



Technical Specification

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Purpose of this Document

This document is designed to provide technical personnel with information regarding the Bridge PT software applications.

These applications are as follows:

- KnowHow (Learning Management System)
- CourseWare FlowHow (Content authoring application)
- CourseWare ShowHow (Simulated lesson authoring application)

It is recommended that a Service Level Agreement is put in place in order to meet your specific requirements.

Should you have any questions or queries relating to the information contained within, please contact support@bridge-pt.com.

Introduction to our Software

KnowHow

KnowHow is a web-based Learning Management System. KnowHow delivers, tracks, reports on and manages learning content, learner progress and learner interaction. It is also an extensive evaluation tool.

Although there are constant developments in the field of training evaluation, Donald Kirkpatrick's (1959, 1996) outcome-oriented, four-level model is still regarded as the basis for training evaluation. He suggested the following sequence of methods to effectively evaluate a training programme:

- Level 1 - Reaction to Training
- Level 2 - Learning
- Level 3 - Application of Learning
- Level 4 - Impact

KnowHow caters for all four of these aspects of evaluation. Level 1 and Level 2 evaluations are completed by users and managers, whilst Level 3 is completed by managers only. Data from Levels 1-3 evaluations is used to analyse results at level 4.

End-users/ learners log on to KnowHow with a username which, in turn, is linked to a learning profile. The learning profile determines the course content that the user is able to view.

KnowHow is also accessible from the Help menu in SAP. Bridge PT has written ABAP code which creates an additional menu item in the SAP Help menu.

When struggling to complete a particular transaction, the user uses the menu path: *Help > KnowHow Help* form within SAP.

KnowHow launches and the user is prompted to log in. Once logged in to KnowHow, the user is presented with a list of simulated transactions which corresponds to the parameters received from SAP. The user can then access the applicable simulation by simply clicking on the simulation name.

CourseWare FlowHow

FlowHow is one of two applications that make up Bridge PT's proprietary CourseWare solution. It is a standalone Java-based application used by content development team members to:

1. Draw/ model flow diagrams
2. Create HTML courses based on the flow diagram

FlowHow contains its own built-in drawing package which can be used to draw/ model business process flow diagrams. FlowHow also supports importing Aris or Microsoft Visio business process flow diagrams.

Typically, learning material can be classified into 2 groups, namely:

1. Business process based
2. Topic based

In the case of **business process based** learning material, FlowHow is used to:

1. Create and define the business process flow diagram
2. Create an HTML course based on the business process flow diagram

Business process based learning material is particularly useful for SAP implementations, where FlowHow is used to ensure that users can easily understand the whole business process (e.g. the purchasing cycle), and, more importantly, understand when and how to perform the tasks required to ensure that the cycle runs smoothly.

For **topic based** learning material, FlowHow is used to:

1. Create a course structure
2. Create an HTML course based on the course structure

In addition, FlowHow includes a printable and downloadable component. The printable component allows for the creation of a printable version of each FlowHow course, whilst the downloadable component allows users to download content for viewing whilst off-line, e.g., when travelling.

FlowHow course content is entered into each html page by means of Macromedia DreamWeaver.

Each FlowHow instance requires a user license.

To obtain a user license, send the following information to support@bridge-pt.com:

- Name
- Surname
- E-mail address
- Company you work for

CourseWare ShowHow

ShowHow is a java-based software application that allows content development team members to create simulated lessons from a series of screen captures, instructions and specified user interactions. These screens can be transactional screens captured from a system like SAP; or can be screens captured from a video or series of photographs.

ShowHow essentially comprises of 2 separate applications, namely:

- ShowHow Editor (used to create lesson working files)
- ShowHow Server (used to create streamed, web-enabled, playing lessons from the working files)

ShowHow Editor is a standalone product and is installed on each developer PC.

ShowHow Server works in conjunction with Macromedia Authorware and is installed on one dedicated, shared PC (with a static IP address), along with the Macromedia Authorware software. Developers create a working file for a lesson using ShowHow Editor (including images, instructions and specifications for user interactions), and send this working file to the ShowHow Server via the network.

