Appeon Server Configuration Guide for J2EE

Appeon® for PowerBuilder® 2016 (on J2EE) FOR WINDOWS & UNIX & LINUX

DOCUMENT ID: ADC20239-01-0700-01

LAST REVISED: September 07, 2016

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Contents

1 About This Book	. 1
1.1 Audience	. 1
1.2 How to use this book	1
1.3 Related documents	. 1
1.4 If you need help	3
2 Server Configuration Tasks	. 4
2.1 Scope of configurations discussed in this book	
2.2 Configuration stages and tasks	
2.2.1 Configuration during application deployment	
2.2.2 Configuration during debugging	
2.2.3 Configuration during security management	
2.2.4 Configuration during performance management	
2.2.5 Configuration during server information management	
2.2.6 Configuration for emergency control	
3 Appeon Server Status Monitor	
3.1 Overview	
3.2 Configuring Status Monitor	
3.2.1 Configuring appeonmonitor.bat	
3.2.2 Configuring appeonserver.bat	
3.2.2.1 Configuring appeonserver.bat (Windows)	
3.2.2.2 Configuring appeonserver.sh (Unix\Linux)	
3.2.3 Configuring monitor.props	
3.2.4 Additional configuration for Status Monitor in Appeon Server	
cluster	17
3.3 Information backed up by Status Monitor	17
3.3.1 What is backed up?	
3.4 Using Status Monitor	
3.4.1 Starting Status Monitor	
3.4.2 Understanding the information in Status Monitor Window	
4 Database Connection Setup	
4.1 Overview	
4.2 What is Appeon Server data source?	
4.2.1 Why Appeon Server data source?	
4.2.2 Why JDBC driver only?	
4.2.3 Supported JDBC driver type	
4.2.4 JDBC driver preparation	
4.2.4.1 Preparing PowerBuilder component support files (for	
EAServer only)	21
4.2.4.2 Checklist for JDBC driver preparation	
4.2.4.3 Copying drivers to Appeon Server	
4.3 Setting up Appeon Server data sources	
4.3.1 Setting up data source for WebLogic	
4.3.1.1 Setting up data source for WebLogic 8.1	
4.3.1.2 Setting up data source for WebLogic 11g	
4.3.2 Setting up data source for WebSphere	
4.3.2.1 Setting up data source for WebSphere 6.1	

4.3.2.2 Setting up data source for WebSphere 8.0	44
4.3.2.3 Required configurations when global security is on	54
4.3.3 Setting up data source for JBoss	
4.3.3.1 Setting up data source for WildFly and JBoss EAP	
4.3.4 Setting up data source for NetWeaver	
4.3.5 Setting up data source for JEUS	
4.3.6 Setting up data source for EAServer 6.x	
4.3.7 Data source parameters	
4.3.7.1 Data source parameters for SAP ASA/SQL Anywhere	
4.3.7.2 Data source parameters for ASE	
4.3.7.3 Data source parameters for SAP IQ	
4.3.7.4 Data source parameters for SAP HANA	
4.3.7.5 Data source parameters for Microsoft SQL Server	
4.3.7.6 Data source parameters for Oracle	
4.3.7.7 Data source parameters for IBM DB2	
4.3.7.8 Data source parameters for Informix	
4.3.7.9 Data source parameters for MySQL	
4.3.7.10 Data source parameters for Teradata	
4.3.7.11 Data source parameters for PostgreSQL	
4.4 Setting up transaction object to data source mapping	
4.4.1 Dynamic transaction object to data source mapping	
4.4.2 Static transaction object to data source mapping	
4.5 Advanced configurations related with database connection	
4.5.1 Application Security	
4.5.1.1 Database security	
4.5.1.2 Using INI files for connection security	
4.5.2 Appeon security	
4.5.2.1 Incorporate Appeon security in PowerBuilder code	
4.5.2.2 Database auditing	
5 AEM User Guide	
5.1 Introduction	
5.1.1 Overview	
5.1.2 AEM Tools	
5.1.3 Supported Web browsers	
5.2 Getting started	
5.2.1 Running Appeon Server	
5.2.2 Starting AEM	
5.2.2.1 AEM URL	
5.2.2.2 Three ways to launch AEM	
5.2.2.3 AEM user name and password	
5.2.2.4 Installing Appeon Workspace	
5.2.2.5 AEM language	
5.2.3 AEM Help	
5.3 Server	
5.3.1 Sessions	
5.3.1.1 Active Sessions	
5.3.1.2 Active Transactions	
5.3.1.3 Deployment Sessions	102

5.3.2 Logging	103
5.3.2.1 Viewing logs	103
5.3.2.2 Log mode	104
5.3.2.3 Replace log files	. 105
5.3.3 Resources	. 106
5.3.3.1 Cluster	106
5.3.3.2 Maintenance	111
5.3.4 Product Activation	. 113
5.3.4.1 Licensing	. 113
5.3.4.2 Support	. 122
5.3.5 Server Security	. 123
5.3.5.1 AEM login	. 124
5.3.5.2 User Management	. 125
5.3.5.3 Group Management	
5.3.5.4 User and Group Management at LDAP server side	134
5.3.5.5 System Security	
5.3.5.6 Deployment Security	
5.4 Application	
5.4.1 Configuration Summary	
5.4.2 Transactions	
5.4.2.1 Transaction Objects	. 140
5.4.2.2 Timeout	
5.4.3 Local Database	. 144
5.4.4 PB Features	
5.4.4.1 Registry Mode	145
5.4.4.2 INI Files	
5.4.4.3 DLL/OCX Files	. 149
5.4.4.4 Decimal Precision	. 151
5.4.4.5 Web service DataWindow	152
5.4.5 Web Browser	
5.4.5.1 IE Compatibility	. 153
5.4.5.2 IE Browser Interface	
5.4.6 Client Features	156
5.4.6.1 Application Title	
5.4.6.2 Web Application Theme	
5.4.6.3 Web Application Auto Update	
5.4.6.4 Run Mode	
5.4.6.5 Error Message Mode	. 158
5.4.6.6 Start & Exit	
5.4.6.7 Client Storage Location	
5.4.6.8 Client Logs	
5.4.6.9 Retina Display	
5.4.7 Data Transfer	
5.4.7.1 Charset	
5.4.7.2 Encoding	
5.4.8 Performance	
5.4.8.1 Multi-Thread Download	
5.4.8.2 Application Server Cache	

5.4.8.3 DataWindow Data Cache	173
5.4.9 Client Security	177
5.4.9.1 User Authentication	177
5.4.9.2 Appeon Workspace	179
5.4.10 Mobile App Distribution	181
5.4.10.1 Upload standalone mobile apps and Appeon	
Workspace	181
5.4.10.2 QR code generation for mobile application(s) 1	183
5.5 Mobile UI Resizing	184
5.5.1 Screen Size	185
5.5.1.1 Adding a device	185
5.5.1.2 Editing a device	186
5.5.1.3 Deleting a device	187
5.5.2 Window Size	
5.5.2.1 Configuring size for all windows	
5.5.2.2 Configuring size for an individual window	189
Index	193

1 About This Book

1.1 Audience

This book is intended for users and system administrators that are responsible for the configuration of servers used in the Appeon for PowerBuilder architecture.

1.2 How to use this book

There are five chapters in this book.

Chapter 1: About This Book

A general description of this book

Chapter 2: Server Configuration Tasks

Describes configuration stages and tasks related to Appeon Server.

Chapter 3: Appeon Server Status Monitor

Describes how to configure and use Appeon Server Status Monitor.

Chapter 4: Database Connection Setup

Describes how to set up connection between Appeon Server and Database Server.

Chapter 5: AEM User Guide

Describes how to configure Appeon Enterprise Manager.

1.3 Related documents

Appeon provides the following user documents to assist you in understanding Appeon for PowerBuilder and its capabilities:

• Introduction to Appeon:

Gives general introduction to Appeon for PowerBuilder and its editions.

• Getting Started (for Appeon Mobile):

Guides you though installing PowerBuilder and Appeon for PowerBuilder, and developing and deploying a mobile application.

• New Features Guide:

Introduces new features and changes in Appeon for PowerBuilder.

• Appeon Mobile Tutorials:

Gives instructions on deploying, running, and debugging the mobile application, distributing native mobile apps, and configuring the Appeon Server cluster.

• Appeon Mobile (Offline) Tutorials:

Gives instructions on setting up the Appeon Mobile (Offline) environment, and configuring, deploying, running, updating, and debugging the offline application.

• Appeon Installation Guide:

Provides instructions on how to install Appeon for PowerBuilder successfully.

• Mobile UI Design & Development Guide:

Introduces general guidelines on designing and developing the mobile app and UI.

• Migration Guidelines for Appeon Web:

A process-oriented guide that illustrates the complete diagram of the Appeon Web migration procedure and various topics related to steps in the procedure, and includes a tutorial that walks you through the entire process of deploying a small PowerBuilder application to the Web.

• Supported PB Features:

Provides a detailed list of supported PowerBuilder features which can be converted to the Web/Mobile with Appeon as well as which features are unsupported.

• Appeon Developer User Guide:

Provides instructions on how to use the Appeon Developer toolbar in Appeon for PowerBuilder.

• Workarounds & API Guide:

Provides resolutions for unsupported features and various APIs to facilitate you to implement the features (including Web and mobile) that are not easy or impossible to implement in the PowerBuilder IDE.

• Appeon Workspace User Guide:

Gives a general introduction on Appeon Workspace and provides detailed instructions on how to use it.

• Appeon Server Configuration Guide:

Provides instructions on how to configure Appeon Server Monitor, establish connections between Appeon Servers and database servers, and configure AEM for maintaining Appeon Server and the deployed applications.

• Web Server Configuration Guide:

Describes configuration instructions for different types of Web servers to work with the Appeon Server.

• Troubleshooting Guide:

Provides information on troubleshooting issues; covering topics, such as product installation, application deployment, AEM, and Appeon application runtime issues.

• Appeon Performance Tuning Guide:

Provides instructions on how to modify a PowerBuilder application to achieve better performance from its corresponding Web/mobile application.

• Testing Appeon Web Applications with QTP:

Provides instructions on how to test Appeon Web applications with QTP.

1.4 If you need help

If you have any questions about this product or need assistance during the installation process, access the Technical Support Web site at <u>http://www.appeon.com/support</u>.

2 Server Configuration Tasks

Server configuration for n-tier architecture is usually a daunting task that requires a wide range of server knowledge. The same rule applies to Appeon architecture. Appeon architecture resides in at least three types of servers: Web server, application server, and database server. Each server involves a third-party server product: for example, Appeon Server can be installed to EAServer, WebLogic, WebSphere, JBoss, SAP NetWeaver Application Server, or JEUS. A number of configuration tasks must be performed before an Appeon application can work on the Web or Mobile, and still there is more involved in the maintenance and management of the server.

This chapter will help you understand the configurations in this guide and will assist you to quickly locate the correct configuration information.

2.1 Scope of configurations discussed in this book

Appeon architecture is a typical n-tier architecture that can provide development and runtime environments for both Appeon and non-Appeon applications. This book focuses on the configurations for supporting Appeon applications in the architecture, and does not provide: (1) configurations for setting up the architecture, (2) configurations specific to the functioning and performance of third-party servers within the architecture.

The configurations needed for setting up the architecture are discussed in Installation Guide for .NET and the Web Server Configuration Guide, and therefore, will not be addressed in this guide.

Configurations specific to the functioning and performance of third-party servers in Appeon architecture may still impact the architecture. For example, indexing database tables has nothing to do with Appeon knowledge but can greatly improve the performance of an Appeon application. Although such configurations are not provided in this book, it is strongly recommended that you refer to the configuration documents of any third-party servers used and perform necessary configurations to achieve the best possible performance of Appeon architecture.

2.2 Configuration stages and tasks

Server configuration is divided into several stages as shown in the following table. Understanding which stage of the configuration, allows one to simply focus on the configurations recommended for that particular stage. This helps save time and effort of searching through the complete document for information.

Configuration During	For the Purpose of
Application Deployment	Ensuring that the application data displays correctly and that all functions in the application work correctly.
Debugging Process	Efficient debugging.
Security Management	Managing the security of applications and servers within the architecture.

Configuration During	For the Purpose of
Performance Management	Improving server performance.
Server Information Management	Managing server-related information.
Emergency Control	Restarting Appeon Server automatically when it shuts down.

After reading the introduction in this section, you will find that most of the configurations can be performed in Appeon Enterprise Manager (AEM). AEM is a Web tool designed for managing Appeon Server and the deployed Web or mobile applications over the Internet or an intranet and can greatly simplify configuration.

2.2.1 Configuration during application deployment

The following table lists the server configuration tasks for ensuring that application data displays correctly and that all functions within the application work. Tasks marked as "in AEM" are performed in AEM.

Description	See section
Establish the database connection between the application server and the database server by configuring data sources.	Database Connection Setup
Set up static mapping between application transaction objects and data sources.	Transaction Objects
Select a proper decimal precision for the Appeon application.	Decimal Precision
Configure the mode for installing and downloading DLL and OCX files used in an application.	DLL/OCX Files
Enable the Appeon Web or Appeon mobile applications to directly access the client machine Windows registry or use Appeon registry emulation, so that PowerBuilder registry functions will work properly.	Registry Mode
Make the Appeon Web or Appeon mobile applications manipulate the INI files at the client or by Appeon emulation, so that INI file function will work properly.	INI File Mode
Specify the display mode for errors in different levels. They can be displayed in the status bar or in popup messages.	Error Message Mode
Specify the input charset and database charset to ensure characters in applications display correctly.	<u>Charset</u>
	Establish the database connection between the application server and the database server by configuring data sources. Set up static mapping between application transaction objects and data sources. Select a proper decimal precision for the Appeon application. Configure the mode for installing and downloading DLL and OCX files used in an application. Enable the Appeon Web or Appeon mobile applications to directly access the client machine Windows registry or use Appeon registry emulation, so that PowerBuilder registry functions will work properly. Make the Appeon Web or Appeon mobile applications manipulate the INI files at the client or by Appeon emulation, so that INI file function will work properly. Specify the display mode for errors in different levels. They can be displayed in the status bar or in popup messages.

