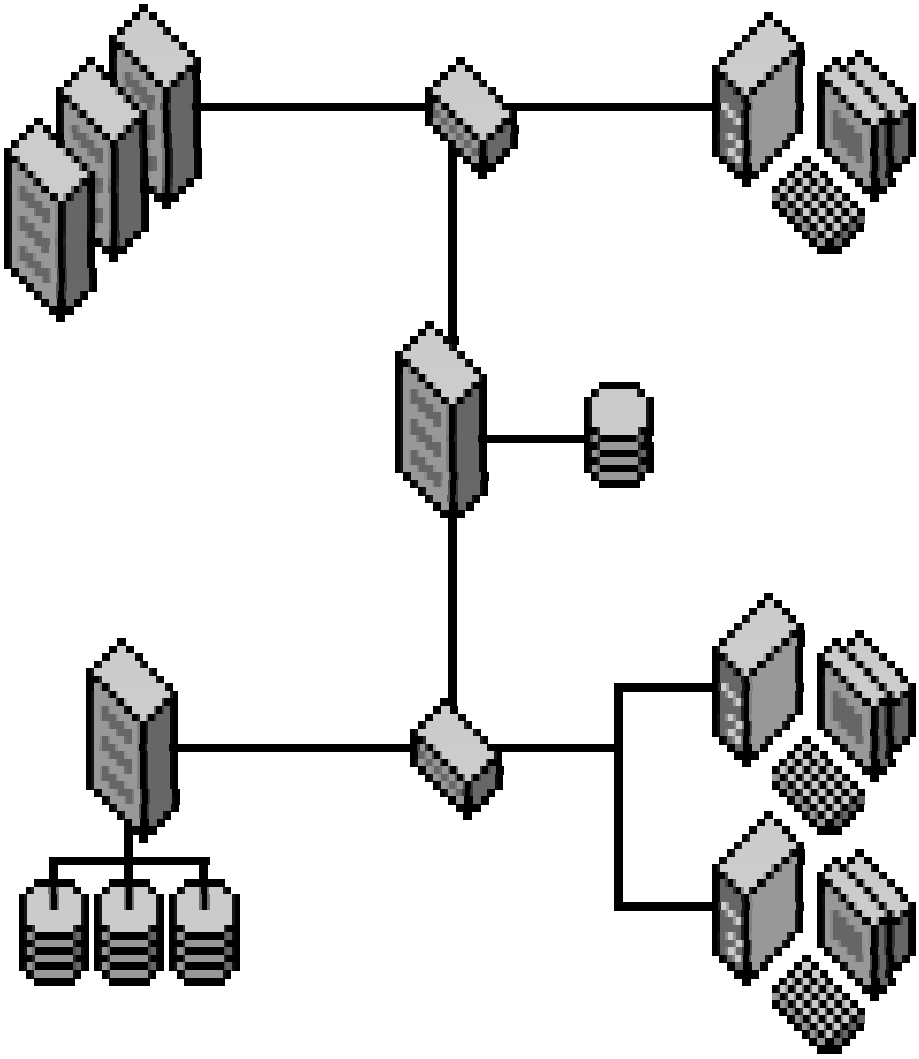
Opendesk



Opendesk ASP Gateway

Version 2.7 - Technical Overview

Opendesk

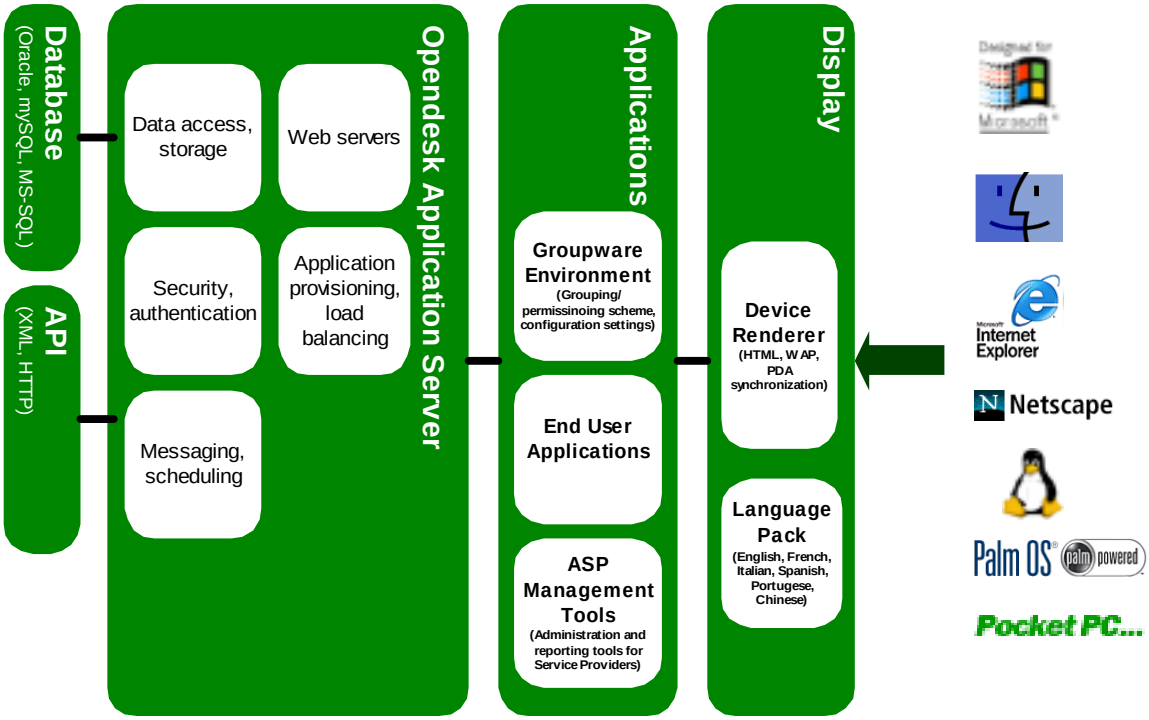
Overview

Opendesk ASP Gateway is a turnkey ASP solution for delivering leading edge application services to a broad range of clients and devices. Built on proven technologies that offer world-class scalability, reliability and performance, Opendesk allows service providers to quickly launch revenue-generating hosted application services for their customers. Built to today's exacting IT standards, Opendesk leverages existing information systems, and offers unparalleled flexibility and extensibility via open APIs and development tools.

Opendesk includes the ability to:

- Install, customize and launch a turnkey ASP optimized for mobile professionals, workgroups and small businesses
- Create new functionality by extending Opendesk modules or by creating new applications.
- Integrate with the existing information assets of service providers, including other ASPs and services, via APIs and data access services.
- Render applications in any language (user selectable).
- Display applications on Web browsers, PDAs (PalmOS, WindowsCE and PocketPC compatible devices), wireless devices such as the Blackberry, and WAP phones.

Opendesk features business-critical capabilities such as load-balancing, application partitioning, and fail over within a high performance, multi-threaded, multiprocessing application.



Opendesk

Feature Set

End-User Applications	General Features	Service Provider Applications
• Calendar • Email • File Manager • Contacts • User Preferences • Phone Messages • To Do • Bookmarks • Scratch Pad • Global Search • News • Polls • Instant Messaging • Group Discussions • Business Tools	• Help Files • PDA Synchronization • WAP Access • Multi-Language Support • Meeting Maker • Sharing • User Roles	• Broadcast News • Broadcast Polls • Broadcast Discussions • Broadcast Files • Broadcast Events • Broadcast Contacts • Broadcast Emails • Broadcast Links • Banner Ad Management • Customer Support Tools • Usage Reporting Tools

