

Release 1513

Web Merit

Installation Instructions for Web Objects
(WebSphere 4.x & 5.x)

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Introduction

This document describes installation steps for Web based merit system for WebSphere 5.x and 4.x versions. There were some changes from the installation document released with previous releases (R1428 and R1485). This release covers web merit installation for WebSphere version 4.x and 5.x both.

The main changes are as follows:

- Change in system parameter file : login.properties
- WebSphere version 5.0 installation
- Additional properties file
- Application design change

Previous version of this documentation can be found at <http://www.ucop.edu/ppsmaint/REL2003/R1485/>

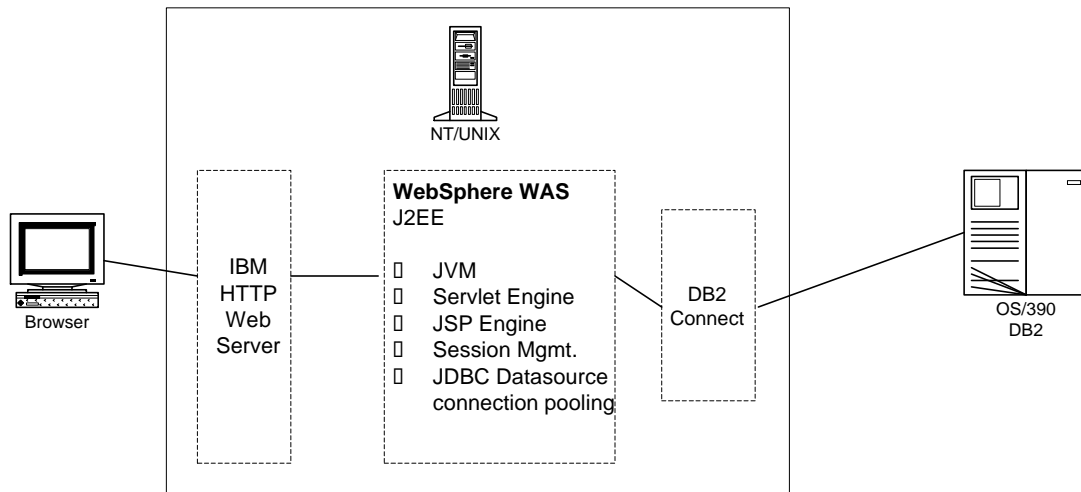
More details about the application can be found in the release documents (R1428) at

<http://www.ucop.edu/ppsmaint/releases.htm> .

The documentation for MVS portion of the system is available at

<http://www.ucop.edu/ppsmaint/REL2002/R1428/> .