Table 2.2: Configuration tasks during application deployment

2.2.2 Configuration during debugging

The following table lists the server configuration tasks for efficient debugging in case of abnormal behavior of the Appeon Web or Appeon mobile applications.

Table 2.3:	Configuration	tasks during	debugging process
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Task	Description	See section
(In AEM) Log Mode	Set the log file generation mode.	Log Mode
(In AEM) Logging	View the log files generated by Appeon Server or the application server.	Viewing Logs
(In AEM) Run Mode	Set the run mode for Web or mobile applications.	Run Mode

2.2.3 Configuration during security management

The following table lists the server configuration tasks for managing the security of applications and servers in Appeon architecture.

Task	Description	See section
Database security	Implement script-coded and database security for applications	Database security
(In AEM) AEM Login	Modify the AEM user name and password.	AEM Login
(In AEM) System Security	Set the system security mode and type.	System Security
(In AEM) Client Security	Limit the accessibility of an Appeon Web or Appeon mobile application to the selected groups.	<u>Client</u> <u>Security</u>
(In AEM) Group Management	Create groups and grant access rights.	Group Management
(In AEM) User Management	Create user profiles and grant access rights.	User Management
(In AEM) Deployment Security	Limit the number of users permitted to deploy applications to Appeon Server.	Deployment Security

Table 2.4: Configuration tasks during security management

2.2.4 Configuration during performance management

The following table lists the server configuration tasks for improving server performance.

Note: In order to maximize the performance of Appeon architecture, besides the tasks in the table, you must also follow instructions from the documents of all the related third-party servers.

Task	Description	See section
(In AEM) Active Sessions	Monitor all active sessions in the system. Some sessions can be killed if necessary.	<u>Active</u> <u>Sessions</u>
(In AEM) Active Transactions	Monitor all active transactions in the system. Some active transactions can be killed if necessary.	Active Transactions
(In AEM) Maintenance	Set the schedule for automatically clearing temporary files, or manually deleting temporary files, and the backing up configurations.	Maintenance
(In AEM) Deployment Sessions	Monitor all active deployment sessions in the system. Some active deployment sessions can be killed if necessary.	Deployment Sessions
(In AEM) Application Server Cache	Allocate server cache between deployed applications. Ensures that important applications are cached.	Appeon Server Cache
(In AEM) DataWindow Data Cache	Cache DataWindow data on the server and/or client to improve data-reading performance.	DataWindow Data Cache
(In AEM) Multi- Thread Download	Download static resources with multi-threads to boost performance.	<u>Multi-</u> <u>Thread</u> <u>Download</u>
(In AEM) Encoding	Choose the proper encoding mode to reduce network traffic.	Encoding

 Table 2.5: Configuration tasks during performance management

2.2.5 Configuration during server information management

The following table lists the server configuration tasks for managing server-related information.

Task	Description	See section
(In AEM) Timeout	Set session timeout, transaction timeout, download timeout, and request timeout.	<u>Timeout</u>
(In AEM) Licensing	View license information, and activate or de-activate an Appeon Server.	Licensing
(In AEM) Support	view the valid product support period and renew the support.	Support

Table 2.6: Configuration tasks during server information management

2.2.6 Configuration for emergency control

The following table lists the server configuration task with which Appeon Server can be started automatically when it shuts down.

Table 2.7: Configuration for emergency control

Task	Description	See section
Status	Configure the Appeon Server Status Monitor so it can be used for	<u>Status</u>
Monitor	restarting Appeon Server automatically.	Monitor

3 Appeon Server Status Monitor

3.1 Overview

Note: Appeon Server Status Monitor does not work with JEUS.

Appeon Server Status Monitor (hereinafter referred to as "Status Monitor") is a small program installed along with Appeon Server. It backs up Appeon Server session information, monitors if Appeon Server is in "started" status, and in the event that the Server shuts down it automatically restarts Appeon Server and recovers the runtime information.

3.2 Configuring Status Monitor

Verify the presence of the following files according to the Appeon Server type. Each will need to be configured, with the exception of appeonserver.jar, before Status Monitor can be run successfully.

Appeon Server	Windows	Unix\Linux
EAServer	<appeon home="">\bin \appeonmonitor.bat</appeon>	<appeon home="">/bin/ appeonmonitor.sh</appeon>
	<appeon home="">\bin \appeonserver.bat</appeon>	<appeon home="">/bin/ appeonserver.sh</appeon>
	<appeon home="">\config \monitor.props</appeon>	<appeon home="">/config/ monitor.props</appeon>
WebLogic/WebSphere/JBoss/ NetWeaver Application	<appeon home="">\bin \appeonmonitor.bat</appeon>	<appeon home="">/bin/ appeonmonitor.sh</appeon>
Server	<appeon home="">\lib \appeonserver.jar</appeon>	<appeon home="">/lib/ appeonserver.jar</appeon>
	<appeon home="">\bin \appeonserver.bat</appeon>	<appeon home="">/bin/ appeonserver.sh</appeon>
	<appeon home="">\config \monitor.props</appeon>	<appeon home="">/config/ monitor.props</appeon>

Table 3.1: Files for status monitor

Notes:

- 1. <Appeon Home> indicates the installation path of Appeon Server.
- 2. Changes to the files will take effect after the Status Monitor is restarted.

3.2.1 Configuring appeonmonitor.bat

The appeonmonitor.bat file (Windows) or appeonmonitor.sh file (Unix\Linux) is the batch program run by Status Monitor.

Make the following changes to the settings in appeonmonitor.bat file (Windows) or appeonmonitor.sh file (Unix\Linux).

For appeonmonitor.bat and appeonmonitor.sh files, the settings and modification are almost the same. The only difference is that forward slash ("/") is used as the path separator in Unix Linux while back slash ("\") is used in Windows.

Table 3.2: Configure appeonmonitor.bat	Table 3.2:	Configure	appeonmonitor.bat
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Settings	Description
EASERVER_	Specifies the path of EAServer.
HOME	For example, EASERVER_HOME=C:\Program Files\Sybase\EAServer6
JAVA_HOME	Specifies the JDK location, which must be the same one used by Appeon Server.
	For example, for EAServer running on Windows, the value of JAVA_HOME is:
	JAVA_HOME=C:\Program Files\Sybase\Shared\jdk1.6.0_18.
	Note: 1) If Appeon Server works on WebLogic, verify that the WLS_USER and WLS_PW variables in the startWebLogic.cmd (Windows) or startWebLogic.sh (Unix\Linux) file contain the correct login credentials.
	2) If Appeon Server works on WebSphere, only when the IBM JDK is used can Status Monitor function properly.
APPEON_HOME	Specifies the Appeon Server home directory.
	EAServer: <jaguar>\appeon</jaguar>
	WebSphere: <was_home>\appeon</was_home>
	WebLogic: <wl_home>\appeon</wl_home>
	NetWeaver Application Server: <nas_home>\appeon</nas_home>
	JBoss: <jb_home>\appeon</jb_home>
	Note: <jaguar> indicates the EAServer installation directory; <was_home> indicates the home directory of WebSphere server; <wl_home> indicates the home directory of WebLogic; <nas_home> indicates the home directory of NetWeaver Application Server; and <jb_home> indicates the home directory of JBoss.</jb_home></nas_home></wl_home></was_home></jaguar>
	For example, if Appeon Server works on EAServer, the Appeon Server home directory is: APPEON_HOME= C:\Program Files\Sybase \EAServer\appeon.
	If Appeon Server works on WebLogic 9.2, the Appeon Server home directory is: APPEON_HOME= C:\bea\weblogic92\appeon.
J2EE_JAR	Changes the default setting according to the Appeon Server in use:
	EAServer: <jaguar>\lib\eas-server-16.jar</jaguar>
	WebLogic: <wl_home>\server\lib\weblogic.jar</wl_home>

Settings	Description	
	WebSphere: <was_home>\lib\j2ee.jar</was_home>	
	JBoss: <jb_home>\common\lib\mail.jar, <jb_home>\modules\javax \ejb\api\main\jboss-ejb-api_3.1_spec-1.0.1.Final.jar</jb_home></jb_home>	
	Note: In different JBoss builds, the name of jboss-ejb- api_3.1_spec-1.0.1.Final.jar may be slightly different.	
For example, if Appeon Server works on EAServer, the home is: J2EE_JAR=C:\Program Files\Sybase\EAServer\lib\eas-server		
CLASS_PATH	Default setting:	
	CLASS_PATH=%EASERVER_HOME%\lib\ext\appeon_server.jar; %J2EE_JAR%	
	You do not need to make any changes to the default setting.	
• •	Specify the administrator password of EAServer 6.x.	
EASPWD	For example, NeedToEncryptedEASPWD=appeon123	
	After you set the password, comment out the following script in appeonmonitor.bat, then run appeonmonitor.bat to encrypt the password, and after you get the encrypted password, make sure to clean the password here and then input the encrypted password to EASPWD below.	
	"%JAVA_HOME%/bin/java.exe" -cp "%CLASS_PATH	
	%" -Dappeon.home="%APPEON_HOME%"	
	com.appeon.server.monitor.StatusMonitor -e "%NeedToEncryptedEASPWD%"	
EASUSER	Specify the administrator user name of EAServer 6.x.	
	For example, EASUSER=admin@system	
	Note that the user name must be in this format "admin@system".	
EASPWD	Input the encrypted password of EAServer 6.x. The encrypted password is generated after you set NeedToEncryptedEASPWD. Please see "NeedToEncryptedEASPWD" for details.	
	For example, EASPWD=YXBwZW9uMTIz	
	After you input the encrypted password here, make sure to clean the password in NeedToEncryptedEASPWD.	

After you properly configure the above settings, make sure to uncomment the following scripts, so Status Monitor can start normally.

```
"%JAVA_HOME%/bin/java.exe" -cp "%CLASS_PATH%" -Dappeon.home="%APPEON_HOME%"
com.appeon.server.monitor.StatusMonitor -e "%NeedToEncryptedEASPWD%"
"%JAVA_HOME%/bin/java.exe" -cp "%CLASS_PATH%" -Dappeon.home="%APPEON_HOME%"
-Deas.user="%EASUSER%" -Deas.pwd="%EASPWD%" com.appeon.server.monitor.StatusMonitor
```

Here is a sample of a configured appeonmonitor.bat file:

@echo off

cls SETLOCAL title Appeon Server Status Monitor REM Please replace <EASERVER_HOME> with the real path of EAServer6 set EASERVER_HOME=C:\Program Files\Sybase\EAServer6 set JAVA_HOME=C:\Program Files\Sybase\Shared\jdk1.6.0_18 set APPEON_HOME=C:\Program Files\Sybase\EAServer6\appeon set J2EE_JAR=C:\Program Files\Sybase\EAServer6\lib\eas-server-16.jar set CLASS_PATH=%EASERVER_HOME%/lib/ext/appeonserver.jar;%J2EE_JAR% REM Please replace <NeedToEncryptedEASPWD> with the administrator password of EAServer 6.x. Make sure to clean the password after you have encrypted it. set NeedToEncryptedEASPWD= REM Please replace <EASUSER> with the administrator user name of EAServer 6.x set EASUSER=admin@system REM Please replace <EASPWD> with the administrator password of EAServer 6.x that is encrypted set EASPWD=YXBwZW9uMTIz REM If you want to encrypt the administrator password of EAServer 6.x, please uncomment the line below "%JAVA_HOME%/bin/java.exe" -cp "%CLASS_PATH%" -Dappeon.home="%APPEON_HOME%" com.appeon.server.monitor.StatusMonitor -e "%NeedToEncryptedEASPWD%" REM If you want to start status monitor, please uncomment the line below "%JAVA_HOME%/bin/java.exe" -cp "%CLASS_PATH%" -Dappeon.home="%APPEON_HOME%" -Deas.user="%EASUSER%" -Deas.pwd="%EASPWD%" com.appeon.server.monitor.StatusMonitor echo Appeon Server Status Monitor terminated. PAUSE ENDLOCAL

3.2.2 Configuring appeonserver.bat

The appeonserver.bat file (Windows) or appeonserver.sh file (Unix\Linux) is the batch program run by Status Monitor when it detects that Appeon Server has shut down.

3.2.2.1 Configuring appeonserver.bat (Windows)

The appeonserver.bat file contains the following code:

```
REM if use EAServer6, please replace <EAServer6> with real path and uncomment the
line below.
start cmd /c "<EAServer6>\bin\start-server.bat" -jdk15
REM if use WebLogic, please replace <Domain> with real path and uncomment the line
below.
REM @start call "<Domain>\startWebLogic.cmd"
REM if use WebSphere, please replace <WebSphere> with real path and uncomment the
line below.
```

```
REM @start call "<WebSphere>\AppServer\bin\startServer.bat" server1
REM if use JBoss, please replace <JBoss> with real path uncomment and the line
below.
REM @start call "<JBoss>\bin\run.bat"
```

Make the following changes to the file:

- 1. Remove the notation "REM" before the command line that starts the application server/ Appeon Server.
- 2. Replace the wildcard character string, which stands for the application server, with the home directory of the application server.

For example, if Appeon Server works on EAServer 6.x, the following script should be modified.

Original script:

REM start cmd /c "<EAServer6>\bin\start-server.bat" -jdk15

Modified script:

start cmd /c "C:\Program Files\Sybase\EAServer6\bin\start-server.bat" -jdk15

3.2.2.2 Configuring appeonserver.sh (Unix\Linux)

The appeonserver.sh file contains the following script:

```
#If use EAServer6, please uncomment the line below.
#"<EAServer6>/bin/start-server.sh" -jdk15
#If use WebLogic, please uncomment the line below.
#"<Domain>/startWebLogic.sh"
#If use WebSphere, please uncomment the line below.
#"<WebSphere>/AppServer/bin/startServer.sh" server1
#If use JBoss, please uncomment the line below.
# "<Jboss>/bin/run.sh"
```

Make the following changes to the file:

- 1. Remove the notation "#" before the command line that starts the application server/ Appeon Server.
- 2. Replace the wildcard character string that stands for the application server, with the home directory of the application server.

