



Server Installation and System Administrator Guide

Release 1.0

by
Mike Hayden



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Pebblesoft Learning™, Inc.
Phone: (800) 951-2675

2251 Lawson Lane
Fax: (408) 992-2073

Santa Clara, California 95054



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Introduction and Prerequisites

Welcome to Pebblesoft Learning™.

This manual provides both instructional and reference material to help you get the most from Pebblesoft Learning™. It consists of the following:

- How to install Pebblesoft Learning™
- How to backup the Pebblesoft Learning™ database
- How to maintain the Pebblesoft Learning™ database

All instructions in this manual assume you are familiar with basic operating system conventions such as, typing command lines, choosing commands from menus, managing windows, moving and copying files, etc.

Pre-Installation Checklist

Before Installing Pebblesoft Learning™:

- ___ Verify that your system has the minimum hardware requirements specified on **page 7**.
- ___ Verify that your system has the required software installed as specified on **page 7**.
- ___ Read the release notes, if any, supplied with Pebblesoft Learning™. This document contains the latest information about Pebblesoft Learning™.
- ___ Read the readme.wri file.
- ___ Look over the **Definitions** on **page 26**
- ___ Gather the information you will need during installation, as follows:
 - ___ The name of your Pebblesoft Learning™ server.
 - ___ The name of your Pebblesoft Learning™ database.



Pebblesoft Learning™ Prerequisites

This part of the manual specifies the contents of the Pebblesoft Learning™ download and defines the hardware and software requirements for installing and running Pebblesoft Learning™.

For a general introduction to Pebblesoft Learning™ covering typical users' features and hardware/software features, see **Appendix I - Pebblesoft Learning™ User Features, page 28**.

Pebblesoft Learning™ License Restrictions

The use of Pebblesoft Learning™ is controlled by the Pebblesoft Learning™ License Agreement signed when you purchased the Pebblesoft Learning™ software.

Pebblesoft Learning™ Download Installation Kit

The Pebblesoft Learning™ download kit contains the following top-level directories:

- Pebblesoft Learning™ and runtime components
- Developer kit

A readme file is included to tell you new or extra information not found in this manual.

Skills Needed for the Installation Process

- Familiarity with system administrator tasks and processes associated with web servers and relational database management systems (RDBMS)
- Familiarity with either Microsoft NT or Solaris as required by your installation
- Familiarity with network configuration

Estimated Installation Times

- 3+ hours Server and database (depending on your configuration and experience)
- 15-30 minutes Pebblesoft Learning™ Software

Pebblesoft System Requirements

Minimum Hardware Requirements

SOLARIS		NT	
Processor	Sun	Processor	Pentium 100 or faster
Memory	64 MB	Memory	64 MB
Disk Storage	100 MB (not including course ware)	Disk Storage	100 MB (not including course ware)
Network Card	as needed for TCPIP	Network Card	as needed for TCPIP
CD-ROM	(recommended)	CD-ROM	(recommended)
DAT Tape Drive	(recommended)	DAT Tape Drive	(recommended)

Minimum Software Requirements

Solaris	NT
Solaris Operating System 2.4	Microsoft Windows NT 3.51 or later
Illustra Server 3.3 or later	Illustra Server 3.3 or later
Illustra DataBlade 2.2 or later	Illustra DataBlade 2.2 or later
Netscape Enterprise Server 2.0	WebSite 1.1, Netscape Enterprise Server 2.0, or Microsoft's IIS



Installing Pebblesoft Learning™

This part of the manual explains how to install the Pebblesoft Server on your Solaris or Windows NT Server.

After you download and start the installation, the Pebblesoft Learning™ installation utility produces any necessary files and updates to your Solaris or Windows NT operating system. The following files are installed:

pebblesoft	
-docs	-loader
-docs_home	-java
-executables	-grafix
-data	-sql
-web_home	-web_objects
-install	-news
-resources	-plugin

Before downloading Pebblesoft Learning™, verify that your system has the required operating system and software installed (see **page 7**).

During installation, there will be some differences depending on whether you're using UNIX or Windows. (Windows NT users, see **Installation for Windows Users** on **page 14**)

<p>NOTE: For Solaris systems, copy the “.tar” file.</p> <p>For NT systems copy the “.zip” file.</p>



Installation for Solaris UNIX users

The next steps are for Solaris UNIX systems. (Windows NT users, see **Installation for Windows Users, page 14.**)

The following instructions require two parameters:

- Your database name, specified as “<dbname>” below
- Path for \$MI_HOME — /usr/illustra

\$MI_HOME is an environment variable that points to the root directory of the Illustra Server. It is defined in the MiParams configuration file.