ShowHow Server, in conjunction with Macromedia Authorware, converts this working file into a streamed, web-packaged playable simulation lesson, and automatically stores the lesson files in a predefined directory structure.

KnowHow Architecture

KnowHow is a servlet-based Java web application, which runs on the Jakarta Tomcat web server, through Microsoft Internet Information Server (IIS) or Apache Webserv.

Java servlets are a world-respected medium for serving web pages from Java web applications due to its stability and performance. Java Servlets are developed and distributed by Sun Microsystems, the providers of Java Development Kits (JDK's) and are an extension of the JDK environment.

The backend uses Java Data Objects (JDO) implementation called JDOGenie to perform database access and persistence management.

JDOGenie is largely database independent. Thus far, Bridge PT has implemented KnowHow on Borland's InterBase RDBMS, Microsoft SQL Server, Webspere, DB2 and PostgreSQL RDBMS.

JDOGenie also supports the following databases:

- Sybase
- Informix
- Oracle
- Microsoft SQL Server
- Postgres
- SAP DB
- Interbase
- Firebird
- MySQL

Due to the architecture described above, it is also possible to install and run KnowHow on:

- All current distributions of Linux
- X86 and X64 platforms
- Solaris x86
- Solaris x64

- Solaris SPARC 32-bit
- Any platform supported by Sun Java

Base System Software

KnowHow's underlying software architecture includes:

- JDK from Sun Microsystems (<http://java.sun.com>)
- Postgres is a highly scalable, SQL compliant, open source object-relational database management system (RDBMS) from <http://www.postgresql.org>. Bridge PT uses this an open source RDBMS as the default RDBMS.
- Tomcat web Server/Servlet Container from <http://www.apache.org>. This is an open source, java-based web server/servlet container that is regarded as the industry standard in this area.
- isapi_redirect from <http://www.apache.org> (ISAPI plugin to use Tomcat in IIS)

Note: All the above software is open source and available for download free of charge.

Jakarta - Tomcat

Jakarta is an Apache umbrella project that includes 3 subprojects related to JSP and servlet technology. One of the Jakarta project's main focuses is the Tomcat Catalina web server/Servlet engine.

Tomcat is a free, open-source implementation of Java Servlet and JavaServer Pages technologies developed under the Jakarta project at the Apache Software Foundation. Tomcat is available for commercial use under the ASF license from the Apache web site in both binary and source versions.

Several key industry players including IBM, Oracle, Netscape, and Symantec have already endorsed the technology and are participating in the evolution of the technology specifications.

