

# Running/Debugging AppEngine Program Using AePlus

# **Tutorial Document**

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# Introduction

**AePlus** (Application Engine Workbench with Interactive Debugger) is a productivity tool that provides developers with a user friendly front-end through which they can run, test and debug AppEngine programs more efficiently thereby cutting down development effort and time. This results in time saving as well as improved quality outcome.

# **AePlus Terminologies**

PSoft User:	User name that will be used to Logon PeopleSoft application. e.g. PS, VP1 etc.			
Source Database:	PeopleSoft Database name where AppEngine Source resides, e.g. HR90DEV, HR90INT etc			
Target Database:	PeopleSoft Database name where AppEngine Runs e.g. HR90DEV, HR90INT etc. Generally it is same as Source Database but you can choose it to be different in that case AppEngine runs in Target database picking source code from Source Database. Source and Target Databases should have same Tools version.			
AE Name:	Application Engine Program Name.			
AE Descr:	Application Engine Program Description.			
AePlus User Name:	User name registered with SqrPlus/PsPlus. This is same as LanId that you use to logon to Windows.			
AePlus User ID:	PeopleSoft is a multi-user/multi-process system. To avoid any conflicts with other AePlus User running/debugging AppEngine programs, AePlus uses an unique identifier called AePlus User ID. This is constructed from Seria Number allocated to AePlus User Name. For example for User NeilS in the screen below, User ID is U002.			



🖪, sqrpa	dmn - User Mainte	enance		
Allow Auto Client Install     Image: State Sta				
User	Maintenanc	e	Cancel	
SL.#	Access Codes	User Name	▲ <u>Insert Row</u>	
1	SARG	Scott	Delete Row	
2	SARG	NeilS	Save and Evit	
3	SARG			
4	SARG	SteveS		
5	SARG			
6				
7				
8				
9				
10				
11		ļ		
12				
14				
1 <u>4</u>	l	ļ {	-1	

All PeopleSoft objects that relate to AePlus start with PP\_XXX. These objects are integral part of AePlus. These objects are installed automatically except for the followings:

SINo	Component	Remarks		
1	Project: PP_AEPLS	This project is available under aeplus folder. This should be imported in PeopleSoft Target Database if you would like to run AppEngine thru Process Scheduler. (i.e. Run Thru ProcSched checkbox is ticked). This project contains PP_SCHD_AE AppEngine that is used by AePlus to Schedule AppEngine program in Target Database.		
2	Project: PP_DEMO	This project is available under aeplus folder. This should be imported in PeopleSoft Source Database if you would like to evaluate AePlus using supplied Demo AppEngine programs. Project does not contain Process Definition for PP_DEMO AppEngine program.		
3	<b>Process Definition:</b> PP_Unnn_A00	<ul> <li>This is required if you would like to run AppEngine thru Process</li> <li>Scheduler and :</li> <li>In Debug mode Or</li> <li>In Target database that is different to Source database</li> </ul>		



		Create process definition for Application Engine PP_Unnn_A00 where Unnn is your AePlus User ID. For Example PP_U002_A00 if you are the second SqrPlus/AePlus user. Please see User Maintenance screen under SqrPlus User Administration for the number that has been allotted to you.
4	Server Agent	This is required if you would like to run AppEngine thru Process Scheduler and in Debug mode. Please see ' <i>Installing Server Agent'</i> for further details.



### **Process Definition Setup**

When AePlus runs AppEngine program in debug mode or when Source Database is different to Target Database and run location is not client, there must be a process definition for AppEngine program PP\_Unnn\_A00 where Unnn is AePlus User ID. AePlus uses this program name as placeholder. This also ensures that there is no conflict when two AppEngine programs are run at the same time by different PeopleSoft user.

Screen captures below show how this Process Definition should be created in PeopleSoft when AePlus User ID is U005.

$\mathbf{D}$ 1 C C	
PeopleSoft.	Home   Marviet   MultiChennel Console   Add to Fevorites   Sign out
1	
Menu	
▷ Portal	New Window
D Search Engine	Processo
D Personalization	Frocesses
	Find on Evicting Value
Requests	End an Existing value Autu a New Value
- Process Monitor	
- Process Types	Application Engine
– Processes	Process Name: PP_(U005)_A00
- <u>Jobs</u>	
- <u>Schedule JobSet</u>	Add
- Recurrences	
- Servers	Find an Existing Value   Add a New Value
- Report Nodes	
- Daemon Group	
- <u>System Settings</u>	
- Batth Himings	
D Application Engine	
Integration Broker	
REN Server Configuration	
D MultiChannel Framework	
D Archive Data	
D Translations	
D EDI Manager	
D Mass Changes	



PeopleSoft		
reopieson	Home   Worklist   MultiChannel Console	Add to Favorites   Sign out
Menu 🗖		
D Portal	New Wi	ndow   Customize Page 🔺
Search Engine		
Personalization	<b>Process Definition</b> Process Definition Options Override Options	nation 🕑
	Drocess Type: Application Engine	
- <u>System Process</u>	Name: DD Lloos 400	
- Process Monitor	Name: PP_0005_A00	
- Process Types	*Description: PP U005 A00	🗹 API Aware
– Processes		_
– <u>Jobs</u>	Long Description:	Restart Enabled?
- Schedule JobSet		Retry Count: 0
Definitions – Becurrences	V	-
- Servers	Modium V	
- Report Nodes		
- Daemon Group	*Process Category: Default Q Default Category	
- <u>System Settings</u>	System Constraints	
- Batch Himings		
D Application Engine	Max Concurrent: Max Processing Time:	minutes
Integration Broker		
REN Server Configuration	Mutually Exclusive Process(es)	Customize   Find   📟
MultiChannel Framework     Archive Date	<u>*Process Type</u> <u>*Process Name</u> <u>Description</u>	
Data Archive Manager	Q Q	
D Translations		
EDI Manager		
D Mass Changes	Save Notify	
Performance Monitor     Niceb Profile		▼ 



PeopleSoft	
	Home   <u>Worklist</u>   <u>MultiChannel Console</u>   <u>Add to Favorites</u>   <u>Sign out</u>
Menu 🗖	
N Portal	New Window   Customize Page -
D Search Engine	
D Personalization	Process Definition Process Definition Options Override Options Destination
- System Process	Process Type: Application Engine
Requests	Name: PP[U005]A00
- Process Monitor	
- Process Types	Server Name:
- Processes	
- Schedule JobSet	
Definitions	On File Creation
- Recurrences	
- Servers	
- Report Nodes	Wait for File: Time Out Max Minutes:
- System Settings	
- Batch Timings	System Recovery Process
D Cube Manager	Process Type: Q Process Name: Q
Application Engine	
Integration Broker	Process Security
REN Server Configuration MultiChannel Framework	Component Process Groups
D Archive Data	
D Data Archive Manager	
▷ Translations	
D EDI Manager	
D Mass Changes	📄 🖳 Save 🔄 Notify 📑 Add 💋
D Performance Monitor	

Other tabs may have defaults values Click Save Button to save the Process Definition for AppEngine Program Name PP\_U005\_A00. This definition is only for AePlus user who has been setup as fifth user under SqrPlus/PsPlus. Each AePlus user should have their own PP\_U005\_A00 process definition setup.