Multi-Device Support

Platform	Software
Windows95, Windows98, WindowsNT, Windows2000	Internet Explorer 4.x, 5.x Netscape 4.x, 5.x, 6.x Mozilla 0.9
MacOS 8.1	Internet Explorer 4.5+ Netscape Navigator 4.x, 5.x Netscape 5.x, 6.x Mozilla 0.9
Linux	Netscape Navigator 4.x, 5.x, 6.x, Mozilla 0.9
UNIX	Netscape Navigator 4.x, 5.x, 6.x
PalmOS Devices (via HotSynch)	OS version 3.3 HotSynch version 3.1.0
WindowsCE/PocketPC Devices (via HotSynch)	OS version 3.0
WAP mobile devices	Phone.com WAP browser

For a more in-depth look at Opendesk's feature set, please see the *Opendesk Feature Set Overview* whitepaper, or request a live demo by contacting sales@opendesk.com.

Opendesk Application Server

The Opendesk Application Server is built on a number of internal components and external methods of data storage and access. These components work together as a single, logical application server, although individual components—e.g. the Web server—may be distributed across multiple physical servers. The Opendesk Application Server provides all of the core functions and services required to operate the applications within Opendesk ASP Gateway and to optionally connect to external data sources, e.g. external databases and third-party ASPs.

Web Server

Opendesk is built on the Apache Web server. Apache has been the most popular web server on the Internet since April of 1996. The February 2001 Netcraft Web Server Survey (www.netcraft.com/survey) found that 60% of the web sites on the Internet are using Apache (around 62% if Apache derivatives are included), thus making it more widely used than all other web servers combined.

