Ekalender.dk from the developers perspective

cabo | communications

Project background

- The ekalender.dk project was an assignment by the Ministry of Science, to provide a working solution for cross-platform scheduling, that could also serve as proof of concept for further development
- The assignment was won in licitation by a consortium consisting amongst others of Cabo Communications
- Most other bids were based on existing products (Exchange with connectors etc.)
- We found none that really solved the problem, but thougt we might build something based on more open technologies
- Some of the highligts of our bid were:
  - Open standards were to be used as much as possible
  - We would build a a freebusy repository and a website for user sign-up and software download
  - We would build connectors to the required calendar systems (Exchange, Notes, GroupWise) and place them in the Open Source domain

Main objective

- To deliver a system that would enable employees in the public Danish sector to book meetings across organizations and calendar systems as easily as in their own organizations
- Basically the task was to enable Outlook/Exchange, Notes/Domino and GroupWise to "talk" to each other
- This was obviously a complicated task, and the "pilot project" was basically started to investigate options
  - The path we chose turned out to show a lot of similarity to the CalConnect Federated FreeBusy Challenge
  - Even if it was a pilot project, the aim was to build something that could provide real value, and lay the groundwork for a working system

Problems

- We divided the project into 3 main tasks

1. Locating attendees
    - No public common or distributed directory service
        - In Denmark we have a public key infrastructure which could eventually be used for this and authentication
2. Finding a good time to meet
    - We found no standards for discovering the service providing free/busy information for an attendee (DNS entries)
    - We found no standards for accessing up an attendees free/busy information
3. Booking meetings
    - iCalendar
        - Lots of issues with existing implementations

Solutions

1. Locating attendees
   - Everyone using the service would register on the website, and their email addresses listed in an LDAP directory
   - Attendees are located through a web interface or directly from the client (only Outlook)
2. Finding a good time to meet
   - We settled for viewing freebusy time of attendees either through a web interface or directly from the client (only Outlook)
   - Freebusy data is published and exposed through a SOAP interface
3. Booking meetings
   - We chose to rely on sending out iCalendar email invitations from the web interface or directly from the client (only Outlook)

Standards

- One of the reasons we won the bid, was our focus on a standards-based approach, which is a high priority in the Danish government
- We quickly stumbled across CalConnect and found out that a lot of people are working on calendaring standards
- We ran into a lack of standards, primarily in the area of discovery
  - How do I locate a persons calendar/freebusy time?
  - How do I access this?
- This seems to be addressed in the CalConnect Realtime TC - looking forward to it

Design

- We obviously wanted to design a system that was flexible, scalable and as standards-based as possible
- Centralized vs distributed
  - A distributed solution would require inbound access to participating calendar servers
  - A centralized solution would not scale as well
  - In the end a centralized approach was chosen

Implementation

- We were required to support:
  - Microsoft Outlook
  - Lotus Domino
  - Novell GroupWise
  - Microsoft Exchange
- We decided to add support for:
  - Zimbra
  - Google Calendar

Implementation

- The main tecnical issue was the publishing of free/busy data in a structured way from the supported calendar systems, by means of connectors, to a central free/busy repository (aggregator) which was named “ekalender.dk”
  - No widely adopted standards existed at the time for this purpose
    - CalDav, SyncML and iCalendar over WebDAV (Outlook style) were considered
    - Given the momentum behind XML-based services in the Danish public sector, it was decided to build a SOAP-based Webservice

Implementation

- Given the limited time and ressources at our disposal, it was decided to build a web-based user interface for booking meetings, instead of trying to modify the existing user interface in Notes and GroupWise
  - Alternatively we could have tried to aggregate free/busy data to the free/busy-databases in Notes/GroupWise, but this was deemed unfeasible
- Outlook has some built-in support for external free/busy lookup, which enabled us to handle Outlook "out of the box" by adding free/busy over WebDAV publishing and look-up to the free/busy service

Design overview

- The project consists of 3 main elements
  - Freebusy-repository
    - A backend service which receives pushed freebusy data and exposes them in aggregated form through a well defined SOAP interface (and WebDAV)
  - Freebusy-connectors
    - Notes, Exchange and GroupWise publish freebusy data through the SOAP interface
    - Outlook has built-in support for publishing freebusy data as iCalendar over WebDAV and aggregating external freebusy data from custom http lookups
  - Calendar webinterface
    - A rich web interface for locating people and booking meetings