1	🕄, sqrpadmn - User Maintenance				
	Allow Auto Client Install: Licenses Available: S:5,A:5,B:5,G:5				
	User	Maintenanc	e		Cancel
	SL.#	Access Codes	User Name	<b>•</b>	Insert Row
	1	SARG	Scott		<u>D</u> elete Row
	2	SARG	NeilS		Save and Exit
	3 🗖	SARG			
	4	SARG	SteveS		
	5	SARG	FifthUser		
	6				
	7				
	8				
	9				



# **AePlus Tutorial**

### This section describes a step-by-step tutorial for using AePlus.

#### **Setup/Installation Check**

AePlus uses PeopleTools product as it is. Before you start using AePlus you must make sure that the AppEngine program (psae.exe) has been setup/installed properly on your PC. This is done as part of PeopleTools setup/install on your PC.

Invoke AePlus Workbench. This program (aewb.exe) is located in your Server directory (e.g. P:\sritech). You may invoke this through AePlus Workbench shortcut (created while installing SqrPlus/PsPlus client) on your Desktop. This will put you in the following AePlus Workbench screen. The screen supports on-line help.

👫 AePlus Work Bench, SRI Technologies, User:sritech 📃 🗖 🗙				
<u>File E</u> dit <u>V</u> iew Optior	ns <u>U</u> tility <u>D</u> ebug <u>W</u> indow	Help		
AE Parameters				×
	-	-		
Server Agent	Client	r Test Run	Thru ProcSched 🔲	Server Name
Source Database: App Engine Program	PP_DEMO	Target Database (WI Same As Source	here AE Runs):	Run <u>N</u> ormal
DbName	H88DMO	DbName	H88DMO	Run With <u>D</u> ebug
Psoft UserName	PS	Psoft UserName	PS	Save
Psoft Password	**	Psoft Password	**	View <u>A</u> ePLus Log
AE Log File	D:\temp\PP_DEM	Run Control ID	Run2	View AE Log
Addl. Cmd Line Args	-trace 123	Process Instance	0	E <u>x</u> it
	,			
📑 AE Options				<u>_   ×</u>
<u>G</u> enerate AE Listing	View AE List View AE	Html View AE Progra	m <u>F</u> low	
Include/Compile 0	ptions			
SL.# Options				▲ <u>I</u> nsert Row
1 !debug c	ptions			<u>D</u> elete Row
2 !Comma S	eparated Ae Library	Programs that	should be includ	
A LComma Separated Functib (FieldFormula) RecoleCode that should				
5 FUNC LIB INCLUDES=PP DEMO LIB.AE PROGRAM /Comma Separated F				
6 !Selective PeopleCode compile options				
7 !program	7 !program=[+-]			
8 program=+ !compile entire pi				
9 !dbg_ae=[+-]ae_program1,[+-]ae_program2,				
(Elapse Time	e: 1:26:2)			



In addition, PeopleSoft options (Options->PeopleSoft Options) should be setup correctly. This screen mainly defines setup related to PeopleSoft like PS\_HOME, Database type etc. Please see the screen below:

, aewb -	- PeopleSoft Options
Cancel	Insert Row Delete Row Save and Exit
People	Soft Options
SL.#	PeopleSoft Options
1	! This section defines some PeopleSoft related parameters/Options
2	PS_HOME= !Directory where PeopleTools is install
3	
4	PSTOOLS_VERSION=8.45 PeopleTools version like 7.58, 8.17 et
5	PSTOOLS_MARKET=AUS !PeopleTools Market in addition to GBL.
6	! Three letter codes are:
7	AUS, BEL, CAN, CHE, DEU, FRA, GBR, JPN
8	
9	PSIUULS_LANG=ENG Peopleloois Labguage. Default ENG
10	DUI Dutch Dutch
12	ENG ENGLISH ENGLISH
13	FRA French French
14	GER German German
15	INE Intl Eng International E
16	ITA Italian Italian
17	JPN Japanese Japanese
18	POR Portuguese Portuguese
19	!
1	

**PS\_HOME** should be left as blank that takes the value of PS\_HOME as defind at AePlus installation time. Different value like p:\pt843 may be specified if you would like to use different Tools Version for time being.

**PSTOOLS\_VERSION** should also be specified in n.nn format ignoring other characters like Tools Release 8.45.10 may be entered as 8.45.

Enter your preferred source code editor. This is available under Options->General Options. Default value of 'System Editor' is notepad.



Java Api's: AePlus uses few java api's while it runs AppEngine in debug mode. These Api's are:

- &javafile = CreateJavaObject("java.io.File", &FileName)
- &JavaThread = CreateJavaObject("java.lang.Thread")

It is important that these api's call work without any errors. If you find any error message while calling these api's, this would imply that PeopleTools installation is not properly done and some java components are missing. By default, when PeopleTools is installaed, java components are automatically installed. Supplied demo program PP\_DEMO has included above java api's calls to ensure that your PeopleTools installation is proper. For example, if PeopleTools installation is proper, you should be able to run demo AppEngine program PP\_DEMO as Normal without any errors.

If Java Api's fail to work as expected, AePlus uses Win Api's instead to cope with the situation. However this switchover is meaningful only if AppEngine runs under windows.

# **Run Options:**

Depending on setup and installation, you can run an AppEngine in many ways. The table below explains various combinations along with the prerequisites:

Run Location	Run Option Tools Version	Run Description	Prerequisites
	A. Option- <b>CNS</b> 8.1 and above	Run Normal at Client in Source Database	None
<b>Client:</b> Run NOT Thru Process	B. Option- <b>CNT</b> 8.1 and above	Run Normal at Client in Target Database	Objects/Tables used/referred by AppEngine program that is not part of AppEngine program definition must exist in Target Database.
Scheduler	C. Option-CDS 8.4 and above	Run with Debug at Client in Source Database	None
Using Windows psae.exe	D. Option- <b>CDT</b> 8.4 and above	Run with Debug at Client in Target Database	Objects/Tables used/referred by AppEngine program that is not part of AppEngine program definition must exist in Target Database.



	E. Option- <b>SNS</b> 8.4 and above	Run Normal at Server in Source Database	<ul> <li>PP_SCHD_AE AppEngine in Source Database.</li> <li>Process Definition of Source AppEngine in Source Database.</li> </ul>
	F. Option- <b>SNT</b> <b>8.4</b> and above	Run Normal at Server in Target Database	<ul> <li>PP_SCHD_AE AppEngine in Target Database.</li> <li>Process Definition for PP_Unnn_A00 AppEngine in Target Database where Unnn is AePlus User ID.</li> <li>Objects/Tables used/referred by AppEngine program that is not part of AppEngine program definition must exist in Target Database.</li> </ul>
<b>Server:</b> Run Thru Process Scheduler Using Server psae	G. Option- <b>SDS</b> <b>8.4</b> and above	Run with Debug at Server in Source Database	<ul> <li>PP_SCHD_AE AppEngine in Source Database.</li> <li>Process Definition for PP_Unnn_A00 AppEngine in Source Database where Unnn is AePlus User ID.</li> <li>Server Agent running on machine where Process Scheduler is running.</li> </ul>
	H. Option- <b>SDT</b> 8.4 and above	Run with Debug at Server in Target Database	<ul> <li>PP_SCHD_AE AppEngine in Target Database.</li> <li>Process Definition for PP_Unnn_A00 AppEngine in Target Database where Unnn is AePlus User ID.</li> <li>Objects/Tables used/referred by AppEngine program that is not part of AppEngine program definition must exist in Target Database.</li> <li>Server Agent running on machine where Target Process Scheduler is running.</li> </ul>



### **Snapshot and Source Code Listing:**

In addition to running AppEngine program as normal or in debug mode, you can also:

• Take a snapshot of AppEngine source code for Source Version Control purpose.