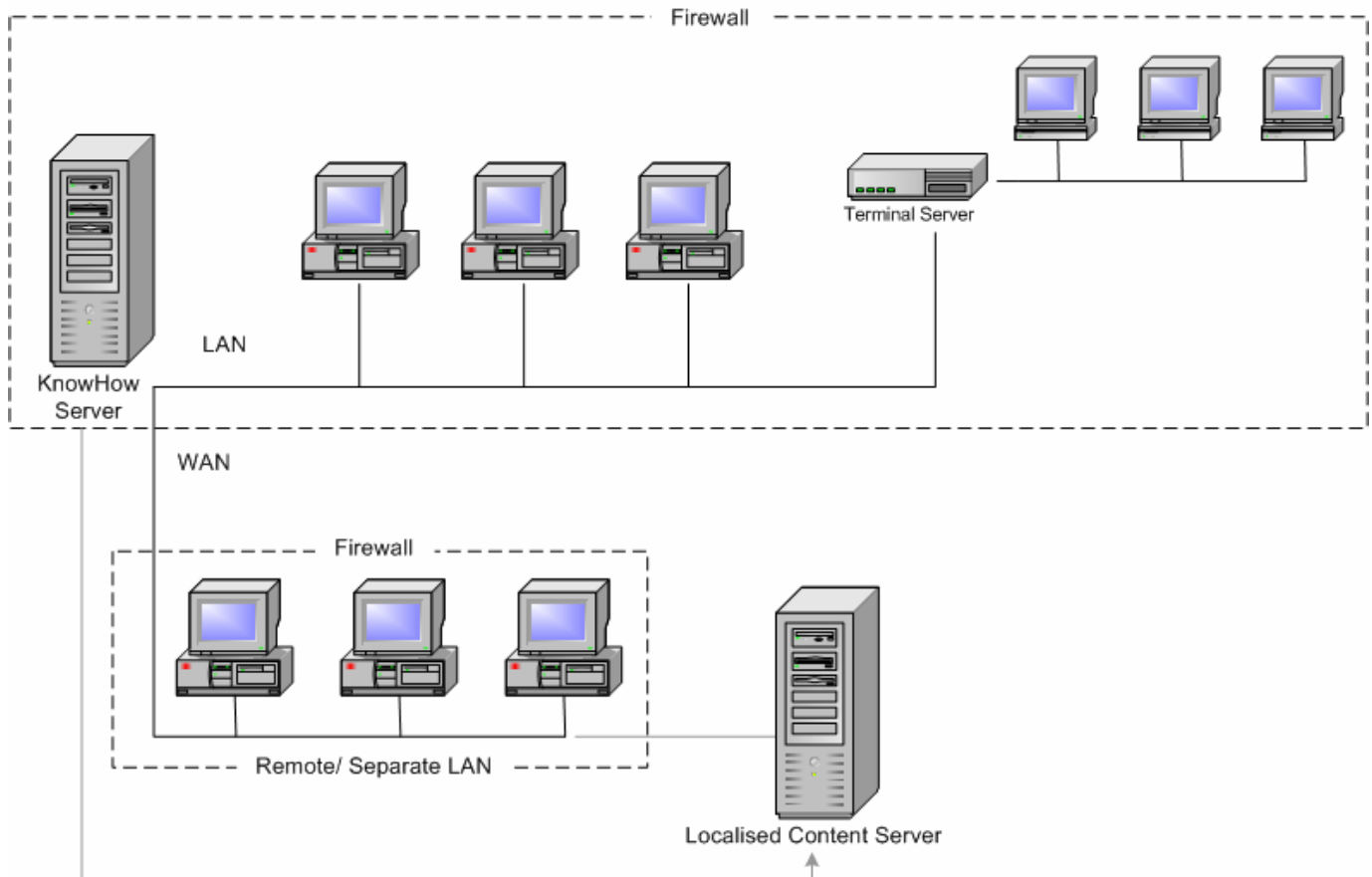
ISAPI

This is the industry standard for communication between IIS and plugin modules and is provided by Microsoft as part of IIS.

JDBC Driver

The JDBC driver is the link between the database and Java application (in this case JDOGenie). JDOGenie provides a stable and secure data abstraction and persistence management layer.

KnowHow Infrastructure



The Central KnowHow Server delivers web-based training content, tracks learners' progress, reports on and manages learning content, learner progress and learner interaction

Learners connect to the KnowHow Server from within a Local Area Network (LAN) - including Terminals.

Localised Content Solution

Localised content is a KnowHow implementation option designed to ensure optimum connection speeds for all KnowHow users.

As KnowHow is Internet based, we need to ensure that we obtain optimum Internet connection speeds at all locations so that users do not become frustrated while utilising the system.

When implementing KnowHow at a new client site, we test connection speed with the help of a selected group of users at all locations. If these tests indicate that connection speed at any of the locations is problematic, the localised content solution is recommended as this improves connection speeds considerably.

In essence, the localized content solution serves content to users by means of the LAN whilst a silent connection to the primary KnowHow server is maintained via the WAN. The purpose of this connection is so that user results are written back to the primary server.

The localised content solution is designed to work as follows:

- The KnowHow application and associated database is installed at a primary location. This server not only hosts the KnowHow application and database, but also serves as the master server on which content resides.
- File-Servers are then installed at locations with slower connection speeds. These servers ONLY host content.
- Content is mirrored from the KnowHow application server to the various localised content servers by means of our content mirroring solution (See the Content Mirroring section of this document for additional information)
- Users logging into KnowHow always access the primary server. Once logged in, KnowHow automatically checks whether content should be served to the user via the primary server or via a localised content server (see Assigning Localised Content Servers to Users below for more information).