The first file for installation, VersionNr.tar, appears on the Pebblesoft Learning™ Web Server in /pebblesoft-release/x.xx, where x.xx is the version release number.

☛ To Locate the Pebblesoft Server on the web:

___ (This will be supplied by the supplier.)

☛ To create the empty database:

___ Enter the following command line(s):

```
micreatedb <dbname>
```

☛ To install the web DataBlade:

___ Enter the following command line(s):

```
cd $MI_HOME/extend/web/install  
make MI_DATABASE=<dbname>
```



❖ To install Pebblesoft Learning™ into the database:

___ Enter the following command line(s):

```
cp pebblesoft.tar $MI_HOME/extend
tar xvf pebblesoft.tar
chmod -R 775 pebblesoft
```

This creates a directory structure with a subdirectory for each of the following components. The subdirectories are:

This creates a directory structure with a subdirectory for each of the following components. The subdirectories are:

- docs
- docs_home
- executables
- data
- web_home
- install
- resources
- loader
- java
- grafix
- sql
- web_objects
- news
- plugin

```
cd $MI_HOME/extend/pebblesoft/install
solarisinstall <dbname> <root_of_web_server>
```

A new database, with the web datablade will be created under the name of <db_name> and the pebblesoft application will be installed into it.

**⚡To set up the web server/ cgi directory:**

A directory called pebblesoft has been created (automatically by the installation process) at the root of the web server. This contains the components of the Pebblesoft Environment which are subsequent to the database.

- ___ Create a cgi directory (usually from the root of the web server but this is arbitrary)
- ___ Register this directory with the web server (consult the web server administration guide)

⚡To set up Web.conf:

- ___ Copy the following files to the newly created cgi directory, i.e.

```
cp $MI_HOME/extend/web/install/Webdriver <cgidirectory>
cp $MI_HOME/extend/web/install/Webdaemon <cgidirectory>
cp $MI_HOME/extend/pebblesoft/web_home/Web.conf
<cgidirectory>
```

- ___ Enter the following command line(s):

```
cd <cgidirectory>
vi Web.conf
```

Now you must change certain entries in your Web.conf table for your configuration.

You'll most likely need to change the entries shown in **shaded areas** below.

Table 1. Sample Web.conf Table

Parameter	Value	Description/Comments
MI_USER	openLearning	
MI_PASSWORD		
MI_DATABASE?	<dbname>	
MI_SERVER	default	
MI_SYSPARAMS	/export/mi/production/illustra/MiParamS	
MITab?	web_pages	
MICol?	page	
MIInam?	ID	
MIval?	IndexM	
MI_WEBDAEMONHOSTIP	129.212.49.57	Address of server running Webdaemon program
MI_WEBDAEMONBASEPORT	10500	
MI_WEBDAEMONCOUNT	2	
MI_WEBLOGFILE	Webdaemon.log	
MI_WEBVERBOSE	ON	
MI_WEBRAWPASSWORD	1	
WEB_HOME	/cgi-bin/Webdriver	Location of Web driver relative to Web server
NEWS_HOME	/news/	Location of news directory relative to Web server
GRAF	/grafix	Location of grafix directory to Web server
DOCS_HOME	/alpha_docs	
BGCOLOUR	FFFFFF	
MIdisplay_exception	on	
MI_WEBSHOWEXCEPTIONS	on	
MI_WEBTIMEOUT	60	
SessionLengthUnit	"Hour"	
SessionLength	4	



☛ To execute Webdaemon:

___ Enter the following command line(s):

```
Webdaemon Web.conf
```

This completes installation for the Solaris System. For information about the System Administrators activities see **System Administrator's Tasks** on **page 23**.



Installation for Windows Users

Windows NT Installation Overview:

Following are the basic steps you'll use to install Pebblesoft running under NT.

1. Confirm necessary components
2. Define System-Level variables
3. Install database software
4. Install database web blade
5. Install Pebblesoft software
6. Examine your system with Netscape 3.0+

Each of these basic steps is described in detail on the pages that follow.