Snapshot creates DMS \*.dat version of AppEngine program and DMS import script that should be stored in Source Version Control repository. This \*.dat and \*.dms script file can be used to restore AppEngine program from history.

• Generate AppEngine Source Code listing for quick browsing and analysis. This provides text and html version of source code for quick analysis.

👫 AePlus Work Bench, SRI Technologies, User:sritech	
File Edit View Options Utility Debug Window Help	
AE Parameters Create AE Snapshot View Snapshot Text	
Server Agent C CreateLibrary	🛛 Run Thru ProcSched 🗖 Server Name 🍺
Source Database:       App Engine Program       PP_DEMO         App Engine Program       PP_DEMO         DbName       H88DMO         Psoft UserName       PS         Psoft Password       **         AE Log File       D: \temp\PP_DEM         Addl. Cmd Line Args       -trace       123	get Database (Where AE Runs):         Same As Source         DbName       H88DMO         Psoft UserName       PS         Psoft Password       **         Run Control ID       Run 2         rocess Instance       0
Generate AE Listing View AE List View AE Html Include/Compile Options I I I Options I I I I Options I I I Options I I Option I I Options I I Options I	View AE Program Flow



# **List Version**

List version looks something like:

000001	Source D	bName:	H88DMO	
000002	Psoft Us	er:	PS	
000003	AePlus U	lser ID: Iser Name:	uuu4	
000000	AE Name:	Ser Name.	PP DEMO	
000006	TimeStam	ıp:	2010-08-30 21:40:07	
000007	AE Descr	:	Demo AE program	ning footunes in Cut made
000008	AE Comme	nts:	This is a demo AE program to demonstrate AppEngine Debug	ging leatures in GUI mode.
000010				
000011				
000012	0001 :F	P_DEMO.MA	N.GetAE_ID.Active.Get Current ApplId	
.GBL.de	0001•s	ten Commer	ts> Get Current Appl-TD	
000014	0001.0	cop contact	, ood ouriene nppr 15.	
000015	0000:	SQL		
000016	0001:	%Select	(AE_APPLID)	
000017	0002:	FROM P	SAEProgram	
000019	0000.	111011 11		
000020	0002 :P	P_DEMO.MA	N.START.Active.Common Start Actions	.GBL.default.1900-01-01.
000021	0000:	Call Sect	ion PP_AE_LIB.PP_START	
000022	0003 :F	P DEMO.MA	N.ReadRC.Active.Read Run Control	.GBL.default.1900-01-01.
000024	0000:	SQL		
000025	0001:	%Select	(ASOFDATE, FLAG1, FLAG2)	
000026	0002:	SELECT	<pre>%DateOut(ASOFDATE) , FLAG1 , FLAG2</pre>	
000027	0003:	WHERE (	PP_DEMO_RC PRID = %Bind(OPRID) AND	
000029	0005:	I	RUN CNTL ID = %Bind(RUN CNTL ID)	
000030				
000031	0004 :F	P_DEMO.MA	N.SetRC.Active.Set Defaults in RC if not foun	.GBL.default.1900-01-01.
000032	0001:5	cep commen	tts Set Runcontrol.	
000034	0000:	PeopleCod	le	
000035	0001:	Declare	Function ToLog PeopleCode PP_DEMO_LIB.AE_PROGRAM FieldF	'ormula;
000036	0002:	Clobal	number tabl menu itoms.	
000038	0003:	Global	number &gbl Navig items;	
000039	0005:			
000040	0006:	ToLog (	", "AET OPRID: "   PP_DEMO_AET.OPRID);	
000041	0007:	ToLog ('	", "AET RUN_CNTL_ID: "   PP_DEMO_AET.RUN_CNTL_ID);	
000042	00009:	If None	(PP DEMO AET.ASOFDATE) Then	
000044	0010:	/* I	C table is not populated */	
000045	0011:	ToLo	g("", "RC Not Populated, Setting Defaults RC Values.");	
000046	0012:	PP_I	JEMO AET.ASOFDATE = %Date; JEMO AET FLAG1 = "Y":	
000048	0010:	PP I	DEMO AET.FLAG2 = "Y";	
000049	0015:	End-If,	-	
000347	0011 :F	P_DEMO.PP	MENU.Step02.Active.Step02 description .	GBL.default.1951-01-01.
000348	0000:	PeopleCoo	le - Eurotian Malag BaarlaCada DD DEMO LID AE DDOCDAM Fielde	
000349	0001:	Global	number & gbl menu items;	ofinitia,
000351	0003:			
000352	0004:	ToLog ('	", "Total Menu Items Listed: "   &gbl_menu_items);	
000353	0005:			
000355				
000356	0012 :F	P_DEMO.PP	NAVIG.Step01.Active.Step01 description .	GBL.default.1900-01-01.
000357	0000:	PeopleCoo		1
000358	0001:	Declare	Function Tolog PeopleCode PP_DEMO_LIB.AE_PROGRAM Fields	ormula;
000360	0003:	ToLog(	", "Navigations yet to be processed");	
000361	0004:			
000362	0005:	&INFO =	GetRecord(@("RECORD."   "PP_DEMO_AET"));	
000364	0008:	αriif LD	- aimro.decrieiu(@( rinib.   "OPKID"));	
000365	0008:	&tmp =	&MYFLD.value	
000366	0009:	ToLog(	", "OprId Value: "   &tmp);	
000367	0010:	rem las	t line.	
000369	0012:	теш таз		
000370				
000371	** End C	f Source (	code **	
000372	** F	eclared G	obal/Component Generic Data Type Variables	
000374	L	Gorarea G.	and the sense of t	