For example, if Appeon Server is installed to EAServer 6.x, the following script should be modified.

Original script:

#"<EAServer6>/bin/start-server.sh" -jdk15

Modified script:

"/export/home/user/Sybase/EAServer/bin/start-server.sh" -jdk15

3.2.3 Configuring monitor.props

The *monitor.props* file contains the property settings of Status Monitor. These property settings work for EAServer, WebLogic, WebSphere, JBoss, and NetWeaver Application Server, except for

- Memory settings, which work for EAServer on Windows only.
- Scheduled task settings, which are unsupported by WebLogic, WebSphere, JBoss, or NetWeaver Application Server.

Make the following changes to the property settings in *monitor.props*, as shown in the following table.

Note: If you have made changes to the instance names and instance ports, you will need to restart Appeon Server to make the settings effective.

Settings	Descriptions
com.appeon.server.monitor.instance.names	The names of server instances that need to be monitored.
	Separate multiple instance names with comma (",").
	Note that changes to this setting will not take effect until Appeon Server is restarted.
com.appeon.server.monitor.instance.cpus	The information for CPU(s) of the server instances.
	The value ranges from CPU0 to CPU31. The value can also be an asterisk ("*"), which stands for all CPUs of the local machine.
	If there are more than one server, their names should be separated by comma (",") and ranked in the same order with com.appeon.server.monitor.instance.names. If one server has multiple CPUs, they can be connected by the plus sign ("+").
com.appeon.server.monitor.instance.ports	The port via which Status Monitor monitors Appeon Server.
	Separate multiple server instances with comma (",") and range them in the same order with com.appeon.server.monitor.instance.names.
	Make sure the port number you specify is not occupied. Note that changes to this setting will not take effect until Appeon Server is restarted.

Table 3.3: Configure monitor.props

G. 44	
Settings	Descriptions
com.appeon.server.monitor.instance.files	The files that Status Monitor will check when the server shuts down, for example, C: \Program Files\Sybase\EAServer6\appeon \repository\LAJ\config\aem-config.xml.
	If there are more than one server instance, separate them with comma (",") and range them in the same order with com.appeon.server.monitor.instance.names.
com.appeon.server.monitor.instance.comman dlines	The command line for starting Appeon Server.
	Default setting:
	com.appeon.server.monitor.instance.comman dlines=appeonserver.bat
	If there are more than one server instance, separate them with comma (",") and range them in the same order with com.appeon.server.monitor.instance.names.
com.appeon.server.monitor.mail.smtp.server	The mail server that Status Monitor uses for sending notification emails.
	Contact your network administrator to get the valid mail server that can be accessed from the machine.
com.appeon.server.monitor.mail.smtp.reciev ers	The email address(es) of the recipient(s) to who Status Monitor will send the notification emails. It can contain one or multiple email addresses.
	Use the comma (",") as the email address separator if you want to specify multiple email receivers.
	The auto-mail functionality will not work unless being specified.
com.appeon.server.monitor.mail.smtp.port	The port number that is specified for the mail server.
	Contact your network administrator to get the valid port number of the mail server specified. The default port number is "25"
com.appeon.server.monitor.mail.smtp.sender.	The account for sending mails.
account	If the mail server uses SMTP to validate, an account for sending mails must be specified. Otherwise anonymous mails will be sent.

Settings	Descriptions	
com.appeon.server.monitor.mail.smtp.sender.	The password for sending mails.	
password	If the mail server uses SMTP to validate, a password must be specified.	
com.appeon.server.monitor.session.checkcy	The cycle for automatic backup.	
cle	The unit is second.	
com.appeon.server.monitor.session.backup	The switch for turning on/off session auto- backup.	
	Specify the value to true or false.	
com.appeon.server.monitor.memory.checkcy cle	The cycle for checking memory information. The memory usage detected by Status Monitor may not be necessarily the same as the memory usage shown in the Windows task manager.	
	The unit is second.	
	Note this setting works for EAServer on Windows only.	
com.appeon.server.monitor.memory.maxva lue	The maximum value (in percentage) for memory usage.	
	The value ranges from 0 to 100.	
	If the memory usage reaches the peak, the Status Monitor will check the existence of active sessions. If there is none, the monitor will immediately restart the server instance(s). If there is one or more active sessions, the monitor will determine whether to restart the server instance(s) according to the restart flag. Before the restart, the monitor will determine whether the sessions will be backed up according the backup settings.	
	Note this setting works for EAServer on Windows only.	
com.appeon.server.monitor.memory.minvalue	The minimum value (in percentage) for memory usage.	
	The value ranges from 0 to 100.	
	If the memory usage reaches the bottom, the Status Monitor will check the existence of active sessions. If there is none, the monitor will immediately restart the server instance(s). If there is one or more, the	

Settings	Descriptions
	monitor will continue checking until the memory usage reaches the peak.
	Note this setting works for EAServer on Windows only.
com.appeons.erver.monitor.memory.restart	The switch to restart server instance by force when the memory usage reaches the peak.
	The value can be true or false.
	Note this setting works for EAServer on Windows only.
com.appeon.server.monitor.scheduled.task.cy	The cycle for scheduled tasks.
cle	The value can be daily, weekly or monthly, among which only the daily mode is supported at present.
	Note this setting is unsupported by WebLogic, WebSphere or JBoss.
com.appeon.server.monitor.scheduled.task.w	The moment to start carrying out scheduled tasks.
	The value ranges from 00:00:00 to 23:59:59.
	Note this setting is unsupported by WebLogic, WebSphere or JBoss.
com.appeon.server.monitor.scheduled.task.re start	The switch to restart server instance(s) if active sessions still exist when starting to carry out scheduled tasks.
	The value can be true or false.
	Note this setting is unsupported by WebLogic, WebSphere or JBoss.

3.2.4 Additional configuration for Status Monitor in Appeon Server cluster

If an Appeon Server works in a cluster, the Appeon Server will not only back up the "active" sessions but also the "passive" sessions. The "passive" sessions are remote sessions created by another Appeon Server in the cluster and backed up in the current Appeon Server.

The "active" sessions for an Appeon Server will always be restored if that Appeon Server shuts down abnormally and then is restarted by its Status Monitor, while the "passive" sessions will be restored only if you select the "Enable Logical Restore with Status Monitor" option in the AEM <u>Cluster</u> tool. If this option is not selected, Status Monitor will only restore the "active" sessions and will not restore the "passive" sessions on an Appeon Server.

3.3 Information backed up by Status Monitor

Status Monitor detects Appeon Server status, backs up and restores session information, and automatically restarts Appeon Server every time Appeon Server is detected "shut-

down". This is very helpful, because Status Monitor detects if Appeon Server shuts down abnormally, and will automatically restart Appeon Server while restoring the most recent state of Appeon Server based on the last backup.

3.3.1 What is backed up?

Status Monitor periodically backs up Appeon Server session information that includes:

- User authentication information
- References to Appeon Server transaction components
- References to NVO components (for EAServer only)

Status Monitor does not back up:

- Information being processed in active transactions
- States of stateful NVOs.

3.4 Using Status Monitor

3.4.1 Starting Status Monitor

Step 1: Locate the *bin* subdirectory under <Appeon Home>/bin where appeonmonitor.bat (Windows) or appeonmonitor.sh (Unix\Linux) is stored. For example: C:\Program Files \Sybase\EAServer\appeon\bin.

Step 2: Run the appeonmonitor.bat file (Windows) or appeonmonitor.sh (Unix\Linux) to start Status Monitor.

Note: In Unix\Linux, be sure to run Status Monitor in the background by executing the command "nohup statusmonitor.sh &". If Status Monitor runs in the foreground, executing a ctrl-c command for Status Monitor will stop both the Status Monitor and the Appeon Server process started by Status Monitor.

Once Status Monitor is successfully started, the Status Monitor window displays, indicating that Status Monitor is functioning. To keep the Status Monitor running you must keep the window open or minimized. If you close the Status Monitor window, Status Monitor stops working, and loses the information that has been backed up.

3.4.2 Understanding the information in Status Monitor Window

Once Status Monitor and Appeon Server are simultaneously running, the Status Monitor window as well as the configuration information will display as illustrated in the following figure.

Figure 3.1: Information in Status Monitor Window

```
Appeon Server Status Monitor
                                                                      _ 🗆 X
               : 18(s)
      Cycle
                                                                           *
      [Restart server function enabled]
  Session Setting:
      Cycle
              : 18(s)
      [Backup function enabled]
  Scheduled Task Setting:
      Cycle
               : daily
              : 23:59:59
      Time
      [Restart server function enabled]
  Mail Setting:
      SMTP Server: appeon.dev.com
                                   Port: 25
      Mail Sendto: huangxuxia@appeon.dev.com
      [Mail function enabled]
      ______
[-]
```

Appeon Server Status Monitor can monitor one or multiple server instances at the same time. You can tell how many server instances are configured for being monitored from the signs at the bottom left of the window. As shown in the above figure, there is only one server instance configured for being monitored. If the sign is shown as "[S]", the server instance is shut down.

4 Database Connection Setup

4.1 Overview

The steps for configuring the database for an Appeon-deployed application are the same as the steps for configuring the database for a PowerBuilder application. However, the way the database server is accessed is different: a PowerBuilder application directly accesses the database server via transaction object(s), while an Appeon-deployed application accesses the database server via Appeon Server data sources.

This chapter describes how to enable a deployed application to access its database. Two key tasks are involved:

- Setting up communication between the database server and Appeon Server. This refers to setting up Appeon Server data sources.
- Setting up communication between the deployed application and Appeon Server. This refers to setting up the mapping between the application transaction objects and Appeon Server data sources.

Some advanced configurations are also related to database connection setup (for example, database auditing). This chapter outlines common techniques for handling such configurations in the Appeon environment.

4.2 What is Appeon Server data source?

Appeon Server data source is actually the same terminology as data source in the following mainstream application servers: EAServer 6.x, WebLogic, WebSphere, JBoss, NetWeaver, and JEUS.

Appeon Server data source (for EAServer 6.x, WebLogic, WebSphere, JBoss, NetWeaver Application Server, and JEUS) can only be configured in their corresponding application server management console.

For detailed instructions, please refer to the corresponding documents of EAServer, WebLogic, WebSphere, JBoss, NetWeaver Application Server, or JEUS.

4.2.1 Why Appeon Server data source?

The data source for a Web or Mobile application is the counterpart to the transaction object in the target PowerBuilder application. The transaction properties in the target PowerBuilder application contain database connection parameters, which should be correspondingly configured in data sources.

Appeon Web applications and Appeon Mobile applications rely on Appeon Server data sources to interact with the database servers. When creating a data source, you can use different JDBC drivers. However, Appeon has some recommendations on which JDBC driver is to be used for certain types of databases.

4.2.2 Why JDBC driver only?

In Appeon Web applications and Appeon mobile applications, data-related operations are managed by Appeon Server. The data related operations are built with J2EE technology and

they require the JDBC interface. Regardless of the interface (ODBC, JDBC, or native driver) target PowerBuilder application uses for its database connection, the Web application and the mobile application must use JDBC.

One issue with the JDBC interface is that most PowerBuilder applications use a native database driver, and there may be differences between the behavior of the native/ODBC database interface and the JDBC interface. Before you configure a JDBC data source, you should test your PowerBuilder applications with the JDBC driver to make sure it does not cause any issues.

4.2.3 Supported JDBC driver type

The JDBC data sources can use any of the four types of JDBC drivers:

Type 1: JDBC-ODBC Bridge

Type 2: Native-API/partly Java driver

Type 3: Net-protocol/all-Java driver

Type 4: Native-protocol/all-Java driver

Each type has advantages and disadvantages. You should run tests to decide which type of JDBC driver works the best for the specific application and database. Generally, Type 3 and Type 4 drivers show better performance than Type 2 drivers, so it is recommended that you evaluate Type 3 or Type 4 for both intranet and Internet deployments. Because of performance considerations, Type 2 drivers should only be used in an intranet environment where response times are generally faster.

4.2.4 JDBC driver preparation

4.2.4.1 Preparing PowerBuilder component support files (for EAServer only)

If Appeon Server is installed to EAServer, whichever database and JDBC driver you use for the deployed application, you must add the following PowerBuilder component support files to the %JAGUAR%\lib\ext directory in the Appeon Server computer. %JAGUAR% indicates the installation path of the EAServer that hosts Appeon Server:

PB Version	File Name
8	pbjdbc12.jar
9	pbjdbc1290.jar
10	pbjdbc12100.jar
10.5	pbjdbc12105.jar
11.1	pbjdbc12110.jar
11.5	pbjdbc12115.jar
12.0	pbjdbc12120.jar
12.5	pbjdbc12125.jar
12.6	pbjdbc12126.jar

Table 4.1: PowerBuilder component support files

Retrieve the file from the %Sybase%\Shared\PowerBuilder folder. Make sure the version of the file is the same as the version of PowerBuilder that Appeon supports.

4.2.4.2 Checklist for JDBC driver preparation

Before you configure a JDBC data source for your application database, the following JDBC driver file(s) must be copied to the Appeon Server computer. Following is the checklist of the JDBC driver file(s) that should be copied to the directory.