Diagram: 3 tier architecture

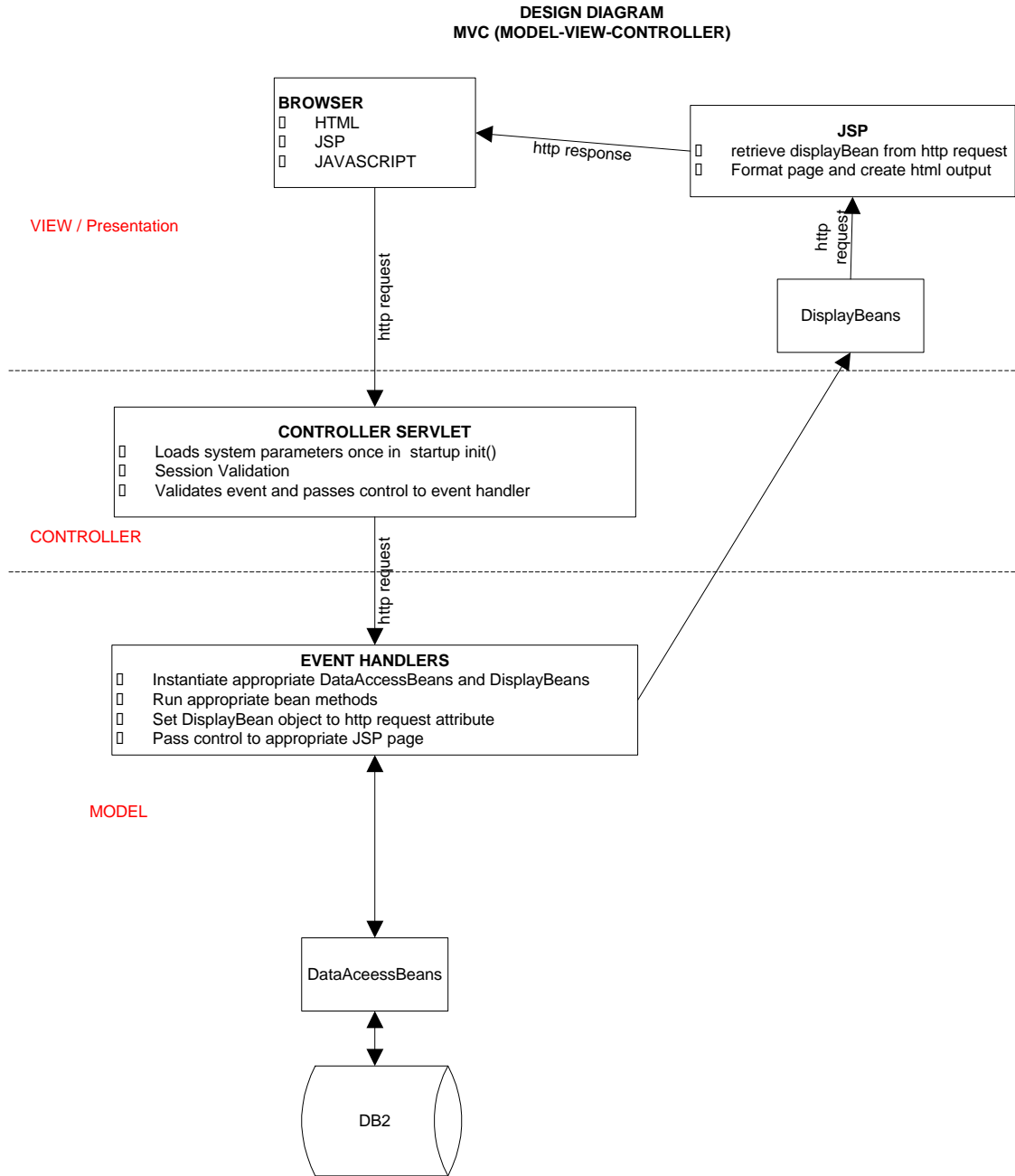


This diagram shows a general 3-tier architecture where web merit can be installed. If WebSphere runs on OS/390 Mainframe then this scenario changes.

The system uses following software components:

- Browser (Client)
 - IE 5.5+, NS4.0+
 - JavaScript
- WebSphere WAS (Web Application Server)
 - JAVA Beans (no EJBs)
 - JSP
 - SERVLET (Controller Servlet)
 - JDBC
 - System Parameter files (*.properties)
- DB2 Connect
 - Create Database aliases pointing to MVS DB2
- MVS on IBM Mainframe
 - DB2 Tables
 - DB2 Stored Procedures
 - COBOL/DB2 Batch Processes

Diagram: Application design: J2EE MVC design



Install HTTP Server

Install IBM HTTP Server from the CD which comes with the WebSphere Application server CDs. For WebSphere 5.x, HTTP server comes in the same distribution CD.

Install DB2 version 7.x (for WebSphere 4.x)

WebSphere version 4.x requires a local version of DB2 installed for internal use.

Note: In WebSphere 5.x+ versions, no need for a local database (replaced by internal XML file system of WAS 5.x+).

Follow the installation instruction on the DB2 CD which comes with the WebSphere 4.x Application server CDs, and install DB2 version 7.x.

DB2 Connect Database Alias

Use DB2 Client Configuration Assistant of DB2 Connect to create a database alias pointing to MVS DB2 instance. This is required for establishing DB2 connection between middleware (NT/Unix) machines to OS/390 DB2, irrespective of the version of WebSphere being used.