000375	Slno	Scope	Туре	Variable	Dimension	Line Reference
000376						
000377						
000378	0001	component	number	&com_var_num		94
000379	0002	component	string	&com_var_str		95
000380	0003	global	number	&gbl_menu_items		37,336,350
000381	0004	global	number	&gbl_navig_items		38
000382	0005	global	boolean	&gbl_var_bool		90
000383	0006	global	date	&gbl_var_date		88
000384	0007	global	datetime	&gbl_var_datetime		89
000385	8000	global	float	&gbl_var_float		91
000386	0009	global	integer	&gbl_var_integer		92
000387	0010	global	number	&gbl_var_num		86
000388	0011	global	string	&gbl_var_str		87,96
000389	0012	global	time	&gbl_var_time		93
000390						
000391 **	Declar	ed Global/Com	ponent Generi	c Data type Arrays		
000392						
000393	Slno	Scope	Туре	Variable	Dimension	Line Reference
000394						
000395						
000396	0001	component	number	&com arr num	2	106
000397	0002	component	string	&com arr str	2	107
000398	0003	global	boolean	&gbl arr bool	1	102
000399	0004	global	date	&gbl arr date	2	100
000400	0005	global	datetime	&gbl arr datetime	2	101
000401	0006	global	float	&gbl arr float	2	103
000402	0007	global	integer	&gbl arr integer	2	104
000403	0008	global	number	&gbl arr num	2	98
000404	0009	global	string	&gbl arr str	2	99
000405	0010	global	time	&gbl arr time	2	105
000406		2				
000407 **	Declar	ed Global/Com	oonent Record	Variables		
000408						
000409	Slno	Scope	Tvpe	Variable	Dimension	Line Reference
000410						
000411						
000412	0001	global	record	&flddefn		111
000413	0002	global	record	&recdefn		110
000414		2				
000415 **	Declar	ed Global/Com	oonent Field '	Variables		
000416						
000417	Slno	Scope	Type	Variable	Dimension	Line Reference
000418						
000419						
000420	0001	global	field	&flddescr		113
000421	0002	global	field	&recdescr		112
000422		5-5001				
000423						

000424 \*\* End Of Listing \*\* 000425



# **HTML Version**

Html version looks something like:

🚈 D:\temp\PP_DEM0_H88DM0.html - Microsoft Internet Explorer 📃 🖂 🗙
Eile Edit View Favorites Tools Help
000001 Source DBName: RooDAD
000002 APPlus User TD: U004
000004 AePlus User Name: sritech
000005 AE Name: PP DEMO
000006 TimeStamp: 2010-10-31 15:21:43
000007 AE Descr: Demo AE program
000008 AE Comments: This is a demo AE program to demostrate App Engine Debugging features
000009
000010 ** AE Section Call Tree **
000011
000012 00 PP_DEMO.MAIN
000013 05 PP_AE_LIB.PP_START
000014 05 PP_DEMO. PP_Menus
000015 05 <u>PP_DEMO.PP_NAVIG</u>
CODOLE US <u>PP_AE_LIB.PP_STOP</u>
000019 0001 · PP DEVO VGTN Section
000012 0001 PDDVM MAIN SetAF TO Active Set Current Amplife
000021 0000 . 0001:Sten Commenter-> Get Current hunl-TD
000021 000 . 0001.Step comments> bet current appr-10.
000023 0000: 501
000024 0001: %Select(AE APPLID)
000025 0002: SELECT % AEProgram
000026 0003: FROM PS INSTALLATION
000027
000028 0002 :PP_DEMO.MAIN.START.Active.Common Start Actions
000029 0000: Call Section PP_AE_LIB.PP_START
000030
100031 0003 •DD DEMO MAIN DeadDC Active Dead Dun Control
E Done Wy Computer



# **Running AppEngine Program**

AppEngine can be run in many ways. This section describes various Run Options.

# A. Run Option-CNS : Run Normal at Client in Source Database

Enter AppEngine Name, Database, Username and Password etc as shown in the screen below:

👫 AePlus Work Bench, SRI Technologies, User:sritech	_ 🗆 ×
<u> Eile Edit View Options Utility Debug Window Help</u>	
🖥 AE Parameters	<u>- 🗆 ×</u>
Server Agent Client 🔽 Test Run Thru ProcSched 🗖 Server Na	ime
Source Database:       Target Database (Where AE Runs):         App Engine Program       PP_DEMO         DbName       H88DMO         Psoft UserName       PS         Psoft Password       **         AE Log File       D: \temp\PP_DEM         Addl. Cmd Line Args       -trace	Run <u>N</u> ormal Run With <u>D</u> ebug <u>S</u> ave View <u>A</u> ePLus Log View AE <u>L</u> og E <u>x</u> it
AE Options           Generate AE Listing         View AE List           View AE Html         View AE Program Flow           Include/Compile Options         View AE Html	
SL.# Options         1       !debug options         2       !Comma Separated Ae Library Programs that should be included i         3       AE_INCLUDES=PP_AE_LIB         4       !Comma Separated FuncLib (FieldFormula) PeopleCode that should         5       FUNC_LIB_INCLUDES=PP_DEMO_LIB.AE_PROGRAM         6       !Selective PeopleCode compile options         7       !program=[+-]         8       program=+	Insert Row Delete Row
List File for PP DEMO Created Successfully.	

- Keep 'Run Location' as Client. This means that AePlus will use your psae.exe located under PS\_HOME to run AppEngine programs. Enter 'App Engine Program:' as 'PP\_DEMO'. This is supplied demo program that should be loaded into Source Database by importing supplied project PP\_DEMO. Alternatively, you can enter any App Engine program that you would like to run thru AePlus Workbench.
- This will update the 'Ae Log File' text box with the default value.



- Tick 'Same as Source' Check box as we would like to run this AppEngine in Source Database itself.
- Enter Source DbName, PeopleSoft User and PeopleSoft Password. For example: H88DMO, PS and password for PeopleSoft User PS.
- Enter 'Run Control Id' that this AppEngine will use.
- Process Instance can be left as 0.
- Enter 'Additional Cmd Line Args' that you would like to have for this AppEngine. For example, -TRACE 123 can be used to produce \*.AET file with trace.
- Click 'Run Normal' to run this AppEngine in source database.

The specified AppEngine will run and produce the AE Log file like: D:\temp\PP\_DEMO.log. Click 'View Log File' to verify results in log file.

If any errors are reported (PeopleTools/Windows related or anything else), or you did not get the log file, the problem needs to be FIXED before proceeding further.

AePlus log may be referred (by clicking 'View AePlus Log') to analyze the issue. It may be due to psae.exe or psdmt.exe not able to complete successfully. This log file shows what command was issue like:

2010-08-18 23:22:37 Exporting AE Definition PP\_DEMO from H88DMO 2010-08-1823:22:37 Executing Command: F:\pt845\bin\client\winx86\psdmt.exe -CT MICROSFT -CD H88DMO -CO PS -CP <Password> -FP D:\temp\PP\_U004\_aedms\_exp.dms

AePlus uses psdmt.exe (Data Mover) program to extract AppEngine definition. This is launched Synchronously. If this fails to launch due to insufficient windows resources, AePlus will continue to wait. To terminate this wait, use 'cancel Active/Synchronously wait' that can be invoked from:

AePlus Workbench->File-> Cancel Active/Synchronous Wait

Try again after freeing some Windows resources.