Step 1. Confirm necessary components

☛ To confirm necessary components

- ___ Confirm that you have **Winzip32 (32-bit version)**
 - ___ Confirm that you have **Illustra 3.3** or later
 - ___ Confirm that you have **Illustra DataBlade 2.2+** or later
 - ___ Confirm that you have **Netscape 3.0+**
 - ___ Confirm that you have **Pebblesoft** software
 - ___ Test the Web server
 - ___ Can you call up a page on the web server?
 - ___ What is the default URL? (write below)
-

Step 2. Define System-Level Variables

To define system-level variables

___ Identify and write down where you will install the Illustra software(in the shaded areas below), for future reference in this installation process.

<MI_HOME>	Illustra Home Directory; value for MI_HOME:
(ex: C:\Illustra)	
<MI_SYSPARAMS>	Location of the MiParams file in MI_HOME:
(ex: C:\Illustra\miparams)	
<web_server>	Root directory on the web server:
(ex: C:\wwwroot\DOCS\	
<db_name>	Name for the learning database you create:
(ex: psoft)	
<cgi-bin>	Absolute path to the cgi directory:
(ex: c:\website\cgi-dos)	
<cgi-map>	Web server map to the CGI directory:
(ex: cgi-dos)	

Step 3. Install Illustra Database Software

The following **summarizes** detailed steps in the Illustra documentation. Please refer to your Illustra documentation for specific details. The following steps define two variables as SYSTEM level variables (not user or environment variables):

- ___ Set the location of the Illustra database (MI_HOME), for example:
MI_HOME=C:\illustra
- ___ Set the location of the miparams file (MI_SYSPARAMS), for example:
MI_SYSPARAMS=C:\illustra\miparams

Create 'miadmin' Account

To create the miadmin account:

- ___ Create an account called miadmin with administrator privileges.
- ___ Log in as **miadmin**.
- ___ Open a DOS window and type in the command **SET** at the prompt.
A list of variables will be returned.
- ___ Verify that MI_Admin and MI_SYSPARAMS are set properly.

Install Illustra

To install Illustra:

- ___ Put the first floppy into the floppy drive and run **setup.exe**
 - ___ Select the option at the top of the install screen to configure Illustra
 - ___ Install all components.
 - ___ When prompted, choose to enter the Illustra security key.
The system will generate a unique server code for your machine, based on machine name and IP address.
 - ___ Write down the server code.
 - ___ Call Illustra to get the license key.
 - ___ Write down the 58 digits Illustra license key here.
-



The Illustra install process will say it is complete – but it isn't – proceed as follows:

- ___ Shutdown and re-boot the system -- don't power down.
- ___ Re-logon as user **miadmin**.

Install Illustra (2nd time)

☛ To install Illustra the 2nd time:

- ___ Re-start Illustra setup from Illustra disk 1.
- ___ Select all installation options but the first.

NOTE: The software shipped to you by Illustra may contain an Upgrade Disk. This software is only required if you have a prior version of Illustra already installed. Do not use the Upgrade Disk if you are installing the full package for the first time.

This time, when Illustra says the Installation is complete, it is.

Turn Illustra ON

☛ To turn Illustra ON:

- ___ Use **START MENU**, then **SETTINGS, CONTROL PANELS**.
- ___ Activate the **SERVICES** icon.
There will be two entries under Illustra.
- ___ Verify that both entries are turned ON.
- ___ Select the service "Illustra Default"
- ___ Give this service authority to log on as a system account.



Verify that Illustra was properly installed using the Illustra Query tool

☛ To run the Illustra Query tool:

- ___ Use START MENU, then PROGRAMS, then ILLUSTRAL USER, then ILLUSTRAL QUERY TOOL-32.
- ___ Select **Show Connections**, then **New Connections**
- ___ Set database Name: **Template1**
- ___ Set user id: **miadmin**
- ___ Open **Connection: template1**
- ___ In the window at the bottom of the screen:
 - ___ Select * from users
 - ___ Click SEND NEW SQL button.

The system will return (comment to be supplied later). This demonstrates that Illustra has been configured properly.

If the system returns the above comment, Illustra is not configured properly; please contact Illustra Technical Support at (510) 652-8000

Step 4. Install Web DataBlade

NOTE: The Web DataBlade (2.2 for NT) shipped to you by Illustra is an incorrect version.

