

Release 1862

**Service Request 82205
Time Reporting Web Service**

Installation Instructions

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Prepared by Maxine Gerber

Information Resources & Communications
Office of the President
University of California

This document provides installation instructions for release 1862. Please review these instructions carefully before proceeding with the installation.

1. Copylib Member Installation

1.1 Install the following **new** copy members:

Copylib Members	Installed?
CPPDFLT	
CPPDTOKN	
CPWSFLT	
CPWSTOKN	
CPWSWEBS	
PS002	
PS002I01	
PS002O01	

1.2 Install **modified** copy members:

Copylib Members	Installed?
CPPDEDHC	
CPWSPTRW	
CPWSTRIF	

2. Bind Member Installation

2.1 Install the following **new** bind members. Change *AUTHID* to the appropriate value.

Bind Members	Installed?
PPDELTS	

3. Assembler Program Preparation

The following program is written in Assembler language and must be assembled with a CICS precompiler step. Sample assemble JCL can be found in PAYDIST.R1862 JCL(ASM). The source code for this program is in PAYDIST.R1862.ASM.

PROGRAM	DB2?	Compile Type	Package Bind?	Done?
UC0\$WBST	No	Assembler	No	

4. COBOL Program Preparation

At UCOP, all COBOL programs pass through the DB2 pre-compiler, whether or not the program contains embedded SQL, to resolve INCLUDE references. Your site may have different requirements.

"DUAL" programs must be compiled twice and linked into batch and online libraries ("LOADLIB" and "OLOADLIB" respectively). "CICS" programs must be CICS pre-compiled and compiled once and linked into OLOADLIB. "BATCH" programs must be compiled once and linked into the batch LOADLIB only.

- 4.1 All PPS programs running in CICS must be defined (via RDO) with Dataloc(Any) and must be linked to have attributes AMODE 31 and RMODE ANY. If any programs are currently not already linked to have attributes AMODE31 and RMODE ANY, those programs must be recompiled and re-linked.
- 4.2 All BMS maps must also be linked to have attributes AMODE 31 and RMODE ANY. If any BMS maps are currently not already linked to have attributes AMODE31 and RMODE ANY, those maps must be re-linked (re-assembly is not required for maps).
- 4.3 Install, compile, and link the following **new** programs

Note 1: If PPS web services in this region will be accessed without SSL, program PPWEBSEC must be modified to add the applid of the CICS region to the 88-level WS-NO-SSL-APPLID. This should be used for development regions only.

Note 2: Web service program PS002 must be compiled using the integrated CICS translator feature of the Cobol compiler. It cannot be compiled with a separate CICS translator step.

Note 3: If using the Cobol 4.1 compiler, program PPXMLPRS must be compiled with the XMLPARSE(COMPAT) option.

Sample JCL for compiling CICS programs with the options identified in the notes above can be found in the release JCL library member COMPILE.

PROGRAM	DB2?	Compile Type	Package Bind?	Done?
PPDELTS	YES	CICS	YES	
PPWEBSEC (see note 1 above)	NO	CICS	NO	
PPXMLPRS	NO	CICS (see note 3)	NO	
PS002	NO	CICS (see note 2)	NO	

- 4.4 Install, compile, and link the following **modified** programs:

PROGRAM	DB2?	Compile Type	Package Bind?	Done?
PPGETTIM	YES	CICS	YES	
PPWEDHC	YES	CICS	YES	
PPWIDTC	YES	CICS	YES	
UCROUTER	YES	CICS	YES	
UCWABND	YES	CICS	YES	

5. *Process Control Table (PCD) Updates*

- 5.1 Update the UC0CFN and UC0PGM tables in the PCD database.

The JCL in PAYDIST.R1862.JCL(LOADPCDX) loads new items into the UC0CFN and UC0PGM tables using LOAD RESUME. The JCL uses PAYDIST.R1862.UDB2PCDX as input.

6. *Systems Support for Web Services*

Prior to installing web service artifacts, certain tasks must be performed at the systems level to prepare the CICS region to support web services. See Appendix A.

