hipergate

Concepts and Architecture

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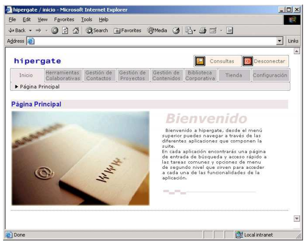
hipergate is a web-based application suite. The product's mission is to cover the critical, enterprise wide, information technology requirements available with broadband communication. hipergate is multienterprise compatible and intended for both internal use and in ASP mode.

What is hipergate?

hipergate is a open source, web-based CRM suite. It covers a wide range of corporate information technology. You can access any of these applications from Internet Explorer without having to download any software to the client workstation.

The suite has multi-enterprise capabilities and can be used for providing service to just one company, to a set of them or in SaaS mode storing an unlimited number of enterprises for different clients.



Bienvenido a hipergate, desde el menú superior puedes navegar a través de las diferentes aplicaciones que componen la suite.
En cada aplicación encontrarás una página de entrada de búsqueda y acceso rápido a las tareas comunes y opciones de menu de segundo nivel que sirven para acceder a cada una de las funcionalidades de la aplicación.

Functional Modules in Standard Product

Collaborative and Workgroup Tools

- Shared Calendars and Meetings Agendas
- Open, Moderated Forum with any number of groups
- Frequently Asked Question Area:
- Personnel Directory
- Listing of Booking of Shared Conference Rooms and Resources

Contact Management Module

- Partner, Competitor, Client and Provider Databases
- Personal Contact Database
- Multi-address Contacts
- Sales Pipeline Management -Business Opportunities-
- Several Types of Distribution Lists
- Territorial Demarcations -Delegations/Branches-
- Loading of Windows Address Book -Outlook Express-
- Automatic Loading of Contacts from plain text files

Project and Incident Support Management Module

- Project Hierarchical Tree
- To Do List Tracking
- Costs accounting per project
- Weekly work reports
- Gantt export
- Incident and Breakdown Control
- Client Maintenance Service Contracts

Virtual Store Module

- Multiple Independent Catalogues
- Unlimited Product Category Hierarchy
- Product-Specific Variable Attributes
- Stock Management for multiple warehouses
- Order Management
- Billing Management
- Online payments tracking

Content Creation Module

- E-mail & Newsletters Templates
- Inclusion of Multimedia Content
- Categorized Content Management
- Portlet Library for Dynamic Content Display

Bulk E-mail Module

- Multiple E-mail Sending via Distribution List Management
- Message Reception Statistics

Corporate Library

- 100% Virtual Web-based Disk
- Version Control
- Role-based, User Security of Files
- OLE Document Property Indexing Management
- Shared Favorite Links

Training

- Courses, subjects and absents management.

Marketing

- Campaign definition and follow-up.
- Events Management.
- Web conversations spy: Twitter, Facebook, LinkedIn, etc.

Functionality Common to All Modules

Role-based Security

- Multiple security Domains
- Unlimited Number of User and Group Permissions
- Ready-to-Use Predefined Roles
- Department Level Security
- LDAP Integration

Hierarchical Data Management

- Object Categorization
- Geographical Thesaurus
- Lexicographical Thesaurus

Reports and Queries

- Form-Driven Query Tool
- Export to Excel
- Online HTML Queries

Task Scheduler

- Process Queue Management
- Background Multithread Runner

Advantages and Benefits of Product

hipergate is latest generation software, designed, programmed and tested with leading-edge tools and technology.

Independent yet Synergetic Applications

Each application in the suite can run standalone or in conjunction with the rest of the applications. Applications can be turned on or off for each individual client, company or department This allows end-users to buy only those applications they really need, without having to purchase the entire solution — which is what occurs in current software packages.

Secure and Consolidated Access

Users only need to be authenticated once for all the applications.

Office Integration

hipergate supports and indexes Office documents, can load Address Book information from Outlook Express and generates queries in Excel format.

Integral Solution

hipergate is designed and intended for both developers and consulting companies so that they can obtain all their software process from this platform. The suite is intended for enhancing the performance of daily tasks, thus creating a user base that runs the software on a regular basis.

Intuitive, User-friendly Environment.

You can easily access the applications by selecting the corresponding tab in the main menu. The user interface is homogeneous and easy to learn

Self-Administration by End-User.

hipergate provides a predefined administration model based on 4 user profiles: *administrator*, *superuser*, *user* or *guest*. You can assign operations to them, much in the same way as is done in an operating system.
The self-administration features have two main objectives: 1º) reducing the cost of application ownership and 2º) reducing the maintenance cost if the platform runs in ASP mode.