☛ To install the Web DataBlade:

- ___ Use your Web Browser to download Web DataBlade 2.2 FIX FROM PEBBLESOFT
<http://www.pebblesoft.com/download/download.html>
- ___ Select Web DataBlade 2.2 for NT.
- ___ Save the file to (write here) _____
- ___ Run the web DataBlade setup program.
- ___ Confirm the installation was successful by looking for the following directory:
 - <MI_HOME> \ extend \ web
 - Ex: C:\Illustra\extend



Step 5. INSTALL PEBBLESOFT

❖ To install Pebblesoft:

- ___ Get your database name from **page 15**.
- ___ Use your Web Browser to locate the Pebblesoft Server on the web in :
`http://www.pebblesoft.com/download/download.html`
- ___ Select “*Download Pebblesoft for NT now*”
- ___ Download pebblesoft.zip file from the ftp server to the following directory on your system.
`<MI_HOME>\extend`
Example: `C:\Illustra\extend`

❖ To unpack the pebblesoft.zip file in the <MI_HOME>\extend directory:

This following steps will create a new database with a web DataBlade, and install the Pebblesoft Learning™ application.

(NOTE: For <db_name> and <webserver> below, check your written list of system level variables on **page 15**.)

- ___ Use Winzip32 to unpack the pebblesoft.zip file in the <MI_HOME>\extend directory
- ___ After the files have been unzipped: from a DOS prompt, enter the following command line(s):
- ___ Open a DOS prompt.
- ___ Go to <MI_HOME>\extend\pebblesoft\install\web
- ___ Type `ntinstall <DBNAME> <PATH TO WWW ROOT>`, for example:
`ntinstall psoft C:\inetpub\wwwroot\`
`<dbname> = psoft`
`path to web server = C:\inetpub\wwwroot\openlearning`



This installs and configures the web database. When done, the display should show the following:

Files copied

104

24

1

1

A new database, with a web DataBlade will be created for <db_name>, and the Pebblesoft Learning™ application will be installed into it.

❖ To configure the web server and create a cgi directory:

A directory called pebblesoft has been created (by the installation process) at the root of the webserver. This contains the components of the Pebblesoft Environment which are subsequent to the database. The following steps will configure the web server, create a cgi directory (cgi-psoft), and register with the web server as a cgi directory.

The procedure will vary from web server to server.

- MS Internet Information Server
- WebSite
- Netscape Enterprise Server
- Microsoft's IIS

Create a CGI directory and register it

❖ To create and register a CGI directory for MS Information Server:

___ Inetpub/wwwroot/openlearning/cgi-psoft

___ Register it as a virtual directory

Copy 3 files into CGI Directory

❖ To copy the Webdriver, Webdaemon, and Web.conf files into the CGI directory:

___ Enter the following command line(s):

```
copy <MI_HOME>\extend\web\install\Webdriver.exe  
    <cgi-psoft>
```

```
copy <MI_HOME>\extend\web\install\Webdaemon.exe  
    <cgi-psoft>
```

```
copy <MI_HOME>\extend\pebblesoft\web_home\Web.conf  
    <cgi-psoft>
```

Configure the Web.conf file

To configure Web.conf:

Now you must change certain entries in your Web.conf table for your configuration. You'll most likely need to change the entries shown in **shaded areas** below.

Table 2. Sample Web.conf Table

Parameter	Value	Description/Comments
MI_USER	openLearning	
MI_PASSWORD	(blank)	
MI_DATABASE?	<db_name> (psoft herein)	
MI_SERVER	default	
MI_SYSPARAMS	<MI_SYSPARAMS>	ex:C:\Illustra\miparam
MItab?	web_pages	
Micol?	page	
Mlnam?	ID	
MIval?	IndexM	
MI_WEBDAEMONHOSTIP	<IPaddress of host machine> ex: 129.212.49.57	Host machine address of server running Webdaemon program
MI_WEBDAEMONBASEPORT	10500	
MI_WEBDAEMONCOUNT	3	
MI_WEBLOGFILE	Webdaemon.log	
MI_WEBVERBOSE	ON	
MI_WEBRAWPASSWORD	1	
WEB_HOME	<cgi-psoft/Webdriver.exe>	Location of Web driver relative to Web server
NEWS_HOME	/news/	Location of news directory relative to Web server
GRAF	/grafix	Location of grafix directory to Web server
DOCS_HOME	/alpha_docs	
BGCOLOUR	FFFFFF	
MIdisplay_exception	on	
MI_WEBSHOWEXCEPTIONS	on	
MI_WEBTIMEOUT	60	
SessionLengthUnit	"Hour"	
SessionLength	4	

___ Restart web server service (in the control panel) before initially launching pebblesoft.

___ Execute Webdaemon: enter the following command line(s):

Webdaemon Web.conf



This completes installation for the Windows NT System. For information about the System Administrators activities see **System Administrator's Tasks** on **page 23**.