Database	Driver Type	Driver Files	Availability of the Driver Files
SAP ASA/SQL Anywhere 8.0.2, 9.0,	jConnect JDBC driver (Recommended)	jconn2.jar for jConnect 5.5, or jconn3.jar for jConnect 6	Available at %Sybase% \Shared\jConnect-5_5\classes or at %Sybase%\Shared \jConnect-6_0\classes.
10.0.1, 11.0, or 12.0			Note: Install sql_asa.sql provided at %Sybase%\Shared \jConnect-5_5\sp for jConnect to function properly.
	iAnywhere JDBC- ODBC driver	For Appeon Servers on Windows: dbjodbc8.dll, dbjodbc9.dll, or dbjodbc10.dll	Available in SAP ASA 8.0.2 Build 4361 or above. For earlier versions, you can obtain the files from <u>http://www.sybase.com/</u> <u>downloads</u> .
		jodbc.jar For Appeon Servers on Unix\Linux: dbjodbc8.so jodbc.jar	Note: dbjodbc8.dll or dbjodbc9.dll must be copied to %Sybase%\Shared\ <i>jdkversion</i> \ire \bin\. <i>jdkversion</i> indicates which version of JDK is used, for example, jdk1.4.1_03.
	Sun JDBC-ODBC driver	-	Bundled with the Java 2 SDK, Standard Edition, so there is no need to download it separately.
ASE 12.5.x or 15.x	jConnect JDBC driver	jconn2.jar for jConnect 5.5 jconn3.jar for jConnect 6.0 Note: ASE 15 supports jConnect 6.0 only.	Available at %Sybase% \Shared\jConnect-5_5\classes or at %Sybase%\Shared \jConnect-6_0\classes. Note: Install sql_server12.5.sql for ASE 12.5 or sql_server15.0.sql for ASE 15 for jConnect to function properly.
SAP IQ 12.7.x or 15.x	jConnect JDBC driver	jconn2.jar for jConnect 5.5 jconn3.jar for jConnect 6.0	Available at %Sybase% \Shared\jConnect-5_5\classes or %Sybase%\Shared \jConnect-6_0\classes.

Table 4.2: Checklist of JDBC driver files

Database	Driver Type	Driver Files	Availability of the Driver Files
	Sun JDBC-ODBC driver	-	Bundled with the Java 2 SDK, Standard Edition, so there is no need to download it separately.
SAP HANA 1.00.36	SAP In-Memory Database JDBC driver	Ngdbc.jar	Available at %SAP HANA% \hdbclient\ngdbc.jar.
Oracle 8i	Oracle JDBC driver	classes12.zip Oracle8i 8.1.7.1 Patch nls_charset12.zip	Available at the Oracle Web site (http://www.oracle.com/ technetwork/database/features/ jdbc/index-091264.html).
Oracle 9i	Oracle JDBC driver	For use with JDK 1.3: classes12.zip nls_charset12.zip For use with JDK 1.4: Ojdbc14.jar	Available at the Oracle Web site (<u>http://www.oracle.com/</u> <u>technetwork/database/features/</u> <u>jdbc/index-091264.html</u>). Note: Classes12.zip and ojdbc14.jar cannot be placed in the same location and used at the same time.
Oracle 10g or 11g	Oracle JDBC driver	For use with JDK 1.4: Ojdbc14.jar For use with JDK 1.5:	Available at the Oracle Web site (<u>http://www.oracle.com/</u> <u>technetwork/database/features/</u> <u>jdbc/index-091264.html</u>).
		Ojdbc15.jar	Note: Ojdbc14.jar and ojdbc15.jar cannot be placed in the same location and used at the same time.
Microsoft SQL Server 2000	jTDS JDBC driver (Recommended)	jtds-1.2.jar	Available at SourceForge Web site (http://sourceforge.net/ projects/jtds/). Note: You need to download the jtds-1.2-dist.zip file, which contains the jtds-1.2.jar file.
			According to our tests, jTDS JDBC driver is better than Microsoft SQL Server JDBC driver in the way that it can prevent memory leak and boost performance.
	Microsoft SQL Server JDBC driver	msbase.jar mssqlserver.jar msutil.jar	Available at the Microsoft Web site (http://www.microsoft.com/ downloads/en/details.aspx? FamilyID=99b21b65-e98f-4a61-

Database	Driver Type	Driver Files	Availability of the Driver Files b811-19912601fdc9&displaylang
			=en). Note: The files have different versions. Make sure the file sizes are equal or close to the following.
			msbase.jar: 281KB
			mssqlserver.jar: 66KB
			msutil.jar: 58KB
Microsoft SQL Server	jTDS JDBC driver (Recommended)	jtds-1.2.jar	Available at SourceForge Web site (<u>http://sourceforge.net/</u> <u>projects/jtds/</u>).
2005, 2008 or 2012			Note: You need to download the jtds-1.2-dist.zip file, which contains the jtds-1.2.jar file.
	Microsoft SQL Server JDBC driver	sqljdbc.jar	Available at the Microsoft Web site (http://www.microsoft.com/ downloads/en/details.aspx? FamilyID=99b21b65-e98f-4a61- b811-19912601fdc9&displaylang =en).
IBM DB2 UDB 8.1, 8.2, 9.5 or	IBM JDBC driver	db2java.zip and/or db2jcc.jar	Available in the java or java12 folder of the DB2 Server installation directory.
10.x			The JDBC driver must be exactly the same version as DB2.
Informix 7.x, 8.x, 9.x, 10.x or 11.x	IBM Informix JDBC driver	ifxjdbc.jar and/or ifxjdbcx.jar	Available at the IBM Web site (http://www14.software.ibm.com/ webapp/download/search.jsp? go=y&rs=ifxjdbc).
MySQL 5.5.x	MySQL Connector/J	mysql-connector- java-5.1.19-bin.jar	Available at %MySQL%\MySQL Connector J\mysql-connector- java-5.x.jar
			Or download from <u>http://</u> <u>www.mysql.com/products/</u> <u>connector/</u> .
Teradata 13.0	Teradata JDBC driver	terajdbc4.jar tdgssconfig.jar	Available at the Teradata Web site (<u>http://</u> <u>downloads.teradata.com/</u> <u>download/connectivity/jdbc-</u> <u>driver</u>).

Database	Driver Type	Driver Files	Availability of the Driver Files
PostgreSQ	LPostgreSQL JDBC	For use with JDK 1.7	Available at the PostgreSQL Web
9.2	driver	or 1.8:	site (<u>https://jdbc.postgresql.org/</u>
		postgresql-9.3-1101.jd	download.html). oc41.jar
		For use with JDK 1.6:	
		postgresql-9.3-1101.jd	bc4.jar
		For use with JDK 1.4 or 1.5:	
		postgresql-9.3-1101.jd	bc3.jar

4.2.4.3 Copying drivers to Appeon Server

Copy the JDBC driver files to the proper directory in Appeon Server. The directory varies with the type of application server that Appeon Server is installed to, as shown in the table below.

Note: Configuring JDBC driver files in NetWeaver Application Server is different from those listed. For details on deploying JDBC driver files in NetWeaver Application Server, refer to <u>Setting up data source for NetWeaver</u>.

Server Type	Directory for Storing JDBC Files
EAServer	For Windows: %JAGUAR%\lib\ext directory
	For Unix\Linux: \$JAGUAR/lib/ext
WebLogic	It can be any directory, but the directory path and name must be added in the ClassPath variable of the startWebLogic.cmd (Windows) or startWebLogic.sh (Unix\Linux) file.
	If the directory is %WL_HOME%\server\lib folder (Windows) or \$WL_HOME/server/lib (Unix\Linux), where %WL_HOME% is the installation folder of the WebLogic server (for example, C:\bea \weblogic81\), it is unnecessary to update the ClassPath variable.
WebSphere	For Windows: %WAS_HOME%\lib (%WAS_HOME% is the installation folder of the WebSphere server) For Unix\Linux: \$WAS_HOME/lib
JBoss	For Windows: %JBOSS_HOME%\server\instance\lib (%JBOSS_HOME % indicates the WildFly or JBoss EAP installation path)
	For Unix\Linux: \$JBOSS_HOME/server/instance/lib
JEUS	For Windows: %JEUS_HOME%\lib\datasource (%JEUS_HOME% indicates the JEUS installation path)
	For Unix\Linux: \$JEUS_HOME/lib/datasource

Table 4.3: Copy drivers to Appeon Server

Important Note: Remember to restart Appeon Server after copying files.

If EAServer is running as service, you need to re-install EAServer service, or stop the EAServer service and start EAServer from the Windows start menu, otherwise, you will encounter the "Exception was:javax.management.MBeanException" error when creating the data source. For details, refer to Section 6.2.12, "Failed to create new data sources" in *Troubleshooting*.

4.3 Setting up Appeon Server data sources

The data source for the Web application and the mobile application is the counterpart to the transaction object in the target PowerBuilder application. The transaction properties in the target PowerBuilder application contain database connection parameters, which should be correspondingly configured in data sources.

Appeon Web applications and Appeon mobile applications rely on Appeon Server JDBC data sources to interact with the database servers. When creating a JDBC data source, you can use different JDBC drivers. However, Appeon has some recommendations on which JDBC driver is to be used for certain types of databases.

This section gives detailed instructions on configuring data sources in EAServer 6.x, WebLogic, WebSphere, JBoss, NetWeaver Application Server, and JEUS. If you have problems creating JDBC data sources, refer to the documentations from the database/JDBC driver vendor or SAP EAServer, SAP NetWeaver, Oracle WebLogic, IBM WebSphere, JBoss and TmaxSoft JEUS.

4.3.1 Setting up data source for WebLogic

4.3.1.1 Setting up data source for WebLogic 8.1

The following section will take one database type (ASA/SQL Anywhere database with jConnect JDBC driver) as an example to show you how to create a data source for WebLogic, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

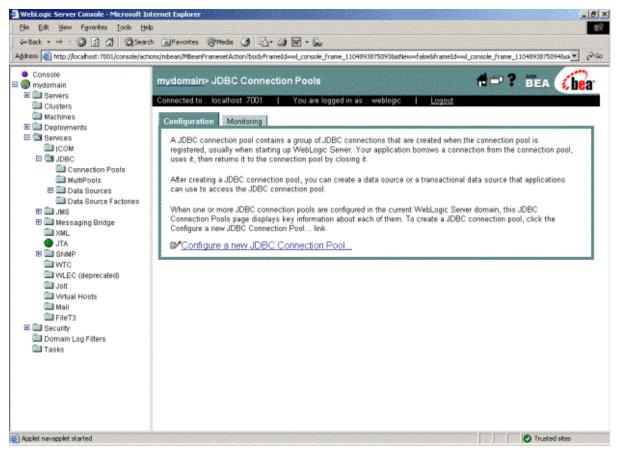
You can create a connection pool and a data source using either the WebLogic server console or the configuration wizard.

Note: the JNDI name specified for the data source will be regarded as the data source name by Appeon Server and AEM.

4.3.1.1.1 Creating a JDBC connection pool

- 1. Start the WebLogic Server for your domain.
- 2. Log on to the WebLogic Server Console.
- 3. Go to **Services** > **JDBC** > **Connection Pools**.

Figure 4.1: Configure a JDBC connection pool



- 4. Click the **Configure a new JDBC Connection Pool** link.
- 5. Select the database type and driver from the dropdown list boxes and click Continue.

Figure 4.2: Choose database

WebLogic Server Console - Microso	At Internet Explorer		. 8 ×				
Elle Edit Wew Pavontes Icols			1				
	iearch 🗈 Favorites @Media 🔇 🔂 - 🖴 🔂 - 🖻		2222				
Address 1 http://localhost:7001/console	e/actions/mbean/MBeanFramesetAction?bodyFrameId=wl_console_frame_L0914722959218isNew=fakeBirameId=wl_console_fra	ame_10914722959228si	260				
Console Gymydomain	mydomain> JDBC Connection Pools> Configure	1 ? BEA 🔏	ea.				
Gervers Gusters Machines	Connected to : locathost :7001 You are logged in as : weblogic Lozaut						
Machines Deployments Deployments	Configure a JDBC Connection Pool	Configure a JDBC Connection Pool					
Becurity Domain Log Filters	Choose database						
📖 Tasks	The following steps will help you create and deploy a connection pool. You can change configuration information and o wish. Select the database type and driver for your new connection pool.	ileployment options later if y	ou				
	Database Type: Sybase						
	DataDirect's Sybase Driver (Type 4XA) Versions:11X, 12X DataDirect's Sybase Driver (Type 4) Versions:11X, 12X Sybase's Driver (Type 4XA) Versions:5X Database Driver: Sybase's Driver (Type 4) Versions:4.1 Sybase's Driver (Type 4) Versions:5X Other	- -					
	Note: Not all drivers in the list are installed. You may need to install the driver you select before you can use it select other.	I. If your driver is not listed,					
	*Weblogic Server JDBC Certified						
		Continue	1				
	P		reenad				
Applet navapplet started		Trusted sites					

6. Choose a name for the new connection pool (for example, appeontutor) and fill in the blanks for the ASA/SQL Anywhere database. Click **Continue**.

Table 4.4: Connection pool properties

Name	Input the name of the new connection pool
Driver classname	com.sybase.jdbc2.jdbc.SybDriver
URL	jdbc:sybase:Tds: <i>hostname</i> :2638/ <i>dbname</i> (The default port of the ASA/SQL Anywhere database is 2638)
Database User name	Type the database login username. The username is set at the database server.
Password	Type the database login password. The password is set at the database server.