- 6.1 Obtain from systems the following information for your CICS region:

- The name of the HFS directory which contains pipeline configuration files. For example /u/cicsdpp4/pipelines
- The name of the Web service binding HFS directory or "pickup" directory which contains Web service binding files that are associated with the PIPELINE, and that are to be installed automatically by the CICS scanning mechanism. For example /u/cicsdpp4/wsbind/provider
- The name of the HFS "shelf" directory in which CICS will store installed wsbind files, e.g. /u/cicsdpp4/var.
- The name of an HFS directory for storing wsdl files. The wsdl is used by developers to create a web application to invoke the web service, e.g. /u/cicsdpp4/webservices/wsdl
- The url and port number to use for web services in your CICS region, e.g. http://cicsdpp4.ucop.edu:3094/PS002.

7. *CICS Resource Definition Operations (RDO)*

- 7.1 Any CICS programs which are currently defined with Dataloc(Below) must be changed to Dataloc(Any).
- 7.2 CICS table entries are required for new programs and also for the web services pipeline. The CICS Resource Definition Operations (RDO) is provided in CARDLIB (RDOPROD). Modify as follows:
- Replace *GROUPID* with the campus group ID
 - Replace *PLAN* in the DB2ENTRY item with the appropriate DB2 plan for the CICS region.
 - In the first item which starts with "DEFINE PIPELINE(PPSPROV)", replace the following
 - *PIPELINEDIR* with the directory which contains pipeline configuration files, e.g. /u/cicsdpp6/pipelines
 - *SHELFDIR* with the "shelf" directory, e.g. /u/cicsdpp4/var
 - *PICKUPDIR* with the "pickup" directory, e.g. /u/cicsdpp4/wsbind/provider
- 7.3 JCL member LOADRDO contains sample JCL for batch loading the RDO definitions. Perform a CEDA install for the group if the region is already executing.

8. *SSL Installation*

SSL implementation is entirely a systems task. See appendix A.

9. *Web Service Installation*

- 9.1 Copy pipeline definition to omvs
PAYDIST.R1862.XML(PPSSOAP) is the pipeline definition file . This must be copied to the pipeline configuration directory in OMVS as PPSbasicssoap11provider.xml. Sample JCL member PDF2HFS is provided.
- 9.2 Modify the wsdl

The wsdl is a file can be used by developers to create a web application to invoke the web service.

- Use binary FTP to copy the file PAYDIST.R1862.WSDL(PS002) to a PC and name it PS002.wsdl.
- Using any text editor, modify this file to indicate the correct url endpoint for the web service. Replace *endpoint* and *port* with the values provided by systems.
- Using binary FTP, copy the PS002.wsdl to the wsdl directory on OMVS.

9.3 Generate the wsbind file

The wsbind file is used by CICS to correctly route a web service request to the appropriate program. It is generated using an IBM-supplied batch java utility. Sample JCL can be found in JCL member DFHWS2LS.

Modify the following parameters in the INPUT DD statement with appropriate local values.

- **PDSLIB=//*COPYLIB*** - The process generates two copylib members, but the PPS service will not use them. However a copylib PDS must be specified here to which the user has write access, e.g. PDSLIB=//PAYMLG.TEST.COPYLIB.
- **REQMEM=DUMMY1 & RESPMEM=DUMMY2** - These are the member names which will be created in the copylib referenced above. The names may be changed or left as is, since they will never get used.
- **LOGFILE=*LOGDIR*** - The process will generate a log in an HFS directory. Change this to an appropriate directory to which the user has write access, e.g. /u/cicsdppp/wsbind/provider/PS002.log
- **WSBIND=*PICKUPDIR*/PS002.wsbind** - This references the "pickup" directory described above, along with the name of the wsbind file. Change *PICKUPDIR* to the local value, e.g. WSBIND=/u/cicsdppp/wsbind/provider/PS002.wsbind
- **WSDL=*WSDLDIR*/PS002.wsdl** - Replace *WSDLDIR* with the local value, e.g. WSDL=/u/cicsdppp/webservices/wsdl/PS002.wsdl
- **URI=*ENDPOINT*:*PORT*/PS002** - Replace *ENDPOINT* and *PORT* with local values, e.g. URI=http://cicsdppp.ucop.edu:3094/PS002

9.4 Install the Web service in CICS

To have CICS scan the pipeline and install a URIMAP and WEBSERVICE definition for PS002, enter the following command:

```
CEMT PERFORM PIPELINE(PPSPROV) SCAN
```

10. Security Considerations

10.1 Certificate Installation

This release does not include a web application to call the time reporting web service. It is assumed that local campus web applications will be modified or developed to invoke the web service. The web server which hosts the application which invokes the web service must have a certificate authorizing it to access the CICS web services. The steps to obtain and install the certificate are:

- A Certificate Signing Request (CSR) is generated by the server hosting the web application and is sent (via email) to the Mainframe systems staff.