Demo

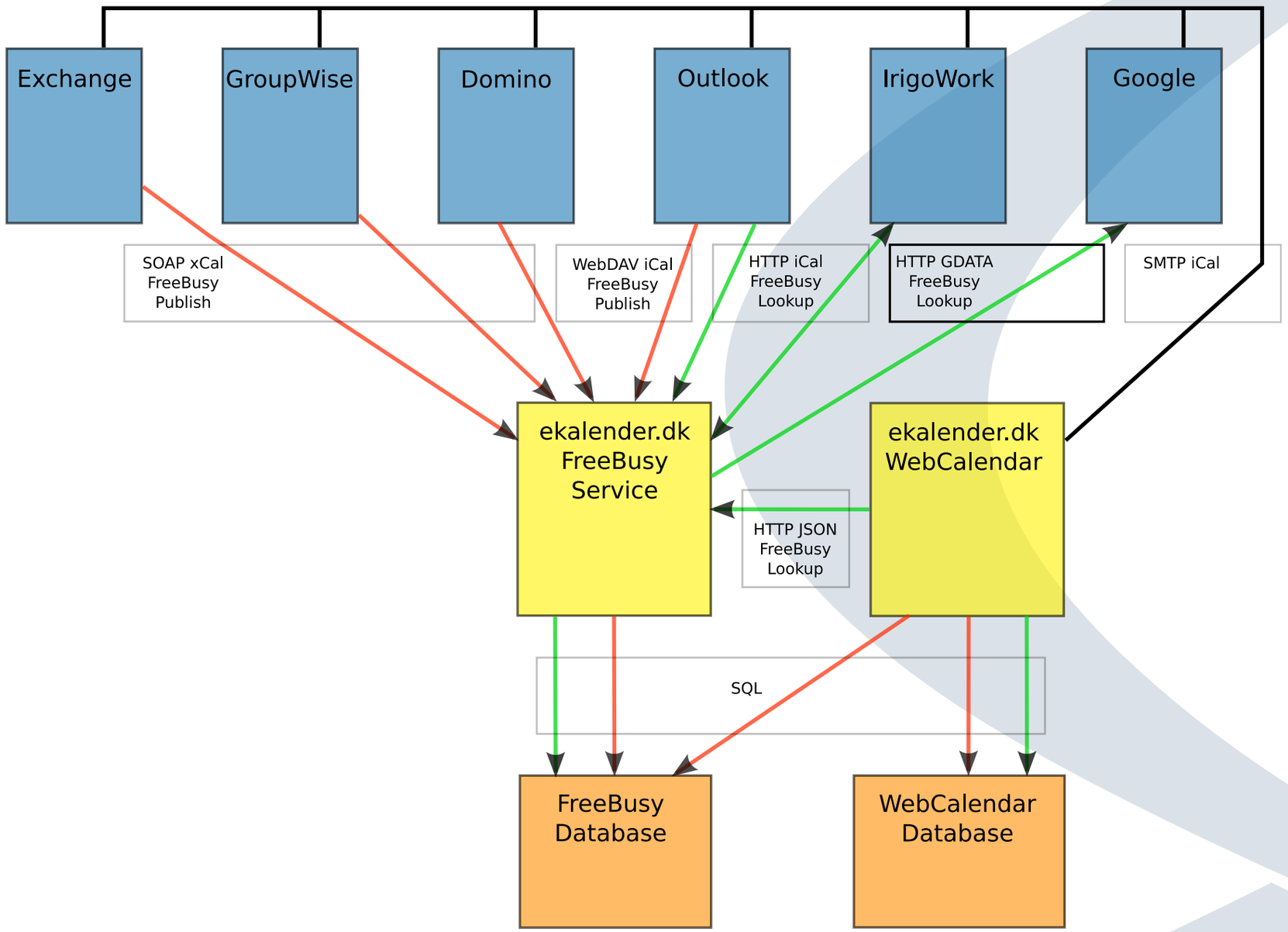
Design limitations

- As was the case with the Federated FreeBusy Challenge, some issues were side-stepped
  - Non-standard DNS lookups
    - We define our own SRV and TXT records
  - Directory synchronization
    - We do provide interfaces for batch registering users from exports from local directories (Domino directory, Actice Directory,...)
    - Continous synchronization would be desirable, but is problematic for various reasons