Figure 4.3: Data source properties

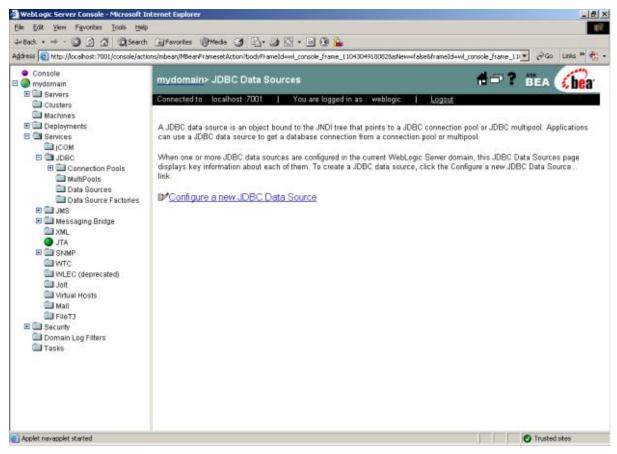
ye Edit yew Pgyontes Icols Hei ⊐Back • => - ② 🖸 🗂 ③Seard	EFevorites @Meda 3 2-	80.E		
the second s		meId=wl_console_frame_L0914722959218isNew=false8	frameId=+ _console_frame_10	0914722959228ss • 🔊 G
Console mydomain Custers Clusters	mydomain> JDBC Connection P Connected to : locahost :7001 You	Pools> Configure ware logged in as : weblogic Logged	4 0 ?	BEA (bea
Machines Deployments	Configure a JDBC Connection Pool Define and test connection			
E Services E COM E State				
Connection Pools MultiPools Data Sources Data Source Factories JMS Messaging Bridge	Name your new connection pool properties you define. Name: The name of this JDBC co	el and define connection properties. You can opt appeontutor ormection pool.	ionally test a database co	nnection using the
IIIX 📖	Connection Properties			
E SNMP WTC WLEC (deprecated) Joit Virtual Hosts	driver class must be in the	com sybase jdbc2 jdbc.SybDriver	connections in the connection	pool. (Note that this
💷 Mail 💷 FileT3	URL: The LISt of the debates	idbc.sybese:Tds:192.0.2.29:2638	40 4	
Security Domain Log Filters Tasks	Database User Name:			
	The database account us	ser name used in the physical database connection.		
	Password	POR .		
	Confirm Password:	4004		
	The database account on	experience experience of the structure o		

- 7. Test your connection to verify that you can connect to your database.
- 8. Create and deploy the new connection pool.

4.3.1.1.2 Configuring a JDBC data source

1. Go to **Services** > **JDBC** > **Data Sources**.

Figure 4.4: Configure a JDBC data source



2. Click the **Configure a new JDBC Data Source** link.

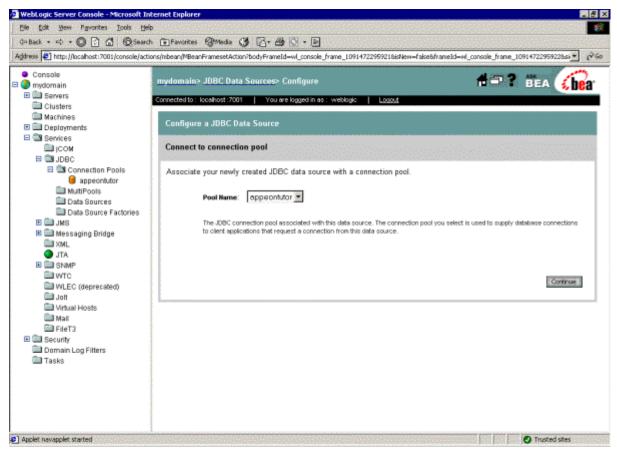
3. Specify the new data source name and JNDI name and click **Continue**. You can use default values for the other options.

Note: The JNDI name will be used as the data source in AEM.

Figure 4.5: Data source properties

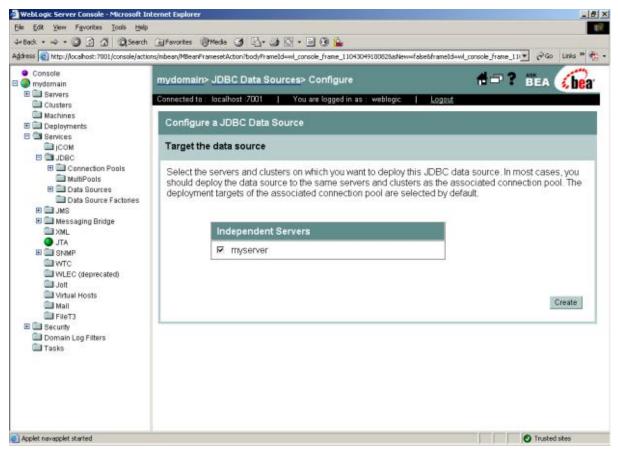
4. Select the newly created connection pool in the dropdown list box and click **Continue**.

Figure 4.6: Select the connection pool



5. Select the server to which you want to deploy the JDBC data source, and click Create.

Figure 4.7: Target the data source



6. Confirm the Deployed status of the data source is "true" in the JDBC Data Sources window.

Figure 4.8: Deployed status

hess 🕘 http://localhost:7001/console/act			ameid=wil_console_fra		025isNew=false6fr	ame3d=w(_cor	sole_frame_11	- Pao 1	inks »
Console	mydomain>	JDBC Data S	Sources			j.	# = ?	BEA .	he
Gusters	Connected to :	localhost :7001	You are log	ged in as : we	blogic L	ogaut			
Machines Deployments Services	A JDBC data source is an object bound to the JNDI tree that points to a JDBC connection pool or JDBC multipool. Applications can use a JDBC data source to get a database connection from a connection pool or multipool. When one or more JDBC data sources are configured in the current WebLogic Server domain, this JDBC Data Sources page displays key information about each of them. To create a JDBC data source, click the Configure a new JDBC Data Source link.								
ICOM I JDBC I Connection Pools MultiPools									
Data Sources Data Source Factories	Configure	a new JDBC	Data Source						
DMS Messaging Bridge Messaging Bridge	QCustomiz	e this view							
XML JTA JTA SNMP VVICC (deprecated) Jott Jott Virtual Hosts Mail	Name	JNDIName	Pool Name	Row Prefetch Enabled	Enable Two Phase Commit	Stream Chunk Size	Row Prefetch Size	Deployed	
	MyJDBC Data Source	MyJDBC Data Source	MyJDBC Connection Pool	false	false	256	48	true	80
Mail									
FileT3									
ElleT3 Security Domain Log Filters									

4.3.1.2 Setting up data source for WebLogic 11g

The following section will take one database type (ASA/SQL Anywhere database with jConnect 6.0 JDBC driver) as an example to show you how to create a data source for WebLogic, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

You can create a data source using either the WebLogic server console or the configuration wizard.

Detailed steps are as below:

- Step 1: Start the Admin Server for WebLogic Server Domain.
- Step 2: Log on to the WebLogic Server Administration Console.
- Step 3: In the **Domain Structure** section, select **Services** > **JDBC** > **Data Sources**.
- Step 4: On the summary of **Summary of JDBC Data Sources** page, click New.

Figure 4.9: The Summary of JDBC Data sources page

ORACLE WebLogic Server® Administration Console

Change Center	Welcome, appeon Connected to: appeon	erord Heln	
View changes and restarts	Search		
Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.		of Services: JDBC >Summary of JDBC Data Sources	
	Summary of JDBC Data Source	ces	
Domain Structure ppeon Deployment Deployments Services H-Messaging D-DBC -Data Sources -Data Sources -Data Sources -Persistent Stores -Persistent Stores -Foreign JNDI Providers	look up a data source on the JNDI t	ound to the JNDI tree that provides database connectivity t ree and then borrow a database connection from a data s lata source objects that have been created in this domain nns Exist)	source.
Work Contexts XML Registries	🗖 Name 🗞	JNDI Name	Targets
├─XML Entity Caches └─jCOM	Appeonsample2	Appeonsample2	AdminServer
	New Delete		Showing 1 to 1 of 1 Previous Next
How do I 🗖			

Step 5: On the **JDBC Data Source Properties** page, enter or select the following information and then click **Next**.

Figure 4.10: JDBC Data Source Properties page

delete items in this domain.		-			
	Create a New JDBC D	ata Source			
Domain Structure	Back Next Finis	h Cancel			
appeon 🔺		JDBC Data Source Properties			
Deployments ⊟-Services ⊞-Messaging ⊟-JDBC	The following properties w * Indicates required fields	The following properties will be used to identify your new JDBC data source. * Indicates required fields			
Data Sources Multi Data Sources	What would you like to nam	e your new JDBC data source?			
LData Source Factories Persistent Stores Foreign JNDI Providers	a∰ [*] Name:	Appeonsample			
Work Contexts XML Registries	What JNDI name would you	I like to assign to your new JDBC Data Source?			
XML Entity Caches jCOM	JNDI Name:				
How do I Create JDBC data sources					
Create LLR-enabled JDBC data sources	What database type would	you like to select?			
	Database Type:	Sybase			
System Status 🗖	What database driver would	d you like to use to create database connections?			
Health of Running Servers	Database Driver:	Sybase's Driver (Type 4) Versions:6.X			
Failed (0) Critical (0)	Back Next Finis	h Cancel			
Overloaded (0)					
Warning (0)					

Fill in details as required in the table below.

Field	Description	Value
Name	Enter a desired new JDBC data source name.	Appeonsample
JNDI Name	Enter a JNDI name that you like to assign to your new JDBC Data Source.	Appeonsample
	Note: The JNDI name will be used as the data source name in AEM.	
Database Type	Select the database type from the dropdown list box.	SAP
Database Driver	Select the database drive from the dropdown list box.	SAP's Driver (Type 4) Versions:6.X

 Table 4.5: JDBC Data Source Properties

Step 6: On the **Transactions Options** page, check the **Supports Global Transactions** checkbox and select the **One-Phase Commit** radio button, and then click **Next**.

Figure 4.11: Transaction options

delete itemo in trio domain.	
	Create a New JDBC Data Source
Domain Structure	Back Ned Finisin Cancel
appeon	Transaction Options
Deployments	You have selected non-XAJDBC driver to create database connection in your new data source.
B-Services B-Messaging D-JDBC	Does this data source support global transactions? If yes, please choose the transaction protocol for this data source.
Data Sources Multi Data Sources	C Supports Global Transactions
LData Source Factories Persistent Stores Foreign JNDI Providers	Select this option if you want to enable non-XAJDBC connections from the data source to participate in global transactions using the Logging Last Resource (LLR) transaction optimization. Recommended in place of Emulate Two-Phase Commit.
	C Logging Last Resource
-jcom	Select this option if you want to enable non-X4.JDBC connections from the data source to emulate participation in global transactions using JTA. Select this option only if your application can tolerate heuristic conditions.
	C Emulate Two-Phase Commit
How do I 🖪	Select this option If you want to enable non-XA JDBC connections from the data source to participate in global transactions using the one-phase commit transaction processing. With this option, no other resources can participate
Create JDBC data sources	in the global transaction.
Create LLR-enabled JDBC data sources	© One-Phase Commit
	Back Ned Finish Cancel
System Status	

Step 7: On the **Connection Properties** page, enter the following information, and then click **Next.**

Figure 4.12: Connection Properties page

	Create a New JDBC Data Source		
Domain Structure	Back Next Finish Cancel		
appeon	Connection Properties		
Deployments	Define Connection Properties.		
⊡-Services ⊡-Messaging	What is the name of database you would like to connect	t to?	
⊟-JDBC Data Sources Multi Data Sources	Database Name:	Appeonsample	
LData Source Factories	What is the name or IP address of the database server'	?	
Foreign JNDI Providers Work Contexts XML Registries	Host Name:	192.0.3.142	
XML Entity Caches jCOM	What is the port on the database server used to connect to the database?		
)	Port:	2638	
How do I 🗖	What database account user name do you want to use	to create database connections?	
Create JDBC data sources Create LLR-enabled JDBC data sources	Database User Name:	dba	
Sources	What is the database account password to use to create database connections?		
System Status	Password:	•••	
Health of Running Servers	Confirm Password:	•••	
Failed (0)			
Critical (0)	Back Next Finish Cancel		
Overloaded (0)			
Warning (0)			

Fill in details as required in the table below.

Table 4.6:	Connection	Properties page
-------------------	------------	------------------------

Field	Description	Value
Database Name	Enter a database name that you would like to connect.	Appeonsample
Host Name	Enter a host name or IP address of the database server.	192.0.3.142
Port	Enter a database port on the database server used to connect to the database.	2638
Database User Name	Enter the database account user name that you want to use to create the database connections.	dba
Password	Enter the database account password that you want to use to create the database connections.	sql
Confirm Password	Enter the same password for confirmation.	sql

Step 8: On the **Test Database Connection** page, specify the **Driver Class Name** and the **URL**, and then click **Test Configuration**. If the test is successful, A "Connection test succeeded" message appears at the top of the page. If the test is unsuccessful, you should correct any configuration errors and retry the test. And then click **Next**.

Figure 4.13: Test Database Connection page

delete items in this domain.	Create a New JDBC Data Source			
Domain Structure	Test Configuration Back Next Finish Cancel			
appeon 🔶	Test Database Connection			
←Deployments	Test the database availability and the connection properties you provided.			
	What is the full package name of JDBC driver class used to create database of	connections in the connection pool?		
	(Note that this driver class must be in the classpath of any server to which it is deployed.)			
Multi Data Sources Data Source Factories				
Persistent Stores Foreign JNDI Providers	Driver Class Name:	base.jdbc3.jdbc.SybDriver		
Work Contexts XML Registries	What is the URL of the database to connect to? The format of the URL varies I	by JDBC driver.		
XML Entity Caches	URL:	8.142:2638/Appeonsample		
		p.142.2030/Appeonsample		
How do I	What database account user name do you want to use to create database con	nnections?		
	Database User Name:	dba		
Create JDBC data sources Create LLR-enabled JDBC data	What is the database account password to use to create database connections?			
sources	(Note: for secure password management, enter the password in the Password field instead of the Properties field below)			
System Status	Password:	••••••		
Health of Running Servers	Confirm Password:			
Failed (0)				
Critical (0) Overloaded (0)	What are the properties to pass to the JDBC driver when creating database connections?			
Warning (0)	Properties:			
OK (1)	url=jdbc:sybase:Tds:192.0.3.142:2638/App 📥 eonsample			
	networkProtocol=Tds portNumber=2638			
	userName=dba databaseName=Appeonsample			
	What table name or SQL statement would you like to use to test database cor	inections?		
	Test Table Name:			
	Test Configuration Back Next Finish Cancel			

Fill in details as required in the table below.