Opendesk extends Apache with a variety of extension modules, including mod_perl (version 1.25). With mod_perl it is possible to write Apache modules entirely in the Perl programming language. In addition, the persistent Perl interpreter embedded in the server avoids the overhead of starting an external Perl interpreter for each request. Mod_perl is used at many high-traffic Web sites including Wired, PBS Online, TechWeb and Slashdot.org.

Application Provisioning & Load Balancing

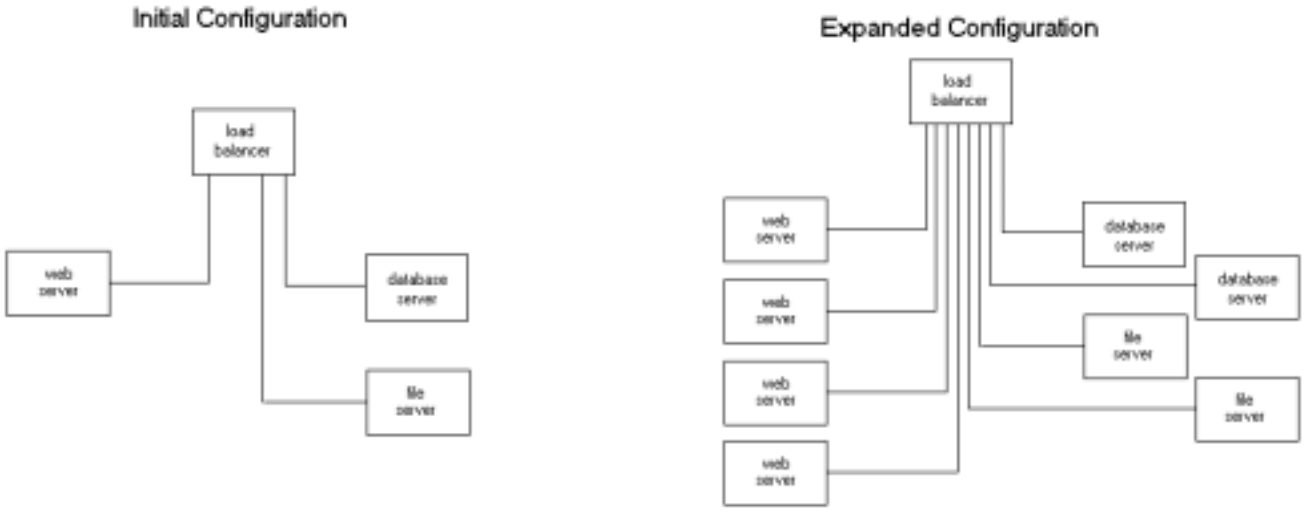
High Scalability

Opendesk has a scalable architecture. This means that applications can meet the needs of initial deployment as well as future growth. Scalability is accomplished in a number of ways:

- Partitioning applications across multiple physical servers: Opendesk supports the partitioning of Opendesk components and applications across more than one physical server. This allows heavily loaded services to be distributed in such a way that there are gains in both performance and reliability. Distributing specific applications to dedicated servers allows Opendesk to diminish the overall load on each machine thus allowing faster response from each service. For example, running the database and the application servers on different machines will prevent load on the database from reducing the performance of other applications.
- Distributing load across multiple servers with hardware and/or software load balancing: In the modular approach described above, it is possible to create a cluster of load balanced Web servers. An efficient load balancer will verify which node in the cluster is the least busy and forward queries to those servers. This ensures the fastest response time from the most available server. Opendesk supports both

hardware and software load balancing. Hardware load balancers distribute requests based on real-time measurement of server load. This can be complemented or replaced by a software solution. Opendesk utilizes the proxy module of Apache to implement a software-based load balancing system that optimizes Opendesk's performance across multiple servers.

- Adding more CPU's to a multi-CPU system: The Apache Web server benefits greatly from multiple CPU systems as requests are handled in parallel by different CPUs. Database systems compatible with Opendesk (MySQL, Oracle, etc.) are multi-threaded and similarly benefit from multiprocessing systems. UNIX operating systems (Linux, BSDs, Solaris etc.) natively support threads and offer numerous overall performance benefits as a result of multiprocessing.
- Adding more physical servers to the data center: Load balancers and database replication allows Opendesk.com to easily add machines to your load-balanced cluster as the user base grows:



High Performance

Opendesk is a high performance application server built on top of a highly optimized mod_perl/Apache application server. Opendesk can handle a high number of concurrent requests, database connections, and sessions, and provides high performance even under heavy loads.

In addition to the high performance architecture, the following features are designed to deliver enhanced efficiency:

1. Caching of objects/data: Opendesk employs object caching to reduce the amount of redundant processing and data transmission. The object caching system ensures that data and objects are kept available on the application server and are synchronized with the database system only when needed. This limits costly database operations to a minimum.
2. Persistent application state: Opendesk utilizes an object model that allows for the transparent maintenance of an application's state. This built-in feature reduces the typical overhead required to re-establish application state within a stateless protocol such as HTTP.