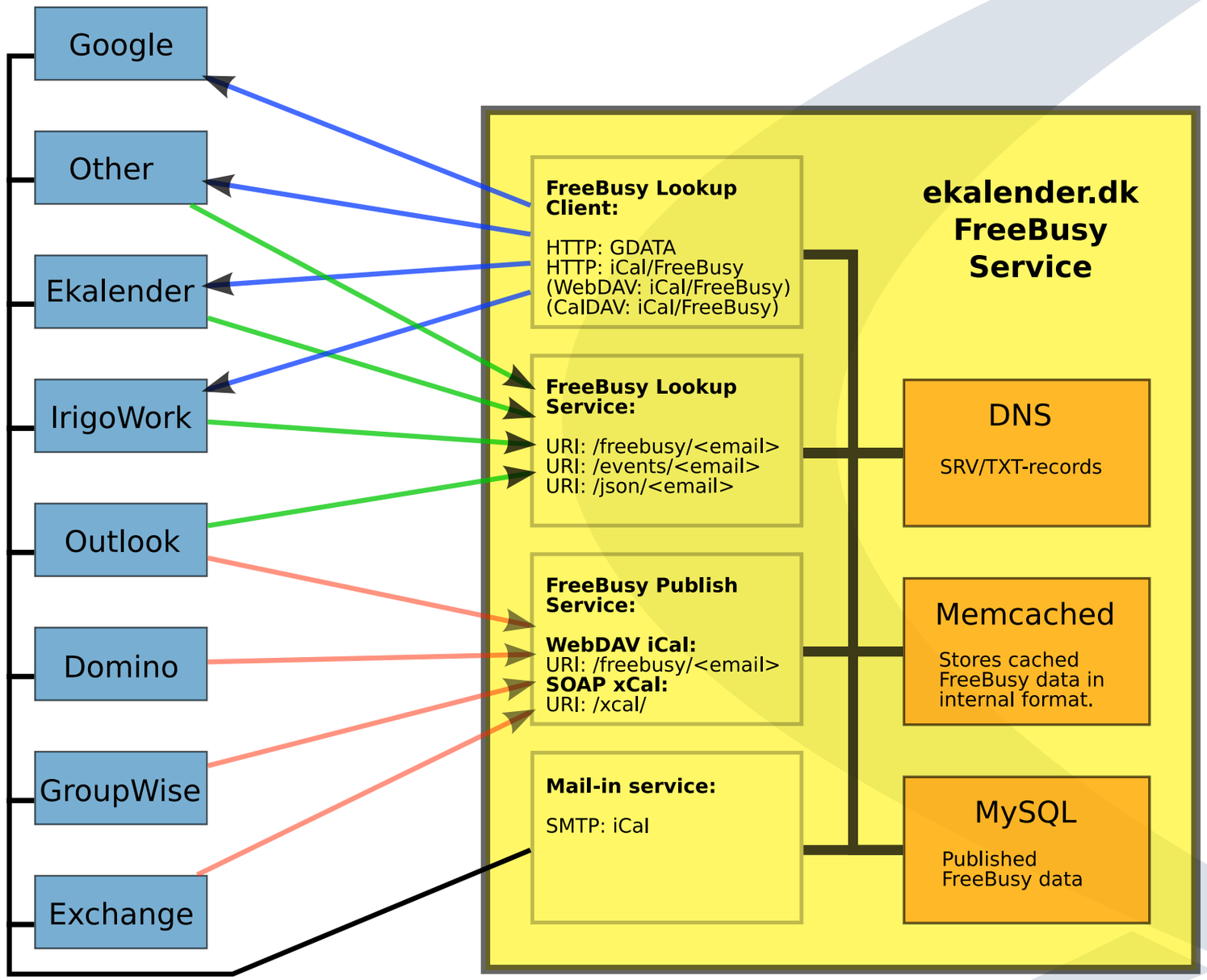
Design limitations

- Authentication and access control
  - Each user registers and chooses a password at the ekalender.dk website
  - Authentication using digital certificates would be highly desirable, but was not chosen in the pilot phase
    - The Danish public sector has established a common public key infrastructure (OCES)
  - Implementation of more secure authentication combined with some access control, would allow for more data than just free/busy to be shared among particating users and organizations
    - The Danish public sector is aiming towards a common, federated access control system (based on SAML)

Architecture



Architecture



Lessons learned

- The user experience needs to be as smooth as possible and it just has to work across all systems
- In order to achieve this we need to work with the software vendors in order to:
  - Improve basic support of standards
    - Even iCalendar support today is just not good enough in any of the systems we work with (Outlook, Exchange, Notes, GroupWise)
  - Integrate at least freebusy aggregation from various sources into the client interfaces
    - Standards need to be made and widely accepted
    - Outlook has some support, but it has basically not changed in 10+ years

Future improvements

- There are a lot of improvements to the project that can be done today, that we would like to implement:
  - CalDav
    - Support CalDav for free/busy lookup and scheduling
  - Directory Synchronization
    - Enable our connectors to synchronize directory data
  - Digital certificates
    - Enable basic X.509 support for authentication
  - SAML support
    - Support the common login services under development by the Danish public sector