2 Architecture

Design Requirements and Priorities

hipergate was designed from the very onset as a suite geared towards providing high quality service to the most demanding clients.

A series of requirements and priorities were set that the product had to strictly comply with.

Ergonomics and Usability

The first priority is that the product had to provide excellent user experience. This is achieved via:

Homogeneous information architecture throughout all the modules
Simple conceptual model
Easy access to all functionality
Quick response time for all operations
Availability of a complete range of operations

Functional Reach

The suite has been designed to cover 80% of the typical requirements of each functional module. Our mission is to concentrate on the horizontal expansion of the product rather than developing a few very highly specialized and complex applications.
Our philosophy is to provide small and medium-size companies with practically all the functionality they require in each department and to provide a solid base to large companies so that they can later add on proprietary extensions.

Stability

Our suite is intended for availability 24 hours a day, 7 days a week. Each module has been thoroughly tested in several code walkthroughs, black box testing, and stress testing in critical conditions.

Scalability

During the entire development cycle, performance has never played a secondary role in relation to transportability and expansion of product functionality. The code is optimized to take advantage of specific functionality of each of the databases and platforms it runs on.

One part of the process logic uses procedures stored in PL/SQL, PL/pgSQL or Transact-SQL, which has been rewritten to take full advantage of the most advanced options available in each RDBSM.

Java code is available in 3 run modes: 100% Pure Java, Unix, Win32 and, depending on your setup, atomic calls to each of the operating systems to obtain optimum performance.

The application has three layers: web server, application server and database server. The design emphasizes on its capacity of creating farms and distributing the load over several servers.

To reduce memory consumption and enhance the service capacity of each web server, the application runs without the sessions and statuses maintained on the server side.

The suite includes a sophisticated, cache-distributed, proprietary system, whose mission it is to maintain local information on the web servers and reduce the overloading of database nodes.

Fault Tolerance

You can set up the system to cluster run on both the database and web servers.

Maintainability

The coding has been designed to enhance easy maintainability and expansion by programmer without an advanced knowledge of the system. The object model, which isolates the physical database from the business logic, provides a natural framework for adding on extensions with a very short learning curve. Many of the routine coding tasks: form generation, lookup tables, data validation, date management, etc. are already resolved in a standardized fashion in reusable components.

Separating client-specific data

hipergate shares information of several clients in the same database to prevent databases from growing unmanageably. Nonetheless, as a pre-requisite for providing ASP services, you must be able to retrieve clean client-specific information from the shared database at any time in order to make a backup copy for the client or for installing a dedicated instance of the database.

Cost Effectiveness.

The application can run 100% on open source software to completely avoid license fees.

Another factor is the rational use of the CPU and disk, which are considered scarce resources.

Standard Technology

Only the most market-standard technology and components are used. In addition, we advocate exclusive use of platforms only when explicit consent of it is given from the large enterprises in the sector.

Simplicity.

In spite of its wide technical and functional reach, the suite has been designed and coded for ease of use.

Languages, Components and Platforms

Java y Tomcat

All hipergate modules have been written in 100% Pure Java.

hipergate 6.0 as been tested on Tomcat 6.0 with Java 1.6

The web server workstation must be Windows, Linux or OpenSolaris.

Tomcat on BSD. The suite does not have any specific restrictions on these platforms, but the web server installation on BSD have not been tested.

Components Used under Open Source Licenses

- Jakarta Bean Scripting Framework 2.3
- Jakarta POI 2.5
- Xerces2 XML Java Parser 2.9
- Xalan XSLT Processor 2.7
- Pat Niemeyer BeanShell 2.0
- Enterprise DT Ltd Java FTP Library 1.2.2
- Jakarta ORO 2.0.8
- Jamie Jaworski DHTML Tabbed Panel
- DynAPI Cross-Browser DHTML Library

Components Used under Sun Microsystems, Inc. License

- JavaBeans™ Activation Framework 1.0.2
- JavaMail™ 1.4
- Java™ Advanced Imaging 1.1.2

Other Components

- Infomentum AppletFile 3.0 (optional)

Supported Relational Database Management Systems

- PostgreSQL 9.0
- Microsoft SQL Server 2008
- Oracle 10g
- MySQL 5.x

Internal Structure

Multilayer Design

hipergate code is made up of 5 layers:

Layer 1: JavaScript code run by the client's browser.
Layer 2: JSP pages provided by the servlet runner.
Layer 3: Java abstract object model.
Layer 4: Java BeanShell Scripts.
Layer 5: Procedures stored in the RDBMS.