To create an alias, the following is required :

- Mainframe host name/ip address.
- Mainframe data base server port number.
- Mainframe DB2 database name

Create one or more alias(s) to Mainframe DB2 instance(s) as required. Give each alias distinct and meaningful name.

Why is DB2 Connect required?

As we have DB2 running on Mainframe and WAS installed in a different machine, we need some way to connect to DB2 from WAS application. A JDBC driver usually does this job. A type-4 JDBC driver can directly connect to Mainframe DB2 instance from outside machines. As per the documentation in IBM technical web sites, DB2 UDB Version-8 comes with a type-4 JDBC driver, which can talk directly to the server without the using DB2 Connect. And these drivers can work with WebSphere 5.0.1 runtime environment.

Currently, most of the campuses run DB2 version 7.x on Mainframe. In this case, you can have DB2 Connect on the machine on which WAS is installed, and create database aliases of remote databases in DB2 Connect. The remote database will act like a local one after the alias is created and is transparent to the Java application and the Data Source definition.

JDBC Driver and enabling JDBC 2.0

DB2 Connect comes with DB2 JDBC driver in db2java.zip file (usually located at sqllib/java/db2java.zip). But, you have to make sure that JDBC 2.0 is enabled.

To enable JDBC 2.0 on Windows 2K/NT system :

Stop the DB2 JDBC Applet Server service.

Run the batch file SQLLIB\java12\usejdbc2.bat. (SQLLIB is the directory where DB2 has been installed).

To see what JDBC level is in use on your system, do the following :

If JDBC 2.0 is in use, the file SQLLIB\java12\inuse will exist.

If JDBC 1.0 is in use, the file SQLLIB\java11\inuse will exist.

Install WebSphere Application Server

Install WebSphere Application Server (WAS). Follow the instructions for installations.

After installation of WAS, some resource set up is required.

In WebSphere 4.x, the application administration (install/update application, add/update resources etc.) is done using Administrator's Console (admin console) which is a GUI tool to administer WAS applications.

In WebSphere 5.x the administration is done from a web based panel. Functionality wise they act similarly. The advantage in version 5.x is that one can administer the application from any browser with proper authority.

JDBC Driver Entry

Add new JDBC provider in the 'Resources' section of WebSphere administration screen.

Give a name to the driver (for example: DB2Driver) and select the implementation class as COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource.

Provide classpath for DB2 driver file(the path where DB2 driver exists) :

Example in WAS 4.x : d:\sqllib\java12\db2java.zip

Example in WAS 5.0: \${DB2_JDBC_DRIVER_PATH}/db2java.zip

In WebSphere 5.x, you need to define DB2_JDBC_DRIVER_PATH in websphere variables (Environment -->Manage WebSphere Variables)

Data Source Entry

Once the JDBC Driver entry is complete, add data source under the JDBC. Provide a name to the data source and a JNDI name (for example, 'DB2D' and 'jndi/DB2D').

Note: This data source name should be present in the login.properties file as datasource.dbname (for example, **datasource.dbname=DB2D**).

Provide database name from one of the DB2 alias names already established in DB2 Connect Client Configuration tool.

Provide database userid and password of Mainframe DB2 instance which can connect to DB2.

Note: Try to provide a non-expiring userid/password. This userid will be used to connect to DB2. If password expires, it should be modified here.

Install Web Merit Application (.ear file)

Before installing the EAR (Enterprise Archive) file, you need to decide on what application server you want to install the application.

WAS 5.x provides a default application server as 'server1' .
WAS 4.x provides a 'Default Server' under 'Nodes'->machine-id

You can install in the default server or create your own application server and install under it.
Note: every application server runs on its own JVM. So, creating multiple servers will create multiple JVMs which can be memory intensive.

Download the .ear file from the release dataset in Mainframe (for example, PAYDIST.Rxxxx.EAR where xxxx is the release number). While downloading using FTP or some other way, please make sure that the download is done in binary mode. The .ear file is a binary file.