Step 6. Examine your system with Netscape 3.0+

☛ **To examine your system with Netscape 3.0+:**

___ Access the website with the following URL:

(machine-name or IP Address)/cgi-psoft/Webdriver.exe?MIval=IndexM

example:

`http://www.pebblesoft.com/cgi-psoft/Webdriver.exe?MIval=IndexM`

___ Log in using the default system administrator account:

ID: sysadmin

PW: sysadmin

Congratulations! You are in!

Thank you for using the Pebblesoft Learning™ System. For help with this process call

1-800-951-2675.



Overview of the System Administrator's Tasks

The following discussion covers basic System Administrator's activities.

The System Administrator (SA), "positioned" at the web server, sets up and maintains the link between users and the database. Users of the Pebblesoft Server are either learners or Pebblesoft Learning™ Managers. Learners access course material only. Pebblesoft Learning™ Managers access the database to update course content or for administrative purposes such as acquiring a learner's transcript, generating billing statements, etc.

The SA installs the following:

- Systems software
- Course material
- Learner material

The SA also keeps and maintains data that permits use access to the system. User access depends on the user's security level. The SA has a higher security level than either learners or Pebblesoft Learning™ Managers.

The **System Administrator** functions at Security Level 3 to:

- Install and maintain system software and course materials
- Install program upgrades
- Access and tune system performance
- Generate system reports
- Import and export data
- Maintain software for the pebblesoft server, Web server, and Database server.
- Backup, restore & recover, and vacuum files

The **Pebblesoft Learning™ Manager** functions at Security Level 2 to:

- Maintain security & passwords
- Database maintenance, such as:
 - Add and drop course content
 - Add and drop users

The SA must be familiar with the server hardware and its operating system and will have access to course content in the database. Thus, the SA is an "Information Technologist."

Much of the following is from the *Illustra Installation and System Administration Guide*. This document should be supplemented with the *Illustra User's Guide*.

Database Description

The Informix *Illustra* database is a hybrid object/relational DBMS. It manages sophisticated data better than a typical relational database. For example, *Illustra* can mix text and numerical data with multimedia files. “DataBlades” are special library files to access this type of information. The web server uses one of these DataBlades.

The *Illustra* database defines much of the framework for the SA's tasks. Therefore, the *Illustra Installation and System Administrative Guide* contains many of the SA's procedures. Topics included in the *Illustra Guide* are:

- Adding & Dropping Content
- Adding & Dropping Users
- Security
- File backup, restoration & recovery, and vacuum

The Pebblesoft Learning™ data-related files on the database are:

- Database files
 - SQL scripts
 - Web Objects
 - Web.conf
 - Graphics
 - Executables
 - User docs

Web Server Description

Netscape, **WebSite**, or **Microsoft's IIS**, are the web servers that run on this hardware. The essential files for the server are:

- Web server files include:
 - Configurations
 - Web Daemon
 - Web Driver
 - Content



Pebblesoft Server Software

News and Resources

Pebblesoft Learning™ allows for the Pebblesoft Learning™ Manager to publish information out to users. Such information comes under two headings,

News: Latest information about changes to course schedules, important dates to know, new upcoming courses etc.

Resources: General information about company such as company organization, references etc.

To add this information to Pebblesoft Learning™ there are two html pages in
<root of web server>/pebblesoft/news/index.html

/resources/index.html

These template pages can be customized to the Pebblesoft Learning™ Managers preferences.

Definitions

Below are some definitions for terminology used herein (in alphabetical order).

cgi	common gateway interface -- When you request a file from a directory name, the web server retrieves the file then sends the file to the browser. For a /cgi directory name, the web server executes the file and sends the output to the browser. This yields the latest data because it's computed on-the-spot. When configuring the web server, you tell the web server which directory is the /cgi directory. NOTE: cgi processing is usually quite slow.
DataBlades	Illustra feature that provides ability to develop add-on modules to the database.
DBMS	Data Base Management System
ftp	File Transfer Protocol
http	Hypertext Transfer Protocol
Illustra	The object-relational-database-system (ORDBMS) from Informix.
LAN	Local Area Network
Learner	A person using the client machine for learning.
ORDBMS	Object Relational Data Base Management System
Pebblesoft Learning™ Manager	The person that maintains and manages Pebblesoft Learning™ courses for the learners.
Platform	Usually means a specific combination of hardware and/or software, such as, Solaris platform, PC platform, Mac platform, etc.
SA	System Administrator The person that maintains and “administrates” the pebblesoft Server.
Server	An entity that receives requests for something, then acquires it and serves it to the requester.
User	Anyone using the Pebblesoft Learning™ system, including the System Administrator, Pebblesoft Learning™ Manager, Learners, etc.