Table 4.7: Specify the Driver Class Name and the URL

Field	Description	Value
Driver Class Name	Enter the driver name of the database specified.	com.sybase.jdbc3.jdbc.SybDriver
URL	Enter the server name of the database specified.	jdbc:sybase:Tds:Hostname:Port/ ServiceName
		For example: jdbc:sybase:Tds:192.0.3.142:2638/ Appeonsample.

Step 9: On the **Select Targets** page, select the **AdminServer** check box, and then click **Finish**.

Figure 4.14: Select Targets Page

	Create a New JDBC Data Source
Domain Structure	Back Next Finish Cancel
appeon	Select Targets You can select one or more targets to deploy your new JDBC data source. If you don't select a target, the data source will be created but not deployed. You will need to deploy the data source at a later time. Servers AdminServer
L-Data Source Factories Persistent Stores Foreign JNDI Providers Work Contexts XML Registries XML Entity Caches	Back Next Finish Cancel

Step 10: On the **Summary of JDBC Data Sources** page, the Data Source that you created appears in the list, and then click the link to the name of the new data source in the **Data Sources** window.

Figure 4.15: Summary of JDBC Data Sources page

ORACLE' WebLogic Se	erver® Administration Console		
Change Center View Changes and restarts Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete tems in this domain.	Welcome, sppson Connected to sppson Home (Log Out (Preferences (IM) Record (Help Connel) Home > Summary of UDBC Data Sources Messages All changes have been activated. No restarts are necessary.		
Domain Structure appeen ⊕-Environment ⊡-Deptopments ⊕-Bervices ⊕-Unit Drain Sources □-Date Drains Sources □-Date Drains Sources □-Destructes □-Persistent Stores □-Persistent Stores □-Persistent Stores □-Vork Contexts	from a data source. This page summarizes the JDBC data source objects that hav Customize this table Data Sources(Filtered - More Columns Exist)		ions can look up a data source on the UNDI tree and then borrow a database connection
-XML Entity Caches	New Delete		Showing 1 to 2 of 2 Previous Next
How do I	Appeonsample	JNDI Name Appeonsample	AdminServer
Create JDBC data sources	Appeonsample2	Appeonsample2	AdminServer
Delete JDBC data sources	New Delete		Showing 1 to 2 of 2 Previous Next

Step 11: (Important) On the Settings for the base_domain page, click appeon in the Domain Structure section and then select Security tab page. Select Anonymous Admin Lookup Enabled check box and click Save. This will allow AEM to read the JNDI Names.

Figure 4.16: Settings for the base_domain page

	Settings for appeon		
Domain Structure	Configuration Monitoring Control Security	Web Service Security Notes	
appeon ▲ B-Environment Deployments D-Services III-Messaging	General Filter Unlock User Embedded LDAF	P Roles Policies	
-JDBC -Data Sources -Multi Data Sources Data Source Factories	This page allows you to define the general security settings for this WebLogic Server domain. Use this page to change the default security realm for the WebLogic domain.		
Persistent Stores Foreign JNDI Providers Work Contexts	🎉 Default Realm:	myrealm 💌	Select the security realm that should be used as the default (active) realm for this WebLogic Server domain. More Info
XML Registries XML Entity Caches jCOM	🗹 🍓 Anonymous Admin Lookup Enabled		Specifies whether anonymous, read-only access to WebLogic Server MBeans should be allowed from the MBeanHome APL More Info
	🗖 Cross Domain Security Enabled		Specifies whether or not cross-domain security is enabled for the domain. More Info
How do I 🗖	Excluded Domain Names:		Specifies a list of remote domain names that are to be excluded from the cross-domain checks. More info
 Change the default security realm Enable Cross Domain Security between domains 			
Create a Cross-Domain Security Credential Mapping			
Reset the EnforceStrictURLPattern flag	Save		

Step 12: Choose **All Programs** > **Oracle WebLogic** > **User Projects** > **appeon** from the **Windows Start** menu to restart your WebLogic server for configuration changes to take effect.

Step 13: In order to test the connection, please log on to Appeon AEM to configure a Transaction Object and then test it.

4.3.2 Setting up data source for WebSphere

4.3.2.1 Setting up data source for WebSphere 6.1

The following section will take one database type (Oracle database with Oracle JDBC driver) as an example to show you how to create a data source for WebSphere, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

Note:

- 1. The JNDI name specified for the data source will be regarded as the data source name by Appeon Server and AEM.
- 2. If the **global security mode** is turned on in WebSphere, AEM will not be able to access the WebSphere data sources. Please refer to <u>Section 4.3.2.3</u>, "Required configurations when global security is on" for solutions.

4.3.2.1.1 Updating JDBC driver path in master configuration

1. Start the WebSphere Server and log on to the WebSphere Server Console.

2. Click **Environment** > **Manage WebSphere Variable** in the console.

3. Set the path of the Oracle JDBC driver to the value of the ORACLE_JDBC_DRIVER_PATH variable.

As required in <u>JDBC driver preparation</u>, the path of the Oracle JDBC driver is %WAS_HOME%\lib\ (Windows) or \$WAS_HOME/lib/ (Unix\Linux). WAS_HOME is the installation folder of the WebSphere platform.

4. Save changes to the ORACLE_JDBC_DRIVER_PATH variable in the master configuration.

4.3.2.1.2 Creating a new J2C authentication data entry

1. Click **Security** > JAAS Configuration in the WebSphere administrative console, then click J2C Authentication Data.

2. Click **New** to create a new J2C authentication data entry.

Figure 4.17: New J2C authentication data entry

General Proper	ties	
Allas	•	Specifies the name of the authentication data entry.
User ID	*	 Specifies the J2C authentication data user ID.
Password	*	Specifies the password to use for the target Enterprise Information System.
Description		Specifies an optional description of the authentication data entry. For example, this authentication data entry is used to connect to DB2.

Fill in details as required in the table below.

Table 4.8: Details for the new authentication data entry

Alias	Enter a suitable (short) name, such as "UDDIAlias"
Userid	Enter the database user ID used to read and write to the UDDI registry database.
Password	Enter the password associated with the user ID specified above.
Description	Enter a suitable description of the chosen user ID or leave it blank.

3. Click **Apply** and save changes to the master configuration.

4.3.2.1.3 Creating and configuring a JDBC provider

- 1. Click **Resources** | **JDBC Providers** in the WebSphere administrative console.
- 2. Click New. The JDBC Providers configuration window opens.

Figure 4.18: JDBC Providers configuration window

Totat (Cel -yihu	aming, Node			
C	2	Cell	yihuaming	ty of resources to a particular cell, node, or server. w, they will be created within the current scope.		
6	-	Node	yihuaming			
C		Server	server1			
 A A	fere					
	Nam	e 🗘		Description 🗘		
None						

3. Select the correct JDBC provider type. For example, Oracle JDBC Driver.

General Prope	rties		
JDBC Providers	User-defined JDBC Provider	*	If the list of supported JDBC Provider types
	Cloudscape JDBC Provider Cloudscape JDBC Provider (XA) Cloudscape Network Server Using Universal JDBC Driver Informix JDBC Driver Informix JDBC Driver (XA) Sybase JDBC Driver	-	does not include the JDBC Provider that you wish to use, select the 'User-Defined JDBC Provider'. You will need to consult the documentation for the JDBC Provider for more information on specific properties that may be required by that provider.
Apply OK	Sybase JDBC Driver (XA) -Oracle JDBC Driver		
	Oracle JDBC Driver (XA) DataDirect ConnectJDBC type 4 driver for MS SQL Server DataDirect ConnectJDBC type 4 driver for MS SQL Server (XA)		

Figure 4.19: Select JDBC Provider type

4. Select the driver provider and driver file.

Figure 4.20: JDBC driver provider and driver file

Configuration		
General Properties		11
Scope	* cells; yihuaming; nodes; yihuaming	The scope of the configured resource. This value indicates the configuration location for the configuration file.
Name	Oracle JDBC Driver	The name of the resource provider.
Description	Oracle JDBC Driver	A text description for the resource provider.
Classpath	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar	A list of paths or JAR file names which together form the location for the resource provider classes. Classpath entries are separated by using the ENTER key and must not contain path separator characters (such as '' or ''). Classpaths may contain variable (symbolic) names which can be substituted using a variable map. Check your drivers installation notes for specific JAR file names which are required.

The Classpath field displays the path to the JDBC file that is configured in the WebSphere variable, for example, the ORACLE_JDBC_DRIVER_PATH driver.

5. Click **OK** to return to the JDBC providers page, where the new JDBC driver appears in the list.

6. Save the settings.

4.3.2.1.4 Creating a data source

- 1. Click **Resources** > **JDBC Providers** in the administrative console.
- 2. Choose the JDBC resource provider under which you want to create the data source.

3. Click the **Data Sources** link under **Additional Properties**. The Data sources page is displayed.

Figure 4.21: Data source page

otat 0			
🗉 Filter			
Preferences			
New Delete Test	t Connection		
and the second	1 2	Description \$	Category \$

- 4. Click **New** to display the Data source settings page.
- 5. Specify the data source name and JNDI name of the data source.

Note:

- The JNDI name specified for the data source will be regarded as the data source name by Appeon Server and AEM.
- If the **global security mode** is turned on in WebSphere, AEM will not be able to access the WebSphere data sources. Please refer to <u>Section 4.3.2.3</u>, "<u>Required configurations when</u> <u>global security is on</u>" for solutions.

Figure 4.22: Data source properties

Configuration		
General Properties		
Scope	 cells:yihuaming:nodes:yihuaming 	The scope of the configured resource. This value indicates the configuration location for the configuration file.
Name	* testing_oracle	The required display name for the resource.
JNDI Name	testing_oracle	The JNDI name for the resource.

6. Select the J2C authentication data entry configured in <u>Creating a new J2C authentication</u> <u>data entry</u> in the Container-managed Authentication Alias list box.

7. Click **Apply** and **OK** to return to the Data Sources window. The name of the new data source displays in the window.

8. Click the name of the new data source in the Data Sources window.

9. Click the link to Custom Properties in the Additional Properties of the data source configuration window.

Figure 4.23: Additional properties

Additional Properties		
Connection Pool	An optional set of connection pool settings.	
	Properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database.	

10. Configure all the required fields according to the instructions in the window. For example, set the URL property to jdbc:oracle:thin:@192.0.0.51:1521:testing if Oracle 9i, 10g, and 11g, or jdbc:oracle:thin:@//192.0.0.51:1521/testing if Oracle 12c.

Figure 4.24:	Data source	URL	property
---------------------	-------------	-----	----------

General Properties			
Scope	cells: yihuaming: nodes: yihuaming	The scope of the configured resource. This value indicates the configuration location for the configuration file.	
Required	true	1	
Name	URL	Name associated with this property (for example, PortNumber and ConnectionURL).	
Value	pracle:thin:@192.0.0.51:1521:testing	Value associated with this property in this property set.	
Description	This is a required property. The URL indicating the database from which the Data Source will obtain connections, such as 'jdbc:oracle:thin:@localhost:1521:sample' for thin driver and 'jdbc:oracle:oci8:@sample' for thick driver.	Text to describe any bounds or well- defined values for this property.	
Туре	java Jang String	Fully qualified Java type of this property (java.lang.Integer, java.lang.Byte).	

11. Click **OK** to return to the data source configuration window.

12. Click the Test Connection for the new data source. Make sure the connection is successful before continuing.

13. Save the master configuration.

4.3.2.2 Setting up data source for WebSphere 8.0

The following section will take one database type (Teradata database with Teradata JDBC driver) as an example to show you how to create a data source for WebSphere, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

Note:

- 1. The JNDI name specified for the data source will be regarded as the data source name by Appeon Server and AEM.
- 2. If the **global security mode** is turned on in WebSphere, AEM will not be able to access the WebSphere data sources. Please refer to <u>Section 4.3.2.3</u>, "<u>Required configurations</u> when global security is on" for solutions.

4.3.2.2.1 Creating and configuring a JDBC provider

Step 1: Start the WebSphere Server and log on to the WebSphere Server Console.

Step 2: Click **Resources** > **JDBC** > **JDBC** providers. In the right pane, select the appropriate scope for the JDBC provider. (This scope becomes the scope of your data source.) You can choose a cell, node, cluster, or server. And then click **New**.

Figure 4.25: JDBC providers page

WebSphere. software		Welcome admin	Help	Logout	IBM.
View: All tasks	Cell=websphere8testNode01Cell, Profile=AppSrv01				Close page
■ Welcome	JDBC providers		?	– Help	
Guided Activities	JDBC providers			Field help	
Servers	Use this page to edit properties of a JDBC pr				nelp information ield label or list
Applications	specific JDBC driver implementation class for environment. Learn more about this task in task steps and more general information ab	a <u>quided activity</u> . A guided activit		marker wi cursor is d	hen the help displayed.
■ Services	Scope: Cell=websphere8testNode01Cell,		Server= server1	Page help	
🗆 Resources		-		More info this page	rmation about
Schedulers	Scope specifies the level at which th visible. For detailed information on works, see the scope settings help.			Command	Assistance
Object pool managers		. —		View adm scripting of	<u>inistrative</u> command for
⊞ JMS	Node=websphere8testNode01, S	erver=server1 💌		last action	<u>г</u>
□ JDBC	Preferences				
 JDBC providers 	New Delete				
 Data sources Data sources (WebSphe 					
Application Server V4)	Select Name 🗘 Scope 🗘	c	escription ()		
Resource Adapters	You can administer the following resources:				
	Derby JDBC Provider Node=websphe	n)erby embedded Ion-XA JDBC Provider		
⊞ Mail	Total 1				
⊞ URL					
Resource Environment					

Step 3: On the Create new JDBC provider page, enter or select the following information, and then click **Next**.