Installing .ear file in WebSphere 4.x

In WebSphere 4.x Admin Console go to 'Enterprise Application' section and right click to 'Install New Application'. Provide the .ear file path name and then click next and you will be presented with a series of screens. Make sure that in the Mapping Resource References to Resources screen the right resource name and JNDI name is available.

You are presented with a series of screens as in the following:

- Mapping Users to Roles (no entry required , click 'Next>')
- Mapping EJB RunAs Roles to Users (no entry required, click 'Next>')
- Binding Enterprise Beans to JNDI names (no entry required, click 'Next>')
- Mapping EJB references to Enterprise Beans (no entry required, click 'Next>')
- Mapping Resource References to Resources (here, you should see under Resource Reference 'jdbc/DB2D' or 'jdbc/XXXX' whatever name you defined while creating data sources under Module 'webmerit' and same under JNDI name. No action required. Click 'Next>').
- Specify the Default Datasource for EJB modules (no entry required, click 'Next>')
- Specifying Data Sources for Individual CMP Beans (no entry required, click 'Next>')
- Selecting Virtual Hosts for Web Modules (here you should see under Web Module 'webmerit' and under Virtual Host 'default_host'. No change required, unless you have multiple virtual hosts set up. Click 'Next>')
- Selecting Application Servers (here, under the Module column you should see 'webmerit' and nothing under Application Server . Click on 'Select Server' and choose one application server from the list. After the application is chosen, it will appear under Application Server column. Click 'Next>' to proceed to the final step.

Installing .ear file in WebSphere 5.x

In WebSphere 5.x, the administration is done from a web based panel.
Navigate to 'Enterprise Applications' under 'Applications' from the menu on the left side. You will see list of already installed applications (WebSphere 5.x comes with some sample applications). Click on 'Install' and follow the instructions.

Note (important): do not forget to do 'Regen Web Server Plugin' every time you install / reinstall / update any application. Regeneration of web server plug in is required to let the web server pass control to appropriate websphere application.

Application parameter file (login.properties)

Each merit application installation will have its own login.properties file which contains application level parameters. All of these parameters are loaded and validated once in the beginning. First time invocation of ControllerServlet does this job in it's init() method. Any changes to these entries require the application to be restarted to reflect the change.

Sample login.properties file :

```
#-----  
#  
#---- DATABASE  
#  
datasource.dbname=DB2D  
datasource.authid=PAYTPP  
#  
#----- URLs  
#  
appl.menuurl=http://uccmvsb.ucop.edu:8121/payadm-cgi/ucdb2www/ppsmenu.d2w/main  
appl.logouturl=http://uccmvsb.ucop.edu:8121/payadm-cgi/ucdb2www/ppsexit.d2w/main  
#  
#---- LOG FILE  
#  
log.filename=c:\\log.txt  
#  
#---- ADMINISTRATOR  
#  
admin.name=Kalpa Barman  
admin.phone=510-987-0012  
admin.email=kalpa.barman@ucop.edu  
admin.mailserver=smtt.ucop.edu  
#-----
```

All fields must be entered.

The description of the parameters are given below :

Data Source Name datasource.dbname: data source name

DB2 authid/qualifier datasource.authid: authid/qualifier for DB2 objects (tables/views/stored procedures prefixed with this qualifier)

MainMenu URL appl.menuurl: Main Menu URL of the invoking application. In the example, this is the Main Menu URL for PPS Main Menu. From this URL, web merit application is invoked by passing the userid, sessionid and authid. Merit application validates this userid and sessionid combination in a DB2 table (with qualifer as authid) used by PPS for session management.

Logout URL appl.logouturl: if user clicks 'Logout' in Merit application, this URL is invoked. In the example, this is 'PPS Log Out' URL which logs out the user from PPS as well.

Log File log.filename: application log file name.

System Administrator's Information

System Administrator's Name admin.name: system administrator's name for this application. This name is displayed in the standard error page as the primary contact in case there is some error.

System Administrator's Phone# admin.phone: system administrator's phone number This phone number is displayed in the standard error page as primary contact's phone number in case there is some error.