URL

Universal Resource Locator A Web “address” for a resource,

Following is a brief description of the URL (Universal Resource Locator). The Web uses the URL “address” to connect to the resource specified by the URL. The URL specifies 3 parameters: **Protocol**, **Server**, and **File Path** (see table below).

Below is a sample URL followed by a description of its basic components.

URL: <http://www.amdahl.com/index.html>

Table 3. URL Parameters

URL		
Protocol Specification	Server Specification	File Path Specification
http://	www.amdahl.com/	index.html/...
http specifies the hypertext transfer protocol. ftp specifies the file transfer protocol (ftp is used for transferring the Pebblesoft Learning™ software to the pebblesoft Server).	The Server Specification specifies the name of the web server (host name), the system with the Pebblesoft Learning™ Server software.	This part specifies the root directory for the web server. Generally, the root directory is a docs directory. index.html is an index of all the files in that directory. cgi-bin , if used, points to an execution file.

Web Addressing

(See **URL** definition above.)

Appendix I - Pebblesoft Learning™ User Features

Pebblesoft Learning™ for the Course Designer

As a **course designer** (“virtual instructor”), Pebblesoft Learning™ lets you design, create, and deliver “real-time” education using the Worldwide Web. You deliver interactive, multimedia courses directly to individuals -- whenever and wherever they want it.

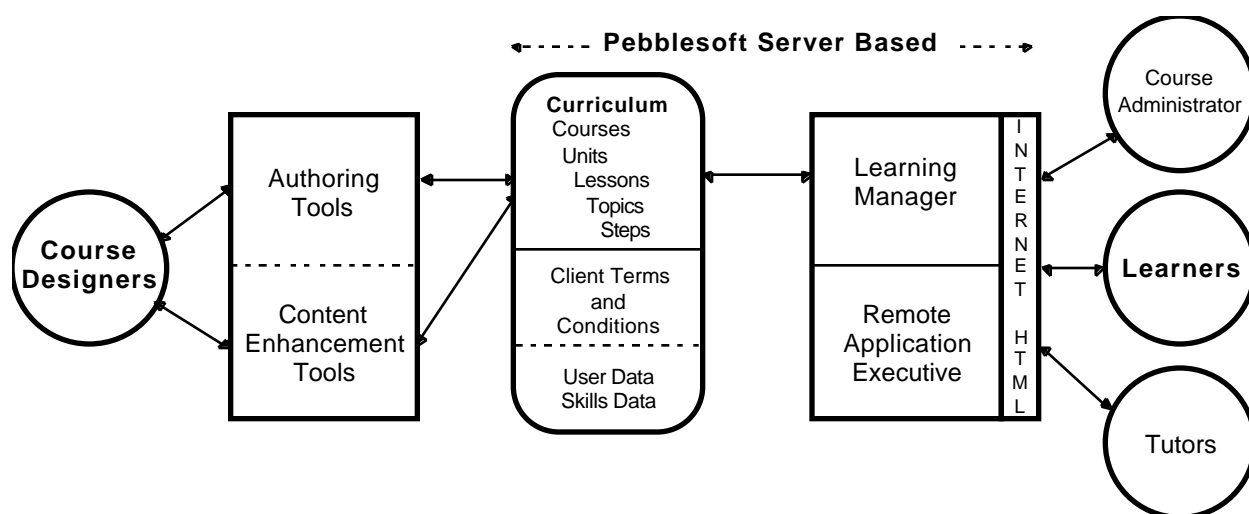


Figure 1. Overview showing Pebblesoft Learning™ users (circles)

To develop courses, Pebblesoft Learning™ lets you use your favorite authoring tools. Or, use Pebblesoft Learning™ converter tools to build courses from existing content. You prepare quizzes, create compatible course content, and support the design of collaborative lesson material.

Examine **Figure 1**. Notice that circles represent users while boxes represent various processes from Course Design (left) through course delivery to Learners (right).