This division is intended to enhance scalability and extensibility of the application to:

1. Validate and process a maximum number of on the client to reduce the traffic between the browser and web server.
2. Differentiate the presentation layer from the iterations of objects.
3. Provide an API for each of the application objects.
4. Use the maximum amount of compiled and optimized code for the system core libraries.
5. Externalize the business logic in server scripts that do not need to be compiled before being run.
6. Reduce the number of calls to the database when these operations can be run atomically from the database manager.

State less Servers

hipergate does not use sessions or statuses maintained in the servers.
This measure ensures a reduced use of memory and enhances the scalability of the web server.
All information is maintained in session cookies stored on the client workstation.

These cookies contain a minimum of information:

Security domain to which it is connected.
Work area it is to which it is connected.
Unique ID of the connected user.
Access token of the encrypted session.

Since there are no sessions, there is no current session ID. Status information is transferred from one page to the next via GET or HTTP POST methods.

Caches

The system uses a distributed cache to locally store database information on the web server. This reduces the network traffic and load on the database.
Cache drivers ensure data consistency is maintained on sites with multiple web servers running concurrently on the same database.

Differentiating Departmental and Client Data

Many applications running in ASP mode do so by automatically duplicating data models for each of the client company running. The advantage is that it allows you to easily differentiate the data of each particular client. The disadvantage, nonetheless, is it leads to a proliferation of cloned databases that eventually becomes unmanageable after a certain number has been reached.

hipergate has chosen to follow a hybrid approach to tackle the challenge of differentiating data: one database can contain information on multiple client entities without any overlapping. Going one step further, the data and permission division can go down to the departmental level, thus enabling people in a specific group to have access to a set of data and applications that is different to that of another department.

Nonetheless, to maintain the separation of data based on client, the administrative tools contain subroutines that cut off and isolate certain client-specific information in the database as exclusive, even if this same information was previously stored in a shared database.

Domains

Conceptually, the hipergate domain is the highest unit level you can use for differentiating data. Typically, it represents a complete client entity, although it is sometimes used as a container for individual users that are not associated to any specific entity (for example, consultants who purchase a user account).

The main use of domains is to set the permission criteria for each administrator. That way, the administrator of one client entity may create new users or activate and deactivate certain applications within their domain, but he cannot view or modify the data of other client entities in different domains.

Work Areas

Each domain can contain one or more work areas. Work areas function as isolated information repositories.

Work areas usually represent functional departments within the client entity.

In any given moment, a user only view information of the work area to which he has been assigned a specific role.

For example, a salesman could be a user in the sales department and, at the same time, he could also be a guest in the technical support area. This salesperson could create new client records or generate business opportunities in the sales work area, but because of his privilege level in the support work area, he would only be able to see open incidents pending resolution and would not be able to modify any of them.

Security Model

hipergate provides a session-level, security model based on roles. This model handles the following concepts:

Application The functional product as a set of interoperative applications. You can add or remove applications without affecting the rest of the system. In any given moment, a subset of these applications are available to the users, and they have a specific role in each of them, depending on the group of permissions they have been assigned.

User You can create an unlimited number of users and assign a set of roles and access IDs to them.

Role Four predefined roles are available in addition to a client entity-definable fifth one: administrator, superuser, user, guest and variable.
Roles determine what the user can do in each application. So, a user can have the role of Administrator in the Personnel Directory module and the role of Guest in the Sales module. This would allow him to create new employee files, but not new client files.