Assigning Localised Content Servers to Users

- Localised content servers are set up in the KnowHow Administrator module.
- The following details are specified for each localised content server: Name, Description, IP Address Range (if applicable) and URL.
- For clients that do not have specific IP address ranges at specific locations:
Each KnowHow user has a unique User ID. As part of the set-up of the localised content server, the KnowHow Administrator associates users to the nearest localised content server by means of the users' User ID's. Thus, when a user linked to a localised content server logs into KnowHow, content is served to this user from the specified localised content server as opposed to the primary KnowHow application server.

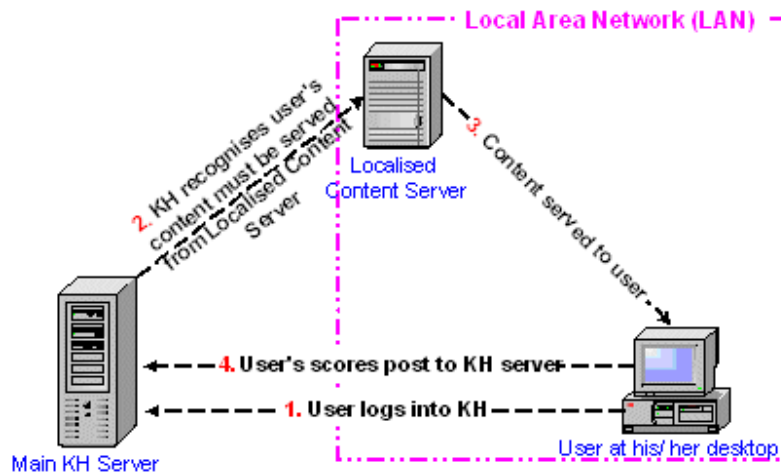
The primary KnowHow application server serves content to all users that are NOT linked to localised content servers.

Due to the silent connection to the primary KnowHow application server via the WAN, all users' results are recorded on the primary KnowHow application server.

- For clients that have specific IP address ranges at specific locations:
Each KnowHow user has a unique User ID. When a user logs into KnowHow, KnowHow checks what the IP address of the user is. Should this IP address fall within a range associated to a localised content server, content will be served to the user from the localised content server assigned to the user's IP address range.

The primary KnowHow application server serves content to all users whose IP addresses do NOT fall into the range(s) assigned to a localised content server.

Due to the silent connection to the primary KnowHow application server via the WAN, all users' results are recorded on the primary KnowHow application server.



Content Mirroring

Content mirroring involves placing the content that resides on the primary KnowHow application server on each of localised content servers in an automated fashion.

Bridge PT recommends and supports the use of RoboCopy, which is included in the Windows Resource Kit.

Scalability

Bridge PT recommends the implementation of a clustered application server environment should concurrent logons exceed 300.

Average Bandwidth Requirements

The table below displays the average bandwidth being used when end users/ learners perform certain tasks within KnowHow:

Task	Bandwidth Usage (bytes)
Log in to KnowHow	4485
Accessing the Home page	9947
Launching the "My Learning" page containing 10 Job Roles	54416

Technical Application & Database Support

Levels of support are specific to each of our clients – these are specified in the Service Level Agreement (SLA).

To enable Bridge PT to support the KnowHow application and database in an efficient, timeous and cost effective manner, the following minimum requirements are applicable:

- Terminal Services access to the primary KnowHow server and all localised content servers (if applicable) to be provided to Bridge PT.
- Dial-up and FTP access to the primary KnowHow server. The same access may be required for localised content servers. This can be set up on request from Bridge PT.
- User account with administrative rights on the local machine with a password which is set NOT to expire.

Contact Bridge PT at support@bridge-pt.com for any support-related queries.

Content Development Architecture

Development Environment

The KnowHow development environment consists of the developer's PC and a development server on a Local Area Network. Wherever there is a KnowHow team developing content, this environment needs to be in place as this enables content creation teams to collaborate during development. Macromedia's DreamWeaver has powerful collaboration features that eliminate content ownership and data synchronization issues.

Upon completion of KnowHow Course content, the development environment is the first stage of QA procedures. The installation of KnowHow onto the development server is optional.

Daily backups of the server will ensure that the impact of any data loss is minimized during development.

Staging Environment

The staging environment and production environment can either be combined onto a single server or kept on separate servers. The staging environment is linked to the development environment via the development server.