Learning Library

As the Course Designer you can set up:

- Curricula
- Course content and structures
- Performance objectives
- Learner skills data



Pebblesoft Learning™ for the Course Administrator

As a **course administrator**, Pebblesoft Learning™ lets you monitor learner's goals and progress. You easily manage course libraries and course content. You manage learner objectives, assignments and skills. You enable learner certification. You control security for Pebblesoft Learning™ access.

You generate usage reports on the system and course modules.

Pebblesoft Learning™ for the Learner

As a **learner**, Pebblesoft Learning™ lets you search and retrieve learning materials anywhere on the web. On-line, you launch courses and learn in your own preferred style and pace. Pebblesoft Learning™ provides a dynamic, interactive learning environment using auditory, visual, textual, random, and sequential learning styles.

You can collaborate with classmates, mentors, and course administrators through video-conferences, chat-rooms, screen sharing, whiteboard, and e-mail.

Today everyone is personally responsible for learning essential information for successfully managing their career, healthcare, investments, etc. Employers and institutions are less able to afford this responsibility. Pebblesoft Learning™ helps solve this problem.

Pebblesoft Learning™ is "Your real-time personal instructor."

Remote Application with Pebblesoft Learning™

Pebblesoft Learning™ can remotely run applications on the Pebblesoft Learning™ Server. Thus, you don't need to run the application on your system. This requires optional software to be installed on the server or on its own server.

Pebblesoft Learning™ Hosting

Optionally, Pebblesoft Learning™ can provide you with a virtual computer site. You simply rent library space and "user seats" for your course administrator, learners, and training managers. By "outsourcing" our service you eliminate the need to have your own server hardware or software (except for client browser helpers).

All user interfaces use HTML. JavaScript and JAVA are used for enhanced interactivity.

In Pebblesoft Learning™, you can use high bandwidth to low bandwidth networked multimedia, depending on your multimedia quality requirements.

uses high-bandwidth networking for higher quality multimedia.



Pebblesoft Learning™ Hardware/Software Features

- Pebblesoft Learning™ uses an Informix/Illustra database server, a Solaris or NT server, and a Web server.
- Modular curriculum storage
- Learning library and learning manager

Web DataBlade

Special Illustra modules designed specifically for use with a Web server; used to build Web-based applications quickly and easily.

(to be continued)

The Pebblesoft Server

The Pebblesoft Server communicates with learner/client workstations using the Internet protocols. This means you can use Pebblesoft Learning™ over the Internet and **Intranets**. (See **Figure 2. Pebblesoft Server Overview**)

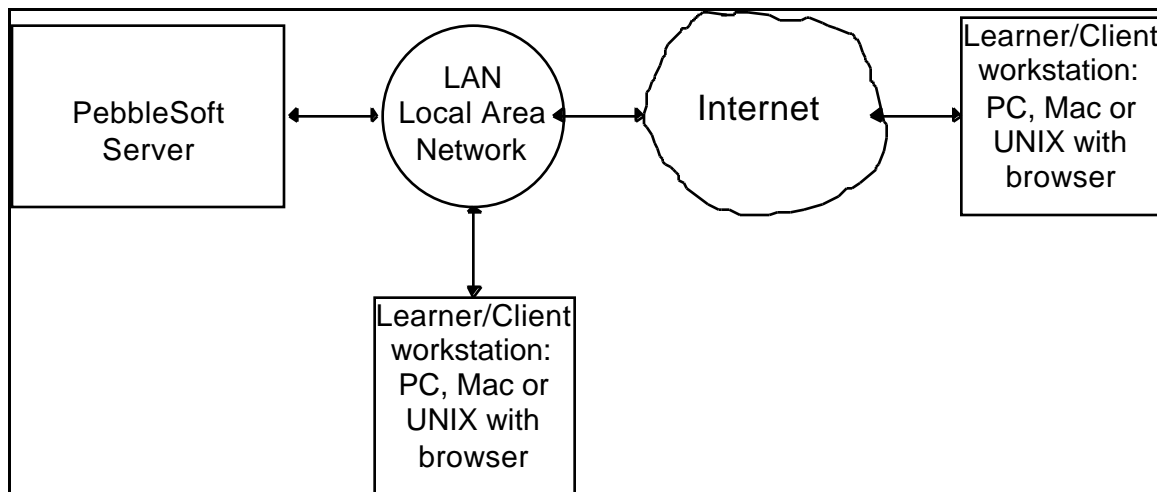


Figure 2. Pebblesoft Server Overview

The **Pebblesoft Server** (left-hand box in **Figure 2**) contains two components as follows:

- **Database**
- **Web Server**

These components are discussed briefly on the next page.