System Administrator's Email admin.email: system administrator's email id. The user can optionally send email from the error page to this email address with the error description. The email id is displayed in error page.

System Email Server Name admin.mailserver: this is required by the send mail page to send mail to administrator. This can be a SMTP/POP email server.

How to run Merit Application?

Web Merit Application should be invoked from PPS Main Menu.

URL link in the net.data macro 'ppsmenu.d2w' looks like

[http://server/webmerit/ControllerServlet?action=MAINMENU&userid=\\$\(userid\)&sessionid=\\$\(sessionid\)&authid=\\$\(authid\)](http://server/webmerit/ControllerServlet?action=MAINMENU&userid=$(userid)&sessionid=$(sessionid)&authid=$(authid))

where *server* is the address for the merit server machine.

Security

Login check

Web Based Merit can be invoked from PPS web main menu.

The request comes with a user id, session id and auth id as query string parameters (either in URL string or in html form hidden fields). If these three query parameters are not found in query string, a standard error message is displayed.

After retrieving these three parameters, a DB2 database check is done on the session table (whose qualifier is the authid) to see if a valid record exists with this userid and sessionid. If a session record does not exist in PPS session table, a standard error message is displayed.

ARSM security check

After a successful login, user comes to the Merit Menu page. All pages from this point onwards have ARSM security check. ARSM check is application controlled. Different sections of the applications have different parameter check. For example, user may do a merit roster update on selected department but can not do merit cycle administration. ARSM rules are controlled by entries in DB2 ARSM security tables. ARSM check is not done in informational pop-up display windows.

Session Management

A valid session (http session) is established every time user comes to Merit Menu from out side applications. All screens have a check to make sure that a session is already established.

Session Time Out

WebSphere standard session time out (due to inactivity) is 30 minutes by default. But this is configurable in websphere administration (application additional properties in WebSphere 5.x). It is advisable to make this time out interval same as the time out interval in the main calling application (PPS).

Front-end Requirements

Browser

Internet Explorer 5.0+

Netscape 4.5+

Note : Netscape 6.0+ browser versions are different than previous Netscape versions in many ways.

JavaScript

Web Merit screens uses JavaScript. JavaScript should be enabled.

JavaScript is used mainly for :

- Front end html form data validation
- Screen navigation

Cookies

Cookies should be enabled.

WebSphere http session management internally can use cookies or URL forwarding for keeping track of sessions depending on the set up.

Error Handling and Messages

A standard error screen is displayed whenever application error happens. User can see System Administrator's detail on this screen. Detailed error messages can be viewed in a pop-up window. User may send email to system administrator with a description of the error. The detailed error message is automatically copied with the email along with user typed in notes in mail form. All errors are logged in the log file (even if user chooses not to send email).

Front end error messages are thrown as JavaScript alerts. The messages are stored in two JavaScript files :

- o AdminErrorMessages.js
- o RosterErrorMessages.js

Back-end application and database messages are available in a properties file:

- o constant.properties

Log file

Application level Log file name should be supplied in the system parameter file (login.properties). The log file name is loaded in the beginning. Monitor this log file from time to time. Clean/back up log file if it grows big.

For WebSphere system related errors please verify log files in the following directories:

- o Check files in /WebSphere/AppServer/logs directory (you can also check stderr.txt and stdout.txt in \winnt\system32 directory, but these file names are configurable in installation, so may be available under different names).

Changing logo image

By default web merit comes with one logo image with following details :

File name : logo.gif

Location : webmerit.war/images directory

Size: 473 x 38 pixels

This image can be modified as long as it is kept under same file name in the same directory.

To modify the size of the logo image displayed on every page, some adjustments are required in 'Header.include' file located at 'webmerit.war' directory. Recompile of all JSPs required after changing the header include file to reflect the changes.

Note: Error.jsp and SendMail.jsp does not use 'Header.include' file. You need to modify them separately.

Installing release updates

In WebSphere 4.x, uninstall and install new .ear file

In WebSphere 5.x, update with new .ear file.

Note: any customization (logo change etc.) needs to be redone.