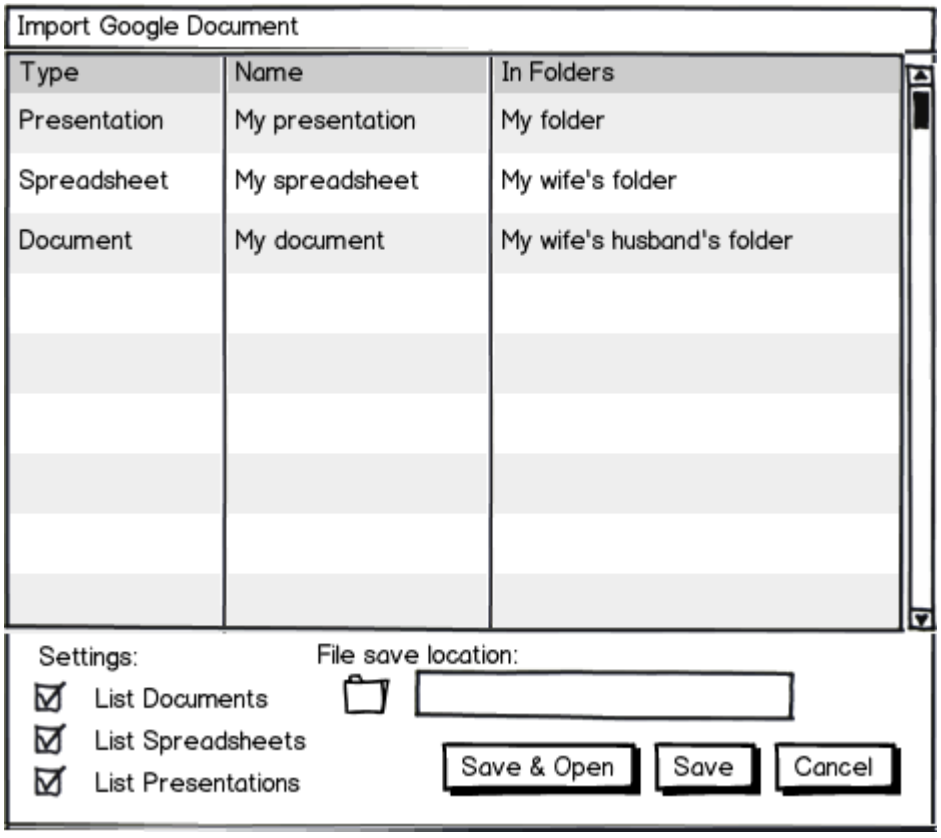
Quality

Extensibility

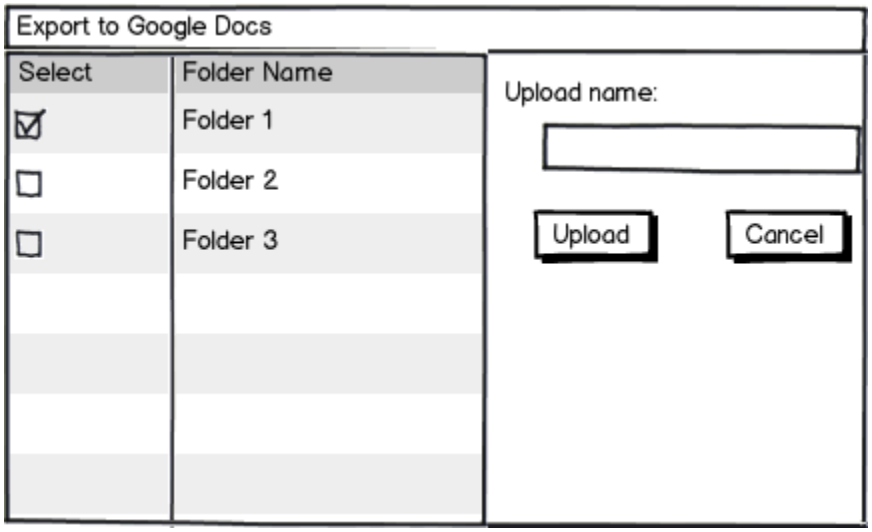
If supported by Google Documents and LibreOffice support for more document formats can be added. Thus the system is extensible.

Proposed GUI's

Import Google Docs Window



Export Google Docs Window



Settings Window