Pebblesoft Server Components

As mentioned the Pebblesoft Server includes two components

- **Database**
- **Web Server**

The two components may be run on one hardware platform, or on separate hardware servers (each with its own operating system). **Figure 3** shows the components on 1 platform.

The **Operating System** may be Solaris or Windows.

Ntrigue, optional software, allows execution of Windows programs on the Pebblesoft Server while displaying the output on the client workstation display. This lets you run a course on the server and display the output on client workstations.

For more information about **Ntrigue**, see:

cf <http://www.insignia.com>

The **Illustra Database** is an object-relational-database-system (ORDBMS) with features for:

- Multimedia database
- Object orientated features
- Easy application development
- Interface with the Web
- Illustra DataBlades

DataBlades provide ability to develop add-on modules to the database for:

- Searching through images
- 2d, 3d, spatial applications
- Web applications

The **Web Server** software is either **Netscape**, **WebSite**, or **Microsoft's IIS**, depending on the platform used.

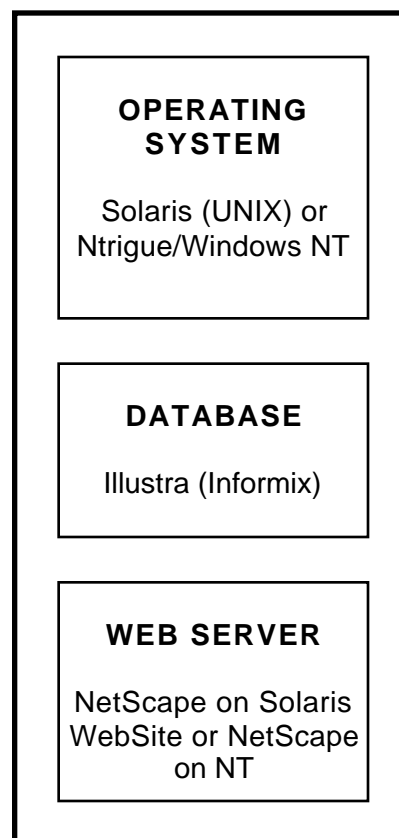


Figure 3. The Pebblesoft Server on One System

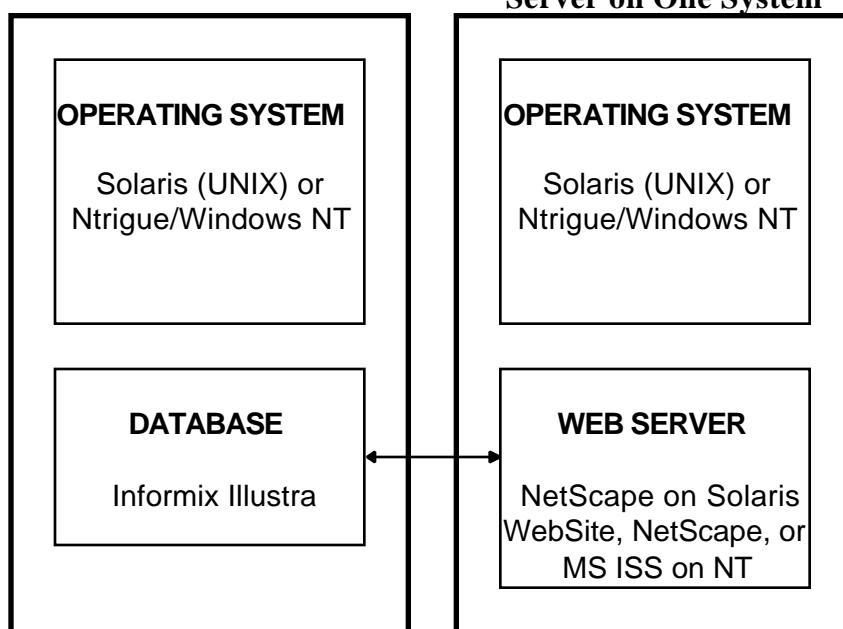


Figure 4. The Pebblesoft Server on Two Systems





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Pebblesoft Learning™, Inc.
Phone: (800) 951-2675

2251 Lawson Lane
Fax: (408) 992-2073

Santa Clara, California 95054
e-mail: xxxxxx-xxx-xxx-xxx