# **B.** Option-CNT : Run Normal at Client in Target Database

Enter AppEngine Name, Database, Username and Password etc as shown in the screen below:

AePlus Work Bench, SRI Technologies, User:sritech	
File Edit View Options Othicy Debug Window Help	
Server Agent Client	Test Run Thru ProcSched 🗖 Server Name
Source Database:         App Engine Program       PP_DEMO         DbName       H88DMO         Psoft UserName       PS         Psoft Password       **         AE Log File       D: \temp\PP_DEM         Addl. Cmd Line Args       -trace	Target Database (Where AE Runs):         Same As Source         DbName         H88INT         Psoft UserName         PS         Save         View AePLus Log         View AePLus Log         View AE Log         Process Instance
AE Options           Generate AE Listing         View AE List         View AE Html           Include/Compile Options         View AE Html	View AE Program <u>F</u> low
SL.# Options 1 debug options 2 !Comma Separated Ae Library Pr 3 AE_INCLUDES=PP_AE_LIB 4 !Comma Separated FuncLib (Fiel 5 FUNC_LIB_INCLUDES=PP_DEMO_LIB. 6 !Selective PeopleCode compile 7 !program=[+-] 8 program=+	rograms that should be included i       Insert Row         rograms that should be included i       Imsert Row         Imsert Row       Imsert Row
List File for PD DEMO Created	Successfully

- Uncheck 'Same as Source' Check box as we would like to run this AppEngine in different Database (Different to Source Database).
- Enter Target DbName, PeopleSoft User and PeopleSoft Password. For example: H88INT, PS and password for PeopleSoft User PS.
- Click 'Run Normal' to run this AppEngine in Target Database.

This will get AppEngine definition from source database. Compiles it as PP\_Unnn\_A00 AppEngine program in Target Database where Unnn AePlus\_User ID. Runs newly compiled program in Target database.



It is important that each AePlus User ID is unique so that two users who may share same PeopleSoft Username (Like PS) have their own version of AppEngine program (PP\_Unnn\_A00) in Target database. PP\_Unnn\_A00 is just a placeholder for AppEngine program that is used for various AePlus activities like running AppEngine program in different database or running it in Debug mode.

The compiled version of AppEngine holds objects (Sections/Steps/Actions) specific to Source AppEngine program only (i.e. all other objects and data are used from Target database). These objects are used to run AppEngine program in Target Database using the application data of Target database. With this flexibility, you can run AppEngine program in different database without changing/migrating AppEngine program in target database but utilizing Target database application data set that is hard to simulate in Source database to address particular business data scenario. Compiled version of AppEngine uses/refers all other objects from Target database.



# **C. Run Option-CDS : Run with Debug at Client in Source Database**

Although you can run any AppEngine program in debug mode but for demonstration purpose supplied demo program PP\_DEMO has been used. This can be loaded into source database by importing PP\_DEMO project located in aeplus folder under 'Server Directory' (e.g. p:\sritech\aeplus).

This is a small comprehensive AppEngine program that uses:

- State Record PP\_DEMO\_AET
- Derived Record PP\_DEMO\_LIB for some FuncLib PeopleCode
- Run Control Record PP\_DEMO\_RC
- AppEngine Library PP\_AE\_LIB
- AppEngine SQL
- Comprehensive PeopleCode



Enter AppEngine Name, Database, Username and Password etc as shown in the screen below:

Elle Edit View Options Utility Debug Window Help			
a AE Parameters	. 🗆 ×		
Server Agent Client 🔽 Test Run Thru ProcSched 🗖 Server Name			
Source Database:			
App Engine Program PP_DEMO Same As Source 🔽 Run Norr	nal		
DbName H88DMO DbName H88DMO Bun With D	ebug		
Psoft UserName PS Psoft UserName PS Save			
Psoft Password ** Psoft Password **	is Log		
AE Log File D: \temp\PP_DEM   Bun Control ID View AE L	og		
Addl. Cmd Line Args Process Instance 0 Exit			
🖹 AE Options			
Generate AE Listing View AE List View AE Html View AE Program Flow	Generate AE Listing View AE List View AE Html View AE Program Flow		
Include/Compile Options			
SL.# Options	w		
1 debug options	1 debug options		
Comma Separated Ae Library Programs that should be included i			
3 AE_INCLUDES=PP_AE_LIB !Comma Separated i			
4 [Comma Separated FuncLib (FieldFormula) PeopleCode that should			
5 FUNC_LIB_INCLUDES=PP_DEMO_LIB.AE_PROGRAM !Comma Separated I			
6 !Selective PeopleCode compile options			
7 !program=[+-]			
8  program=+ !compile entire pi▼			
List Rile for DD DRMO Creeted Suggessfully			

- Since AppEngine program will run in debug mode at client, Select 'Server Agent' as Client and Un-Check 'Run Thru ProcSched' checkbox.
- Enter PP DEMO as 'App Engine Program'
- Check 'Same as Source' Check box as we would like to run this AppEngine in Source Database.
- Enter Source DbName, PeopleSoft User and PeopleSoft Password. For example: H88DMO, PS and password for PeopleSoft User PS.
- 'Addl Cmd Line Args' can be left as blank.
- Run Control Id can be left as blank.
- Process Instance can be left as 0
- Click 'Run With Debug' to run this AppEngine in Source Database with Debug.



AePlus goes thru the compilation process that is logged in AePlus log file (Unnn\_AePlus.log in AePlus Temp folder. e.g. c:\temp\U001\_AePlus.log). If compilation is successful you will get into following screen for interactive debug session with your AppEngine program.

🕂 AePlus Work B	ench, SRI Technologies, User:sritech	_ 🗆 ×
<u>File Edit View G</u>	<u>Options Utility <b>Debug Window Help</b></u>	
Source Windo	w	_ 🗆 🗵
Source Step:	PP_DEMO>MAIN>GetAE_IDExit Debug Mode Run Location: Client	
00004	Aeflus User ID: 0004 Aeflus User Name: spitech	
00006	AE Name: PP DEMO	
00007	TimeStamp: 2010-10-31 15:48:34	
00008	AE Descr: Demo AE program	
00009		
00010		
00012	0001 :PP_DEMO.MAIN Section	
00013* =>	0001 :PP_DEMO.MAIN.GetAE_ID.Active.Get Current ApplId	
00014	0000 : 0001:Step Comments> Get Current Appl-ID.	
00015	0000. COT	
00017	0001: %Select(AE APPLID)	
00018	0002: SELECT %AEProgram	
00019	0003: FROM PS_INSTALLATION	-
🛐 Display Windo	ow	- 🗆 🗵
🖹 Command Wir	ndow	
Type AePlus Debu	uq command and press Return/Enter	
		<b>^</b>
		[#]
L	1	
J		



In above screen the demo program PP\_DEMO is running in Database H88DMO in debug mode and ready to execute first Step of the Main section while waiting for the user input. At any point while program is waiting for user input, a debug command can be used. List of debug commands are available under Menu Item 'Debug'

A AePlus Work B	ench, SRI Tech	nologies, User:sritech		
File Edit View C	Options Utility	Debug Window Help		
Source Windo Source Step:	w PP_DEMO>MA	Step Step Into Step Over	F8 Shift+F8 Ctrl+F8	de Run Location: Client
00004 00005	AePlus Us AePlus Us	Go (Run to Next Break Point) Commit	F5 Ctrl+F5	<u> </u>
00006 00007 00008 00009	AE Name: TimeStamp AE Descr:	Toggle BreakPoint List/Save BreakPoints Cancel All BreakPoints Restore BreakPoints	F9 Ctrl+F9 Shift+F9 Ctrl+R	
00010 00011 00012 000138 = 5	0001 :P: 0001 :P:	Examine Global Variable Deposit Global Variable Watch Global Variable	F6 Shift+F6 Ctrl+F6	t Current ApplId
00014 00015 00016 00017	0000 : 0000 : 0001 :	Examine Array Variable Deposit Array Variable Watch Array Variable	F7 Shift+F7 Ctrl+F7	rent Appi-ID.
00018	0002: 0003:	Examine StateRecordField Deposit StateRecordField Watch StateRecordField	F12 Shift+F12 Ctrl+F12	
🗟 Display Windo	WC	Examine Local Variable Examine System Variable	F11 Shift+F11	
		Exit Debug Session		f
Command Wir	ndow Ja command and J	press Beturn/Enter		
				▲ 
				T



The screen is divided into three windows as:

- Display window will be blank at this stage. Later on, this window will be used to display the results of various AePlus debug commands.
- Command window will also be blank at this stage. The left column shows the serial number and will be 1 at this stage.
- Source and Display windows are 'Read Only' windows. Command window provides the area where you will enter various AePlus debug commands.