The staging server can be deployed from any location and need not be geographically in the same place as the development server, but should be on the same platform as the production server for speed of file transfers.

The staging server is where the formal QA of KnowHow content is performed. Once approved, the developed content will be published directly from the development server to the staging server.

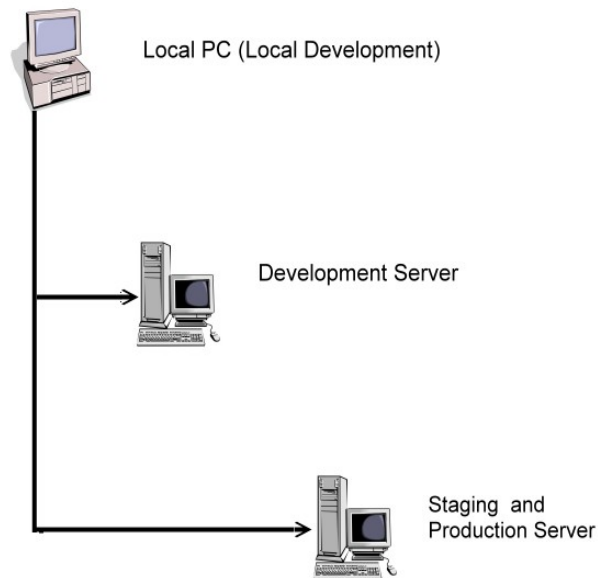
The staging server's approved content will mirror the production server's content and is the source of any content updates. In the unlikely event that content on the production server is corrupted, the staging server's content can be immediately re-published to the production server.

Production Environment

The production server is the source of live KnowHow content that is served to end-users worldwide. The production environment is linked to the staging environment via the staging server.

Once approved content is published to the production server, the KnowHow publisher will log the Courses and related Components into the database and configure the access to content according to Job Roles. Only when all content links from KnowHow, including the writing of assessment results to the database, are verified, will access to Course content be given to end-users.

Outline



Hardware & Software Specification:

Primary KnowHow Application Server

Minimum Requirements

Software	Hardware
Operating System: Windows 2000 Server Edition	1 x P4 3.02 Ghz
Webserver Software: Microsoft IIS	1 GB Ram
Microsoft Terminal Services	100 GB hard disk space
Microsoft Robocopy Note: This is part of Microsoft's Resource Kit and is only applicable if the localised content solution is implemented.	

Note: The specification above caters for approximately 50 concurrent users ONLY.

Localised Content Server

Minimum Requirements

Software	Hardware
Operating System: Windows 2000 Server Edition	1.8 GHZ Processor
Webserver Software: Microsoft IIS with FTP enabled (Connected to the Internet or Intranet)	Pentium 4
Microsoft Terminal Services	512 MG RAM
	30 GIG hard drive at 72 RPM (dependant on the amount of content)

Content Developer Machines

Minimum Requirements

Software	Hardware
Operating System: Windows 2000	1.3 GHZ Processor
Webserver Software: Microsoft IIS (optional)	Pentium 3
Courseware FlowHow	256 MG RAM
Courseware ShowHow Editor	30 GIG hard drive at 72 RPM
Courseware ShowHow Server (optional)	
Macromedia DreamWeaver	
Paint Shop Pro	
Macromedia Authorware (optional)	

End-User Machines

Minimum Requirements

Software	Hardware
Internet 5.0	400 MHZ Processor
Operating System: Windows 98 or higher	Pentium 2
Macromedia Flash Plugin version 6.0 or higher	64 MG RAM
Macromedia Authorware Plugin version 6.5 or higher	10 GIG hard drive

Hardware & Software Assumptions

Note: KnowHow content development team and end user minimum specifications, especially processor speed, MG RAM and hard drive space, indicated above may change due to the type of content (3rd party content, such as STT, SAP Tutor or RAD) being launched.

Hard drive space on the KnowHow application server and the localised content server is purely dependant on the amount of content that is intended to be hosted on the respective servers.

Product Licensing

To obtain additional KnowHow, FlowHow or ShowHow licenses, contact Bridge PT Consulting at support@bridge-pt.com for licensing information.