Figure 4.26: Create new JDBC provider page

WebSphere. software		Welcome admin	Help	Logout	IBM.
	Cell=websphere8testNode01Cell,	Profile=AppSrv01			Close page
■ Welcome	Create a new JDBC Provider				Help
■ Guided Activities					Field help
Servers	Create a new JDBC Provide	ir			The require name for t
	Step 1: Create new JDBC provider	Create new JDBC provider			
Services	Step 2: Enter	Set the basic configuration values of a JDBC provider, specific vendor JDBC driver implementation classes th	at are required f	to access the	
□ Resources	database class path information	database. The wizard fills in the name and the descri different values.	ption fields, but	you can type	
 Schedulers Object pool managers JMS JDBC JDBC providers Data sources Data sources (WebSpher Application Server V4) Resource Adapters Asynchronous beans Cache instances Mail URL 	Step 3: Summary	Scope [cells:websphere8testNode01Cell:nodes:websphere8t P Database type [User-defined]= + Implementation class name a.jdbc.TeraConnectionPoolDataSource + Name Teradata Driver Description Tteradata Driver	testNode01:serv	ers:server1	
■ Resource Environment	Next Cancel				
■ Security					
■ Environment					
System administration					

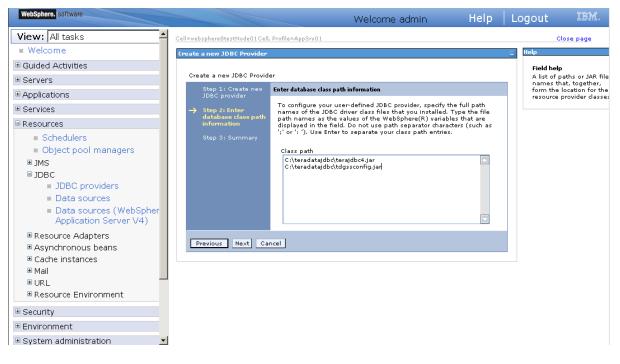
Fill in details as required in the table below.

 Table 4.9: Create new JDBC provider

Field	Description	Value
Database type	Select the database type of the JDBC provider	User-defined
	you need to create from the drop-down list.	

Field	Description	Value
	Note: If the list of database types does not include the database type that you want to use, select "User-defined".	
Implementation classname	Enter the name of the connection pool driver of the database specified.	com.teradata.jdbc.TeraC onnectionPoolDataSource
Name	Enter a desired new JDBC provider name.	Teradata Driver
Description	Enter the description that you like to describe your new JDBC provider.	Teradata Driver

Step 4: On the Enter database class path information page, enter the database class path, and then click **Next**.



Fill in details as required in the table below.

Table 4.10: Database class	s path information
----------------------------	--------------------

Field	Description	Value
Class path	The full name of the jar files that make up the Teradata JDBC Driver. The example assumes that you have copied these files to the C:\teradatajdbc directory on your system. A path on a Unix machine would use forward slashes to separate its components.	C:\teradatajdbc\terajdbc4.jar C:\teradatajdbc\tdgssconfig.jar

Step 5: On the Summary page, you can review the settings and when done click Finish.

Figure 4.28: Summary page

WebSphere. software			Welcome admin	Help	Logout	IBN		
View: All tasks	Cell=websphereStestNodeO1Cell, P	rofile=AppSrv01				Close page		
Welcome	Create a new JDBC Provider							
Guided Activities								
Servers	Create a new JDBC Provider							
■ Applications	Step 1: Create new JDBC provider	Summary						
Services	Step 2: Enter	Summary of act	ions:					
Resources	database class path information	Options	Values					
	→ Step 3: Summary	Scope	cells:websphere8testNode01Cell:r	ll:nodes:websphere8testNode01:servers:se				
 Schedulers Object pool managers 	-> Step 3: Summary	JDBC provider name	Teradata Driver					
■ JMS		Description	Tteradata Driver					
		Class path	C:\teradatajdbc\terajdbc4.jar C:\t	eradatajdbc\tdgs	sconfig.jar			
= JDBC providers		Implementation class name	com.teradata.jdbc.TeraConnection	PoolDataSource				
Data sources								
Data sources (WebSpher	Previous Finish Ca	ncel						
Application Server V4)								
■ Resource Adapters								
■ Asynchronous beans								
■ Cache instances								
🗉 Mail								
■ URL								
■ Resource Environment								
■ Security								
■ Environment								
System administration								

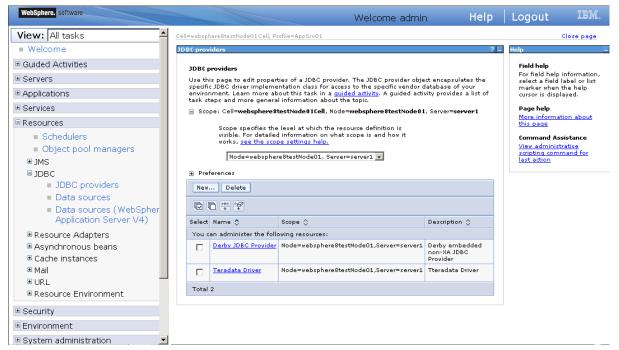
Step 6: On the JDBC providers page, click **Save** to commit these changes to the master configuration and have them go live inside of the server.

WebSphere. software			Welcome admin	n Help	Logout	IB)
View: All tasks	JDBC prov	iders		2.		
■ Welcome		😑 Messages			Help	
■ Guided Activities			have been made to your local configuration. Ye rectly to the master configuration.	ou can:	Field help	
Servers		Review	changes before saving or discarding.		For field help select a field l	
Applications		Che ser effect.	ver may need to be restarted for these change	s to take	marker when t cursor is displ	
Services					Page help	
Resources	JDBC	providers			More informat this page	ion abou
Schedulers			ties of a JDBC provider. The JDBC provider obje entation class for access to the specific vendor (Command Ass	sistance
 Object pool managers 			pout this task in a <u>quided activity</u> . A guided acti al information about the topic.	vity provides a list of	View administr scripting comm	
∎ JMS	🖃 Sco	pe: Cell =websphere8	testNode01Cell, Node=websphere8testNode0	l, Server= server1	last action	
□ JDBC		C	e level at which the resource definition is			
JDBC providers		visible. For detaile	d information on what scope is and how it			
Data sources		works, <u>see the sco</u>	<u>pe settings help.</u>			
Data sources (WebSpher		Node=websphe	re8testNode01, Server=server1 💌			
Application Server V4)	🛨 Pre	ferences				
■ Resource Adapters	New	Delete				
🗉 Asynchronous beans						
🗉 Cache instances		0 # #				
🗉 Mail	Select	Name 🛟	Scope 🗘	Description 🗘		
	You a	an administer the foll	owing resources:			
Resource Environment Security		Derby JDBC Provider	Node=websphere8testNode01,Server=server1	Derby embedded non-XA JDBC Provider		
■ Environment		Teradata Driver	Node=websphere8testNode01,Server=server1	Tteradata Driver		
🗉 System administration 📃 💌	Total	2				

Figure 4.29: JDBC providers page

Now the "Teradata Driver" appears in the list of JDBC providers.

Figure 4.30: The newly created JDBC providers page



4.3.2.2.2 Creating the Data Source

Step 1: Start the WebSphere Server and log on to the WebSphere Server Console.

Step 2: Click **Resources** > **JDBC** > **Data sources**. In the right pane, select appropriate scope for the data source. (This scope becomes the scope of your data source.) You can choose a cell, node, cluster, or server. And then click **New**.

Figure 4.31: Create the Data Source page

WebSphere. software				Welcome admin	Help 📗	Logout	IBM.
View: All tasks	Cell=websphe	re8testNode01C	ell, Profile=AppSrv01				Close page
Welcome	Data source	15					?
Guided Activities	Data so	urces					
Servers				source that is associated with your selected JD			
				ing the database. Learn more about this task ral information about the topic.	in a <u>quided ac</u>	<u>tivity</u> . A guided	activity
Services	🖃 Scop	e: Cell =websph	ere8testNode01Cell	, Node=websphere8testNode01, Server=serv	er1		
🗆 Resources				the resource definition is visible. For detailed i , see the scope settings help.	nformation		
Schedulers			phere8testNode01,				
Object pool managers		,	phereotesthodeor,	Server-Serveri			
⊞ JMS	🕀 Prefe						
□ JDBC	New	Delete	Test connection	Manage state			
JDBC providers	BF	9 👾 🗐					
Data sources				-			
 Data sources (WebSpher Application Server V4) 	Select	×	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
			following resources				
■ Resource Adapters		<u>Default</u> Datasource	DefaultDatasource	Node=websphere8testNode01,Server=server	Derby JDBC Provider	for the	
						WebSphere Default	
■ Cache instances						Application	
Mail	Total 1						
■ URL							
■ Resource Environment							
■ Security							
Environment							
🗉 System administration 📃 📃							

Step 3: On the Enter basic data source information page, enter the following information. And then click **Next.**





Fill in details as required in the table below.

Table 4.11: The basic Data Source information

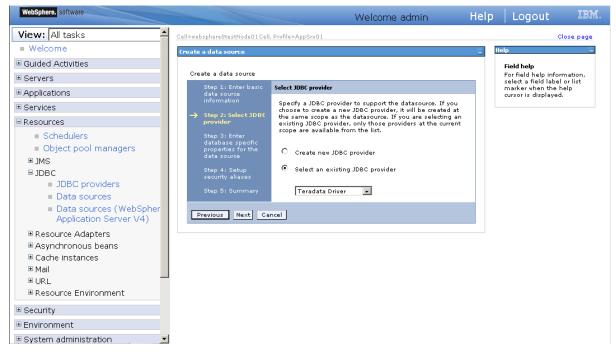
Field	Description	Value
Data Source Name	Enter a desired new JDBC data source name.	testTeradataJdbcDS
JNDI Name	Enter a JNDI name that you like to assign to your new JDBC Data Source.	testTeradataJdbcDS

Note:

- The JNDI name specified for the data source will be regarded as the data source name by Appeon Server and AEM.
- If the **global security mode** is turned on in WebSphere, AEM will not be able to access the WebSphere data sources. Please refer to <u>Section 4.3.2.3</u>, "<u>Required configurations when</u> <u>global security is on</u>" for solutions.

Step 4: On the **Select JDBC provider** page, click **Select an existing JDBC provider** and select **Teradata Driver** from the drop-down list. And then click **Next**.

Figure 4.33: Select JDBC provider page



Step 5: On the Enter database specific properties for the data source page, click Next.

Figure 4.34: Enter database specific properties for the data source page

WebSphere, software		Welcome admin	Help	Logout	IBM
View: All tasks	Cell=websphere8testNode01Ce	II, Profile=AppSrv01		c	lose page
Welcome	Create a data source			Help	
Guided Activities	Create a data source			Field help For field hel	
Applications	Step 1: Enter basic data source information	Enter database specific properties for the data source		select a fiel marker whe cursor is dis	n the help
Resources	Step 2: Select JDBC provider	required by the database vendor JDBC driver. If the wiz	ard page does		
 Schedulers Object pool managers JMS JDBC JDBC providers Data sources Data sources (WebSpher Application Server V4) 	→ Step 3: Enter database specific properties for the data source Step 4: Setup security aliases Step 5: Summary	not prompt you for all of the necessary properties, conf later as custom properties in the administrative consol datastore helper class field generally displays a default appropriate for your driver type. However, for some driv installations, WebSphere(R) Application Server supplies generic datastore helper class name. You must type a Otherwise, set the datastore helper class after you exit to the settings page for the new datasource in the adm console. Data store helper class name <u>com.ibm.webSphere.rsadapter.GenericDataStoreHelper</u> Use this data source in container managed persist	a. The : value that is ver : sonly a specific value, the wizard; go inistrative ar		
■ Resource Adapters ■ Asynchronous beans ■ Cache instances	Previous Next C	ancel			
Mail URL					
■ Resource Environment					
Security					
Environment System administration					

Fill in details as required in the table below.

Table 4.12: Database specific properties for the data source

Field	Description	Value
Data store helper class name	Data store helper classes provided by WebSphere.	Select the default value "com.ibm.websphere.rsadapte r.GenericDataStoreHelper".

Field	Description	Value
Container Managed	Set if Data Source is used for	Check this box if the Data
Persistence	CMP of EJBs.	Source is used with CMP
		entity beans. Otherwise, leave
		it unchecked.

Step 6: On the **Setup security aliases** page, keep the default values as "none", and then click **Next.**

Figure 4.35: Setup security aliases	page
-------------------------------------	------

WebSphere. software		Welcome admin	Help	Logout	IBM.
	Cell=websphere8testNode01Cel	l, Profile=AppSrv01		Clo	se page
E Resources	Create a data source			lelp	=
Schedulers				Field help	
Object pool managers	Create a data source			For field help inform- select a field label or	
	Step 1: Enter basic data source	Setup security aliases		marker when the hel cursor is displaved.	P
■ JDBC ■ JDBC providers	information			• •	
 Data sources 	Step 2: Select JDBC provider	Select the authentication values for this resource. Component-managed authentication alias			
 Data sources (WebSpher 	Step 3: Enter	(none)			
Application Server V4)	database specific properties for the	Mapping-configuration alias			
Resource Adapters	data source	(none)			
■ Asynchronous beans	→ Step 4: Setup security aliases	Container-managed authentication alias			
🗉 Cache instances					
	Step 5: Summary	Note: You can create a new J2C authentication alias by			
■ URL		accessing one of the following links. Clicking on a link will cancel the wizard and your current wizard selections will be			
Resource Environment		lost.			
± Security		Global J2C authentication alias Security domains			
Environment					
System administration	Previous Next Ca	ancel			
Users and Groups					
Monitoring and Tuning					
Troubleshooting					
■ Service integration					
■ UDDI					

Step 7: On the **Summary** page, you can review the settings and when done click **Finish**.