Data Access & Storage

Opendesk utilizes Perl's DBI interface to connect to SQL 92 compliant database servers. This module allows the Opendesk Application Server to utilize a wide variety of database products include MySQL, Oracle and Microsoft SQL Server. DBI also enhances database performance by caching database connections. This reduces database access time by eliminating the need to re-establish new connections to the database. Opendesk's data storage and access system also transparently handles replicated database servers, effectively distributing queries to multiple database servers.

Security & Authentication

Opendesk is designed to provide a high security environment at all levels. The following security features have been implemented.

- SSL: Secure Socket Layer is a secure extension of the regular HTTP protocol. When used, communication between a client browser and Opendesk servers is encrypted with a strong cipher, making eavesdropping practically impossible. Opendesk's SSL implementation supports both 40-bit and 128-bit encryption.
- Encrypted cookies: Cookies used by Opendesk and saved on the end user's computer are encrypted with 3DES.
- One-time passwords are used whenever authentication is required by services external to the application servers (i.e. Mail server, File server, etc)
- Advanced event logging and tracking allows for early detection of, and protection against, unauthorized access and malicious usage.

Messaging & Scheduling

Opendesk's core messaging infrastructure is based on the Internet Message Access Protocol (IMAP). IMAP is an Internet standards for accessing messages (mail, newsgroups etc.). Specifically, Opendesk utilizes the Cyrus IMAP server. All user access to mail is through the IMAP, POP3, or KPOP protocols.

Opendesk's messaging database design, based on Cyrus' IMAP server, gives the messaging server large advantages in efficiency, scalability, and administrative overhead. Multiple concurrent read/write connections to the same mailbox are permitted. The server supports access control lists on mailboxes and storage quotas on mailbox hierarchies.

Opendesk Application Programming Interface (API)

Opendesk implements an efficient HTTP API which allows direct access to application data and functions via HTTP protocol calls. It is possible to bypass Opendesk's user interface and communicate directly with Opendesk services using HTTP calls. This allows secure machine-to-machine communication between an external system and Opendesk. Some of the most common API calls are listed as follows:

- Add User – add a new user to the Opendesk user database
- Edit User – retrieve and edit user information
- Delete User – delete a user from the Opendesk user database
- Create Business – create a new Intranet
- Delete Business – delete an existing Intranet
- Edit Business – retrieve and edit Intranet information
- Sign-On User – logs in a user (for unified login applications)

Currently, Opendesk supports additional feature enhancements via a programmable API written in the Perl programming language. The source code of Opendesk is available for license, allowing for low-level modifications to the application server and components. An upcoming interface to the API via XML will allow easy access from Java and C++ classes.

Customization of User Environment

Opendesk can be customized and extended in the following ways:

Non-programming customization:

- User interface "themes" via Cascading Style Sheets (CSS) modifications
- Default and user-selectable themes configuration
- Domain name selection
- Layout customization
- Branding

Opendesk software can be displayed in any language (e.g. English, French, Chinese) supported by the end user's Web browser software. Due to the changing nature of the software and, therefore, the user interface, language packs are created during the customization phase of an Opendesk implementation.

Supported Hosting Platforms

Operating system	Linux Redhat 6.2, 7.0, FreeBSD 4.0, PoenBSD 2.7, Solaris 2.7
Hardware platforms	Any supportd by above operating systems including x86, SPARC, Trasmeta, Alpha
Memory configuration (application server)	Minimum: 256 mb Recommended: 2 gb
Memory configuration (database server)	Minimum: 512 mb Recommended: 1gb
Storage configuration (application server)	Minimum: 20 gb, 5400 rpm Recommended: 40 gb, 7200 rpm
Storage configuration (database server)	Minimum: 3X20 gb software RAID level 0 Recommended: 6X20 gb hardware RAID level 5
Backup solution	Minimum: tape backup solution Recommended: hot backup solution such as Veritas or hosting center based network backup solution.
Databases supported	MySQL 3.23 Oracle (8.1.5 tested) Any SQL 92 compatible database (supported) PostgreSQL
Application server	Apache 1.3.x (current 1.3.14) Mod_perl 1.25 OpenSSL 0.9.6 Postfix (SMTP) Cyrus (IMAP) 2.0.6 with SASL authentification

For more information about Opendesk please contact:

Heidi Wilson
Senior Business Development Manager

OPENDESK CORP.
460 Ste-Catherine Street West
Suite 210
Montreal, Quebec
H3B 1A7 CANADA

Phone: 1-866-OPENDESK ext. 225
Fax: (514) 876-9223

Email: **sales@opendesk.com**

Web: **www.opendesk.com**