- Mainframe systems uses the CSR to generate a certificate and sends it back to the web server administrator.
- The certificate is installed on the server hosting the web application.

10.2 Implement Function-Level Security

The RACF steps that need to be performed to implement function-level security for the new WDTC function are:

- Define protected profiles in the installation-defined resource class for the function code WDTC.
- Permit READ access to WDTC to the individual users or groups who are authorized to use the function.
- EDHC authorization is required to use WDTC, so the same users/groups should be given READ access to EDHC.

10.3 Implement transaction security

Web service requests are run under transaction id CPIH. To ensure that only authorized users and application servers are allowed to use PPS Web Services, CICS resource security is used. The RACF steps needed to implement security for transaction CPIH ARE:

- Create RACF profile CICSXXXX.CPIH in class TCICSTRN (where CICS region userid is CICSXXXX)
- Permit READ access to CICSXXXX.CPIH to all users and groups allowed to access PPS in the CICS region.
- Permit READ access to CICSXXXX.CPIH to the userid associated with the certificate being used by the web application server that is making Web Service requests to the region.
- Do not permit READ access to CICSXXXX.CPIH to the userid of the CICS region hosting the web service

11. Testing

- 11.1 Perform installation verification testing as described in the Test Plan. In addition, perform any further local testing.

12. Install in Production

- 12.1 Place modified objects in production.

13. Control Table Updates

- 13.1 Execute **PPP004** to update the following DB2 CTL tables with release transactions.
- **System Messages Table (08)** – Use the transactions in CARDLIB (MSGPROD).

Appendix A

Enabling Web Services in a CICS Region

Below is a summary of the tasks needed to prepare a CICS region to support web services.

1. Changes to SIT table (keyring etc.)
2. Create CSD data to define a default Pipeline(PROVPIPE)
3. Setup USS directory (e.g. /u/cicsdpp4/) and permit access by the region and to RACF ids that will maintain the region
4. Create a server certificate for the region
5. Create CSD data to define TCPIP SERVICES HTTPNSSL and HTTPSSL which will include the server certificate created in the previous step.
6. Modify CSD LIST to include new definitions
7. Modify IBM supplied proc DFHWS2LS. The supplied version uses a different syntax for the PARM= statement which causes the 100-character limit to be reached.

```
//JAVAPRG1 EXEC PGM=BPXBATCH,  
// PARM=('SH &PATHPREF/usr/lpp/cicsts/&USSDIR/lib/wsd/DFHWS2LS ',  
// '&JAVADIR &USSDIR &TMPDIR.&TMPFILE. &SERVICE ',  
// '&PATHPREF')
```
8. Ensure that java is installed and enabled in OMVS.
9. In the SIT table for the CICS region ensure that XTRAN=YES is specified
10. In the definition of transaction CPIH, ensure that RESSEC(YES) is specified
11. If not already active, activate the CICS resource class TCICSTRN
12. Provide developers with the following info:
 - IP address and port for both SSL and non-SSL access to web services.
 - The name of the HFS directory which contains pipeline configuration files. For example /u/cicsdpp4/pipelines. Developers must have write access to this directory.
 - The name of the Web service binding HFS directory or "pickup" directory which contains Web service binding files that are to be installed automatically by the CICS scanning mechanism. For example /u/cicsdpp4/wsbinding/provider. Developers must have write access to this directory.
 - The name of the HFS "shelf" directory in which CICS will store installed wsbinding files, e.g. /u/cicsdpp4/var. Developers must have write access to this directory.
 - The name of an HFS directory for storing wsdl files, e.g. /u/cicsdpp4/webservices/wsd. Developers must have write access to this directory.