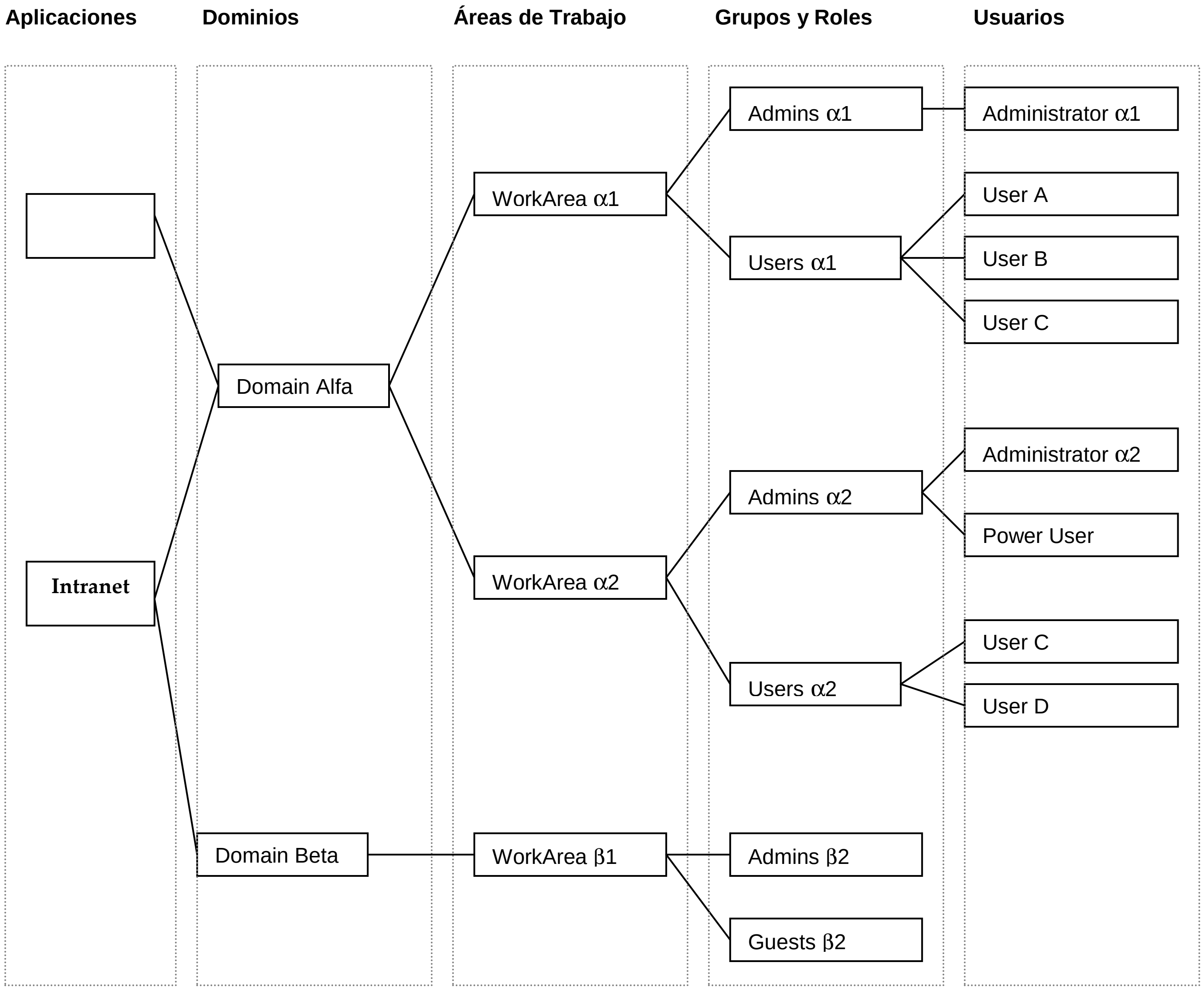
Accounts An account is the same as a contract with the end client. There are 3 types of predefined accounts: the corporate account, the professional account and the system account.
Corporate accounts permit an arbitrary number of users and are associated to their specific domain.
Professional accounts represent individual users that cannot take advantage of the team work functionality available in the application.
The system accounts are used by ISP providers that offer the service as a means of managing the domains purchased by their clients.

Domains A domain represents a set of users that independently manage themselves. Each domain has one or more administrator.

Work Areas Each domain contains one or more work areas. The work area is an entity that is used to determine what will or will not be displayed in the application. For example, suppose the client entity is a company with two branches, one in Madrid and another one in Barcelona. It is decided that the creation and management of users should be centralized through Barcelona and that the users should only be able to view the schedules and directories in their specific locations. In this case, one domain would be created for the company and a work area would be created for each of the branches.

Group Each user belongs to one or more groups. You can create an arbitrary number of groups. The groups themselves cannot assign roles to any user. You must assign a role to the group within the application and work area so that the users acquire the desired role.

Graphical Illustration of the Security Model


Aplicaciones
Dominios
Áreas de Trabajo
Grupos y Roles
Usuarios
Intranet
Domain Alfa
Domain Beta
WorkArea α1
WorkArea α2
WorkArea β1
Admins α1
Users α1
Admins α2
Users α2
Admins β2
Guests β2
Administrator α1
User A
User B
User C
Administrator α2
Power User
User C
User D