Current line that will be executed is shown as:

II.	00012	0001 : PP_DEMO.MAIN Section		
н.	00013* =>	0001 :PP_DEMO.MAIN.GetAE_ID.Active.Get Current ApplId		
	00014	0000 : 0001:Step Comments> Get Current Appl-ID.		

which will execute SQL:

0001:	%Select(AE_APPLID)
0002:	SELECT % AEProgram
0003:	FROM PS_INSTALLATION

"\*' after the line number indicates that it is a valid source line where break point can be set.

Enter F8 (or enter step in command window followed by 'Enter' key)

Г	🖡 Command Window					
IF	Type AePlus Debug command and press Return/Enter					
			<u> </u>			
		step				
			•			
1						

This will execute SQL at step 0001 and cursor will move to Step 0002 as shown below:



	······································
00020	
00021* =>	0002 :PP_DEMO.MAIN.START.Active.Common Start Actions
00022	0000: Call Section PP_AE_LIB.PP_START
00023	
00024*	0003 : PP_DEMO.MAIN.ReadRC.Active.Read Run Control
00025	0000: SQL
00026	0001: %Select(ASOFDATE, FLAG1, FLAG2)
00027	0002: SELECT %DateOut(ASOFDATE) , FLAG1 , FLAG2
00028	0003: FROM PS_PP_DEMO_RC
00029	0004: WHERE OPRID = %Bind(OPRID)
00030	0005: AND RUN_CNTL_ID = %Bind(RUN_CNTL_ID)
00031	

Double click at line number 32 to set a break point.

👫 AePlus Work	Bench, SRI Technologies, User:sritech	_ 🗆 ×
<u>File E</u> dit <u>V</u> iew	Options Utility Debug Window Help	
Source Wind	dow	
Source Step:		
00019	0003: FROM PS_INSTALLATION	-
	N 0002 PP DEMO MAIN START Active Common Start Actions	
00022	0000: Call Section PP_AE_LIB.PP_START	[7]
00023	0002 (PR DEMO WAIN ReadEd Active Read Due Control	
00024*	0000: SQL	
00026	0001: %Select(ASOFDATE, FLAG1, FLAG2)	
00027	0002: SELECT %DateOut(ASOFDATE) , FLAG1 , FLAG2	
00029	0004: WHERE OFRID = %Bind(OPRID)	
00030	0005: AND RUN_CNTL_ID = %Bind(RUN_CNTL_ID)	
00031	0004 PP DEMO MAIN SetRC Active Set Defaults in RC if not	foun
00033	0000 : 0001:Step Comments> Set RunControl.	
00034		<b>-</b>
Dicolau Win	dam	
	uu <del>w</del>	
1	Successful - set break at PP_DEMO>MAIN>SetRC	
L	Break Foint Established for: Fr_DENG>MAIN>Setre	
Command W	Vindow	
- Type AePlus De	bug command and press Return/Enter	
	step	
	1	
ll - Exec	uting PP DEMO	



This will set a break point at step 0004 along with command confirmation in Display window:

E	🖥 Display Windo	w _	미지
lh		1	
			_A
			_
			_
			_
	1	Successful - set break at PP_DEMO>MAIN>SetRC	
	2	Break Point Established for: PP_DEMO>MAIN>SetRC	•

Press F5 or enter go in the command window. This will execute Step 0002 thru 0003 and cursor will move to line 32 as shown below:

🗟 Source Win	dow	
Source Step:	PP_DEMO>M	AIN>SetRC Exit Debug Mode Run Location: Client
00028	0003:	FROM PS_PP_DEMO_RC
00029	0004:	WHERE OPRID = %Bind(OPRID)
00030	0005:	AND RUN_CNTL_ID = %Bind(RUN_CNTL_ID)
00031		
00032* =	O004 : F	P_DEMO.MAIN.SetRC.Active.Set Defaults in RC if not foun
00033	0000 :	0001:Step Comments> Set RunControl.
00034		
00035	0000:	PeopleCode
00036	0001:	Declare Function ToLog PeopleCode PP_DEMO_LIB.AE_PROGRAM
00037	0002:	
00038	0003:	Global number &gbl_menu_items;
00039	0004:	Global number &gbl_Navig_items;
00040	0005:	
00041*	0006:	ToLog("", "AET OPRID: "   PP_DEMO_AET.OPRID);
00042*	0007:	ToLog("", "AET RUN_CNTL_ID: "   PP_DEMO_AET.RUN_CNTL_ID);
00043	0008:	

Pressing F8 (step) will execute step 0004 and cursor will move to next step. However, we would like to step thru each line of PeopleCode and so we will press Shift+F8 (step/into) this time. This will take us to the first executable PeopleCode like e.g. line 00041 as shown below:



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膏 Source Win	Source Window				
Source Step:	PP_DEMO>MAIN	I>SetRC#6 Exit Debug Mode Run Location: Client			
00037		•			
00038	0003:	Global number &gbl_menu_items;			
00039	0004:	Global number &gbl_Navig_items;			
00040	0005:				
00041* =	0006:	ToLog("", "AET OPRID: "   PP_DEMO_AET.OPRID);			
00042*	0007:	ToLog("", "AET RUN_CNTL_ID: "   PP_DEMO_AET.RUN_CNTL_ID);			
00043	0008:				
00044*	0009:	If None(PP_DEMO_AET.ASOFDATE) Then			
00045	0010:	<pre>/* RC table is not populated */</pre>			
00046*	0011:	ToLog("", "RC Not Populated, Setting Defaults RC Value			
00047*	0012:	<pre>PP_DEMO_AET.ASOFDATE = %Date;</pre>			
00048*	0013:	<pre>PP_DEMO_AET.FLAG1 = "Y";</pre>			
00049*	0014:	<pre>PP_DEMO_AET.FLAG2 = "Y";</pre>			
00050	0015:	End-If;			
00051	0016:				
00052*	0017:	ToLog("", "AET ASOFDATE: "   PP_DEMO_AET.ASOFDATE);			

While program is waiting for user input, any debug command can be issued. At this stage we can see value of State Record or value of global variable. Also, we can choose to modify value of State Record Field or global variable to impact change in program flow. Let us see what is the value of PP\_DEMO\_AET.OPRID at this stage by issuing debug command:

Command: esf PP\_DEMO\_AET.\* displays value of all the field in State Record PP\_DEMO\_AET where as command PP\_DEMO\_AET.OPRID displays value of OPRID only as shown in the screen below:



🛐 Display Windo	ρ₩	- II X
6 7 8 9 10	<pre>1. PP_DEMO_AET.PROCESS_INSTANCE = '1328' 2. PP_DEMO_AET.OPRID = 'PS' 3. PP_DEMO_AET.RUN_CNTL_ID = 'run' 4. PP_DEMO_AET.ASOFDATE = '' 5. PP DEMO_AET.FLAG1 = ''</pre>	
11 12 13 14 15	6. PP_DEMO_AET.FLAG2 = ' 7. PP_DEMO_AET.MARKET = ' 8. PP_DEMO_AET.PNLGRPNAME = ' 9. PP_DEMO_AET.MENUGROUP = ' 10. PP_DEMO_AET.MENULABEL = '	
16 17 18 19 20 21	11. PP_DEMO_AET.BARLABEL = ' ' 12. PP_DEMO_AET.ITEMLABEL = ' ' 13. PP_DEMO_AET.AE_APPLID = 'PP_U004_A00' 14. PP_DEMO_AET.AE_APPSTATUS = '0' 15. PP_DEMO_AET.COMPANY = ' ' PP_DEMO_AET.OPRID = 'PS'	
Type AePlus Deb	ndow uq command and press Return/Enter esf PP_DEMO_AET . * esf PP_DEMO_AET . <mark>OPRID</mark>	

Let us set another break point at line number 00053.

🛐 Source Win	dow	
Source Step:	PP_DEMO>MAIN	I>SetRC#6 Exit Debug Mode Run Location: Client
00039	0004: 0005:	Global number &gbl_Navig_items;
00041* =	> 0006:	ToLog("", "AET OPRID: "   PP_DEMO_AET.OPRID);
00042* 00043	0007: 0008:	ToLog("", "AET RUN_CNTL_ID: "   PP_DEMO_AET.RUN_CNTL_ID);
00044*	0009:	If None(PP_DEMO_AET.ASOFDATE) Then
00045	0010:	<pre>/* RC table is not populated */</pre>
00046*	0011:	ToLog("", "RC Not Populated, Setting Defaults RC Value
00047*	0012:	PP_DEMO_AET.ASOFDATE = %Date;
00048*	0013:	PP_DEMO_AET.FLAG1 = "Y";
00049*	0014:	PP_DEMO_AET.FLAG2 = "Y";
00050	0015:	End-If;
00051	0016:	
00052*	0017:	ToLog("", "AET ASOFDATE: "   PP_DEMO_AET.ASOFDATE);
00053*	0018:	ToLog("", "AET FLAG1: "   PP_DEMO_AET.FLAG1);
00054*	0019:	ToLog("", "AET FLAG2: "   PP_DEMO_AET.FLAG2);
	•	



Let us see all the active break points at this stage by issuing debug command: lb (list break)

🛐 Display Wind	low .	- D ×
1 2 3 4 5 6	Successful - set break at PP_DEMO>MAIN>SetRC Break Point Established for: PP_DEMO>MAIN>SetRC Successful - set break at PP_DEMO>MAIN>SetRC#18 Break Point Established for: PP_DEMO>MAIN>SetRC#18 1 - Break At: Line: 32 (PP_DEMO>MAIN>SetRC) 2 - Break At: Line: 53 (PP_DEMO>MAIN>SetRC#18)	×
💐 Command W	indow	
- Type AePlus Deb	pug command and press Return/Enter 11 11	<u> </u>
	step	

Pressing F5 (go) will take us to line number 00053. We can execute each line of PeopleCode using F8 (step) command and examine result using various debug commands.

Screen below shows the ability to examine value of global variable by just positioning the mouse on the variable in source window:

Source Win	Source Window				
Source Step:	PP_DEMO>MAIN	I>PCTests#167 Exit Debug Mode Run Location: Client			
00239*	0157:	ToLog("", "Tested java APIs.");	-		
00240	0158:	&gbl_var_str = "test string";			
00242* 00243*	0160: 0161:	&gbl_var_num = 123456; &gbl_var_date = %AsOfDate;			
00244* 00245	0162: 0163:	&gbl_var_datetime = %Datetime;			
00246*	0164:	&gbl_var_str = &gbl_var_str   " appended"; &gbl_var_num = &gbl_var_num <b>#</b> 2;			
00248*	0166:	&gbl_var_date = AddToDate(&gbl_var_date, 1, 2, 3);           &dbl_var_date           &ddToDateTime(&gbl_var_date, 1, 2, 3);	4 5		
00250	0168:	(lol way num = {chl way num + 10;	<b>1</b> , <b>3</b> ,		
00252* 00253*	0170:	&lcl_var_nam = wgbl_var_nam + 10, &lcl_var_str = "local "   &gbl_var_str; &lcl_var_date = AddToDate(&gbl_var_date, - 1, - 2, - 3);;	-		

In addition to function keys, command window is used to enter various debug commands. Each debug command is terminated by 'Enter' key. The Arrow keys may be used to pickup commands from the history. It is the 'Enter' key that completes the debug command.

Ones AppEngine completes successfully, you can exit the debug mode by clicking 'Exit Debug Mode' command button or enter Exit command in command window.



A AePlus Work	c Bench, Demo Copy, User:Demo User	_ 🗆 ×
Ele Edit View	Options Utility Debug Window Help	
Source Wine	dow	
Source Step:	PP_DEMO>MAIN>FINISH	
00386* 00387* 00388 00389* 00390* 00391*	0005: &xyz = "xyz"; 0006: &x2 = 1;; 0007: 0008: ToLog("", "Value of &xyz is: "   &xyx); 0009: ToLog("", "Value of &x2 is: "   &x2); 0010:	1
00392	0000: Log Message : (108,108) , Parameter: Param1	
00394	0009 : PP_DEMO.MAIN.FINISH.Active.Common Finish Actions	
00395 => 00396 00397 00398 00399* 00400	0000: Call Section PP_AE_LIB.PP_STOP 0002 :PP_DEMO.PP_Menus Section 0001 :PP_DEMO.PP_Menus.Step01.Active.Step01 description 0000: Do Select	×
膏 Display Win	ndow	<u>_   ×</u>
5 6 7	Successful - set break at PP_DEMO>MAIN>FINISH Break Point Established for: PP_DEMO>MAIN>FINISH EXIT - Program Finished Normally.	
Command ¥	Window	_ 🗆 ×
	ebug command and press Return/Enter step go go	×
PP DEMO F	/inished.	

This will close the debug window and workbench window will be restored.



When running program in debug mode, if AppEngine calls Sections Dynamically, value of state record should be changed just in time so that appropriate sections are called at run time. For Example, when debugging TL\_TIMEADMIN program that calls section from TL\_TA\_RULES AppEngine dynamically, value of AE Program name should be modified in State Record by appropriate PP\_Unnn\_Axx just before the Section Call where PP\_Unnn\_Axx is the Ae Name assigned to TL\_TA\_RULES by AePlus compiler. This can be achieved by setting break point before the Call Section Step.

PP\_Unnn\_Axx value can be obtained from "Object Mapping" table in \*.lst file that is created by AePlus in SqrPlus temp directory. This will be something like:

• • • •			
000560	Object Mapping		
000561			
000562	Original Object	Mapped Object	
000563			
000564	TL_TIMEADMIN	PP_U004_A00	
000565	TL_TA000410	PP_U004_A01	
000565	TL_TA000800	PP_U004_A02	
000565	TL_TA_RULES	PP_U004_A03	
000567			



### **D. Run Option-CDT : Run with Debug at Client in Target Database**

This is same **as Run Option** C (Run With Debug at Client in Source Database) except that and Source Database and Target Database are different. Debug version of AppEngine runs in Target Database instead of Source Database. The compilation process takes AppEngine definition from Source Database but compiled version is created in Target Database.

#### E. Run Option-SNS : Run Normal at Server in Source Database

This is same as **Run Option A** (Run Normal at Client in Source Database) except that the AppEngine is run thru Process Scheduler. AePlus uses PP\_SCHD\_AE AppEngine program to schedule AppEngine program in Source Database.

Run Thru ProcSched checkbox should be ticked. Server Name should be specified although that may be overridden by appropriate Server name when process is scheduled. e.g. PSNT may change to PSUNX when process is scheduled.

AePlus Workbench notifies developer when AppEngine completes. However, log files created by the AppEngine program should be viewed thru Process Monitor. It is essential that AppEngine program specified has the Process Definition setup in source database.

#### F. Run Option-SNT : Run Normal at Server in Target Database

This is same as **Run Option B** (Run Normal at Client in Target Database) except that the AppEngine is run thru Process Scheduler. AePlus uses PP\_SCHD\_AE AppEngine program to schedule compiled AppEngine program (PP\_Unnn\_A00) in Target Database.

Run Thru ProcSched checkbox should be ticked. Server Name should be specified although that may be overridden by appropriate Server name when process is scheduled. e.g. PSNT may change to PSUNX when process is scheduled.

AePlus Workbench notifies developer when AppEngine completes. However, log files created by the AppEngine program should be viewed thru Process Monitor. It is essential that AppEngine PP\_Unnn\_A00 has the Process Definition setup in target database where Unnn is AePlus User ID.



# **G. Run Option-SDS : Run with Debug at Server in Source Database**

This is same as **Run Option C** (Run with Debug at Client in Source Database) except that the AppEngine runs thru Process Scheduler. AePlus uses PP\_SCHD\_AE AppEngine program to schedule compiled AppEngine program (PP\_Unnn\_A00) in Source Database.

Run Thru ProcSched checkbox should be ticked. Server Name should be specified although that may be overridden by appropriate Server name when process is scheduled. e.g. PSNT may change to PSUNX when process is scheduled.

Debugging interface is same as that in **Run Option C**. However, since AppEngine runs is a different machine, Server Agent must be up and running on machine where AppEngine runs. Server Agent should also point to correct Remote Server Agent (other than Client). For further details on 'Remote Server Agent', please refer to *Installing Server Agent* topic.

It is also essential that AppEngine PP\_Unnn\_A00 has the Process Definition setup in source database where Unnn is AePlus User ID.

# H. Run Option-SDT : Run with Debug at Server in Target Database

This is same as Run Option D (Run with Debug at Client in Target Database) except that the AppEngine runs thru Process Scheduler. AePlus uses PP\_SCHD\_AE AppEngine program to schedule compiled AppEngine program (PP\_Unnn\_A00) in Source Database.

Run Thru ProcSched checkbox should be ticked. Server Name should be specified although that may be overridden by appropriate Server name when process is scheduled. e.g. PSNT may change to PSUNX when process is scheduled.

Debugging interface is same as that in **Run Option D**. However, since AppEngine runs is a different machine, Server Agent must be up and running on machine where AppEngine runs. Server Agent should also point to correct Remote Server Agent (other than Client). For further details on 'Remote Server Agent', please refer to *Installing Server Agent* topic.

It is also essential that AppEngine PP\_Unnn\_A00 has the Process Definition setup in target database where Unnn is AePlus User ID.



# Ae Abends

Whenever an AppEngine that runs at Client (i.e. not thru Process Scheduler) and it abends due to some run time errors, you may have to manage this abended process so that you are able to run this process next time. Screen capture below shows how to manage such un-finished process.

Navigation: PeopleTools->Application Engine->Manage Abends

	Home   Worklist   MultiChennel Console   Addito Fevorites   Sign out		
	New Window   Customize Page		
	Manage Abends		
	manage Abernae		
	Process Monitor Use Process Monitor for processes that were run via Process Scheduler.		
	🖹 Notify 🗘 Refresh		
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	•		

If AppEngine that runs at Server thru Process Scheduler, it should be managed thru Process Monitor.



# Source Version Control AppEngine using AePlus

Source Version Control is an essential part of any Source Code in any software development environment. With **AePlus** you can Source Version Control AppEngine source code using the same Source Version Control Software that you use for SQRs or COBOLs. AppEngine source code is kept as one unit. Since Source code can be preserved in Source Version Control software - you always know where the master copy is and never lose your coding effort as a result of database refresh. You can easily compare two versions of AppEngine source code (that is available in text format) to find what exactly has changed. Rolling back to previous version is much controlled and quality assured.

A AePlus Work Bench				
File Edit View Optio	ns Utility Debug Window Hel	P		
<table-of-contents> AE Parameters</table-of-contents>	Create AE Snapshot View Snapshot Text			<u>-0×</u>
Server Agent	Client 💽	Test Run Th	ru ProcSched 🔲 🦳 Server I	Name psnt
- Source Database: - App Engine Program	PP_DEMO	Target Database (Wł Same As Source	here AE Runs):	Run <u>N</u> ormal
DbName	H88DMO	DbName	H88DMO	Run With <u>D</u> ebug
Psoft UserName	PS	Psoft UserName	PS	<u>S</u> ave
Psoft Password	**	Psoft Password	**	View <u>A</u> ePLus Log
AE Log File	D:\temp\PP_DEMO	Run Control ID	Run2	View AE Log
Addl. Cmd Line Args	-trace 123	Process Instance	0	

Following steps are required:

- Enter AppEngine program name that you would like to put into Source Version Control Software.
- Enter Source Database, Username and Password.
- Click Utility->Create AE Snapshot

This will extract AppEngine Definition from Source Database and produce followings:

• AppEngine Source Code in text format. For example if AppEngine program name is PP\_DEMO and Source Database is H88DMP, text snapshot will be created as c:\sqrplus\ae\PP\_DEMO\_H88DMO.txt where c:\sqrplus\ae is AE\_SNAPSHOT\_DIR as defined in AePlus Options. This text file should be checked into your Source Version Control repository to facilitate general browsing and comparision between two versions.



• In addition, Dat and Dms files are also created to facilitate rollback to specific version when needed. For example for PP\_DEMO AppEngine program, c:\sqrplus\ae\PP\_DEMO\_imp.dat and c:\sqrplus ac\PP\_DEMO\_imp.dat ac\PP\_DEMO\_imp.dat ac\PP\_DEMO\_i

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