WebSphere. software			Welcome admin	Help	Logout	IB
■ Services	Create a data source					
= Resources	Step 1: Enter basic data source	Summary				
Schedulers	information	Summary of act	ions:			
Object pool managers	Step 2: Select JDBC provider	Options	Values			
∎ IMS		Scope	cells:websphere8testNode01Cell:	nodes:websphere	e8testNode01:serve	rs:server
□ JDBC	Step 3: Enter database specific properties for the	Data source name	testTeradataJdbcDS			
 JDBC providers 	data source	JNDI name	testTeradataJdbcDS			
Data sources	Step 4: Setup	Select an existing JDBC	Teradata Driver			
Data sources (WebSpher	security aliases	provider	Teradata Driver			
Application Server V4)	→ Step 5: Summary	Implementation class name	com.teradata.jdbc.TeraConnectio	nPoolDataSource		
■ Resource Adapters		Data store				
Asynchronous beans		helper class	com.ibm.websphere.rsadapter.Ge	enericDataStoreH	elper	
■ Cache instances		Use this data				
Mail		source in container				
■ URL		managed persistence	true			
■ Resource Environment		(CMP)				
Security		Component- managed				
Environment		authentication	(none)			
■ System administration		Mapping-				
± Users and Groups		configuration alias	(none)			
■ Monitoring and Tuning		Container- managed				
Troubleshooting		authentication alias	(none)			
Service integration						
∎ UDDI	Previous Finish Ca	ncel				

Figure 4.36: Summary page

Step 8: On the **Data Sources** page, click **Save** to commit these changes to the master configuration and have them go live inside of the server.

Figure	4.37:	Data	Sources	page
--------	-------	------	---------	------

WebSphere. software				Welcome admin	Help	Logout	IBM
E Services	Data sources						?
 ■ Resources ■ Schedulers ■ Object pool manage ■ JMS ■ JDBC ■ JDBC ■ JDBC providers ■ Data sources ■ Data sources (W Application Serve ■ Resource Adapters ■ Asynchronous beans 	Data sources ? Messages						
		ode=websphe	re8testNode01, Serve				
■ Security		P					
■ Environment	Select Name		JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
■ System administration	You can admi	nister the foll	owing resources:				
Users and Groups Monitoring and Tuning Traviblesheating	Default	Datasource	DefaultDatasource	Node=websphere8testNode01,Server=server1	Derby JDBC Provider	Datasource for the WebSphere Default Application	
Troubleshooting Service integration	testTer	adataJdbcDS	testTeradataJdbcDS	Node=websphere8testNode01,Server=server1	Teradata Driver	New JDBC Datasource	
∎ UDDI ▼	Total 2						

Step 9: On the following page, click testTeradataJdbcDS in the Data Sources window.

Figure 4.38: The newly created data source information page

WebSphere, software			Welcome admin	Help	Logout	IBM.
E Services	Cell=websphere8testNode01Cell,	Profile=AppSrv01				Close page
Resources	Data sources					?
■ Schedulers ■ Object pool manage ■ JMS ■ JDBC ■ JDBC providers ■ Data sources ■ Data sources (W Application Serve	application with connection steps and more general in Scope: Cell=websphere Scope specifies the scope is and how	s for accessing the dat formation about the to :8testNode01Cell , Nod	e= websphere8testNode01 , Server= server1 ssource definition is visible. For detailed inform. <u>e settings help.</u>	<u>activity</u> . A guided	urce object supp activity provide:)lies your s a list of task
 Resource Adapters Asynchronous beans Cache instances Mail 	Preferences New Delete Te TE	st connection	lanage state			
. URL	Select Name 🗢	JNDI name 🗘	Scope 🗘	Provider 🗘	Description 🗘	Category 🗘
Resource Environment	You can administer the fo	llowing resources:				
Security Environment	Default Datasource	DefaultDatasource	Node=websphere8testNode01,Server=server1	Derby JDBC Provider	Datasource for the WebSphere Default Application	
System administration	testTeradataJdbcD:	stestTeradataJdbcDS	Node=websphere8testNode01,Server=server1	Teradata Driver	New JDBC Datasource	
Users and Groups Monitoring and Tuning	Total 2			•		
Troubleshooting						
■ Service integration						
UDDI					_	

Step 10: On the following page, click the link to Custom properties in the Additional Properties of the data source configuration window.

Figure 4.39: The details of the newly created data source information page

rs	Test connection
Applications	
E Services	General Properties
Resources Schedulers Schedulers JDBC JDBC JDBC JDBC Data sources Resource Adapters Resource Adapters Cate instances Mail Mail	Scope cells:websphere8testNode01Cell:nodes:websphere8testNode01:servers:server1 Provider Teradata Driver Name kestTeradataJdbcDS JNDI name testTeradataJdbcDS Use this data source ir container managed persistance (CMP) Description New DBC Datasource
URL Resource Environment Security	
Environment	Category
System administration	
Users and Groups 8 Monitoring and Tuning	Data store helper class name Select a data store helper class Data store helper classes provided by WebSphere Application Server
Troubleshorting E Service integration	Generic data store helper (com.ibm.websphere.rsadapter.GenericDataStoreHelper)

Step 11: On the Custom properties page, specify the Custom properties and click Save.

Figure 4.40: Custom properties page

WebSphere. software				Welcome admin	Help	Logout	IBM.
View: All tasks	Cell=webspl	hereStestNodeO1Cell, Profile=AppSrvO1					Close page
Welcome	Data sour	ces					
■ Guided Activities	Data	ources > testTeradataJdbcDS > Custom pro	naution				
■ Servers		is page to specify custom properties that you	•	se information system (EIS) requ	uires for the reso	ource providers an	nd resource fac
		e additional custom properties for data sourc	es that ac	ess the database.		·	
Services		ferences					
□ Resources	New						
Schedulers							
 Object pool manage 	Select	Name 🗘	Value 🗘	Description 🗘			
. IMS	You d	an administer the following resources:					
⊐ JDBC ■ JDBC providers		freeResourcesOnClose	false	Controls whether or not the app Readers when the object that o the free (or close) method.			
 Data sources Data sources (W Application Serve 		<u>userDefinedErrorMap</u>		Overlays existing entries in the used to add, change, or remov and value, where the key is an are separated by = (equals sig to DuplicateKeyException, and	e entries from th error code (num n). For example	ne error map. Ent neric value) or SQ , to remove the n	ries are delimit LState (text er napping of SQI
■ Resource Adapters ■ Asynchronous beans				userDefinedErrorMap: "S1000"=;1062=com.ibm.webs	phere.ce.cm.Dup	olicateKeyE×ceptic	n;"08004"=co
■ Cache instances		beginTranForResultSetScrollingAPIs	false	If beginTranForResultSetScrollin when the connection is not curr	ngAPIs is enable ently enlisted in	d, the application a transaction and	i server attem; i a result set s
Mail URL		beginTranForVendorAPIs	false	If beginTranForVendorAPIs is e connection is not currently enlis WSCallHelper.jdbcCall or WSCa	ted in a transac	tion and a vendor	
Resource Environment Security		connectionSharing	1	Determines whether connection (0). To specify with greater grai the following constants by addii 16=catalog.	nularity which co	nnection propertie	es are matchec
Environment		syncQueryTimeoutWithTransactionTimeout		Use the time remaining (if any) in a JTA transa	ction as the defa	ult query timec
System administration	•	webSobereDefaultIsolationLevel		Specifies a default transaction i	isolation level fo	r new connections	: Resource Re

Fill in details as required in the table below.

 Table 4.13: Custom properties

Name	Description	Value
DSName	Enter a host name or IP address of the database	192.0.2.54
	server.	

Name	Description	Value
USER	Enter the database account user name that you want to use to create the database connections.	DBC
PASSWORD	Enter the database account password that you want to use to create the database connections.	DBC
CHARSET	Enter the session character set utilized to map characters bidirectionally from the client application and the Teradata Database.	UTF8
TMODE	Enter the session mode on a Teradata Database V2R2.0 or later system.	ANSI
account	Enter the database account name that you want to use to create the database connections.	DBC

Step 12: Click **Test Connection** for the new data source. A message will display as follows if the data source is successfully created.

Figure 4.41: Test the connection for the data source

```
Messages
The test connection operation for data source testTeradataJdbcDS on server server1 at node websphere8testNode01 was successful with 1 warning(s). <u>View JVM logs</u> for further details.
```

4.3.2.3 Required configurations when global security is on

If the global security mode is turned on in WebSphere, AEM will not be able to access the WebSphere data sources. You can perform the following configurations to resolve this problem.

Step 1: Go to the %user.install.root%\properties directory (%user.install.root% indicates the WebSphere instance installation directory, for example, C:\Program Files\IBM\WebSphere \AppServer\profiles\AppSrv01\), open the sas.client.props file in text editor, and modify the following three properties:

- com.ibm.CORBA.loginUserid: set to the WebSphere account username.
- com.ibm.CORBA.loginPassword: set to the WebSphere account password.
- com.ibm.CORBA.securityServerPort: set to the WebSphere IIOP port, if it is not the default port 2809. You can find out and modify this port number by using the BOOTSTRAP_ADDRESS property in the WebSphere console.

Step 2: Save changes in sas.client.props and then restart WebSphere.

Note: After making the above changes, everytime when a data source is created, you will need to restart WebSphere so the new data source is accessible to AEM.

If the global security mode is turned off, you will need to remove settings of com.ibm.CORBA.loginUserid and com.ibm.CORBA.loginPassword from the sas.client.props file.

4.3.3 Setting up data source for JBoss

4.3.3.1 Setting up data source for WildFly and JBoss EAP

Data source configuration in WildFly 10 and JBoss EAP 6.x is almost the same. Here we take WildFly as am example to show you how to create the data source. You can find more details in the corresponding JBoss Web sites: <u>Datasource configuration</u> for WildFly, and <u>Datasource management</u> for JBoss EAP 6.4.

The following section will take one database type (ASA/SQL Anywhere database with SAP jConnect JDBC driver) as an example to show you how to create a data source for WildFly, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

You need to perform two main tasks to define a data source in WildFly and JBoss EAP. First, you must make the JDBC driver available to the application server; then you need to configure the data source that references the driver you installed.

4.3.3.1.1 Installing the JDBC driver

You can install a JDBC driver with the management console or as a Core Module. In this example, we will take the management console approach as an example. If you want to use the Core Module approach, you may refer to the corresponding JBoss documentation.

Step 1: Modify the JAR file of the JDBC driver. Take SAP jConnect JDBC driver as an example.

- 1. Under the same directory as the jconn3.jar file, create a "**META-INF**" subdirectory and a "**META-INF**\services" subdirectory.
- 2. Under the "**META-INF**\services" directory, create a **java.sql.Driver** file which contains one line the fully-qualified class name of the JDBC driver, in this example, **com.sybase.jdbc3.jdbc.SybDriver**.
- 3. Execute the "jar" command to update the JAR file: "jar -uf jconn3.jar META-INF/ services/java.sql.Driver". You can also use WinRAR tool to add the META-INF \services\java.sql.Driver directory and file to jconn3.jar, as shown in the following figure.

達 jconn3.jar - WinRAR	(evaluation copy)			- 0 X
<u>File Commands To</u>	ol <u>s</u> Fav <u>o</u> rites Optio <u>n</u> s <u>H</u>	elp		
Add Extract To	Test View Delete		fo VirusScan Comment SFX	
🗈 🗎 jconn3.ja	r\META-INF\services - ZIP are	hive, unpacked size 970,691	bytes	•
Name	Size Packed	Type Mod	dified CRC32	
	31 29	File folder DRIVER File 10/2	5/2013 11: 57A7A3B5	
			Total 31 bytes in 1 file	

Figure 4.42: Modify the JAR file

Step 2: Deploy the modified JAR file.

- 1. Log into the WildFly management console.
- 2. Click **Start** for **Deploy an Application** on the home page.

☆ マ C

WildFly Home Deployments Configuration Runtime Access Control Patching WildFly 🕸 Configuration Deployments Add and manage deployments Configure subsystem settings v Deploy an Application Start 🖸 Create a Datasource Start 🖸 Deploy an application to the server Define a datasource to be used by deplmust be deployed and registered. 1. Use the 'Add Deployment' wizard to deploy the application 2. Enable the deployment 1. Select the Datasources subsystem 2. Add a Non-XA or XA datasource 3. Use the 'Create Datasource' wizard t > Create a JMS Queue Start 📀 Runtime Access Control Monitor server status Manage user and group permissions fo

Figure 4.43: Start to deploy the JAR file

♦ ♦ localhost:9990/console/App.html#home

3. Click the Add button on the deployment page. The New Deployment wizard starts.

Iocalhost:9990/console/App.html#standalone-deployments				
Wild Fly				
Home Deployments	Configuration	Runtime	Access Control	Patching
Deployment	Add			
Q appeonmobile.war appeonserver.ear	, , ,	kind of standard	presents anything tha	

4. In the **New Deployment** Wizard, keep the default option "**Upload a new deployment**" and click **Next**.

Figure 4.44: Add the JAR file

Figure 4.45: New Deployment wizard

New Deployment	2 ×
Please Choose	
Upload a new deployment Use this option to upload a new artifact like a WAR or EAR archive.	
Create an unmanaged deployment An unmanaged deployment points to a folder on the server's local file system. Compared to managed deployments, unmanaged deployments won't be copied (i.e. uploaded) to the server's deployment repository be they're deployed. The deployment content will remain at and be deploy directly from its original location. Note: exploded deployments are supp only as unmanaged.	efore ed
Cancel << Back Ne	ext >>

5. Click **Browse** to select the modified JAR file and click **Next**.

Figure 4.46: New Deployment wizard

New Deployment	2	×
Upload Deployment		
Please choose a file that you want to deploy.		
Browse jconn3.jar		
Cancel << Back Nex	t »>	
		//,

6. Verify the deployment settings for the JAR file and click **Finish**.

New Deployment		2	×
Verify Upload	Need He	1-2	
Name *:	jconn3.jar]]	
Runtime Name*:	jconn3.jar]	
Enable *:			
Required fields are	marked with an asterisk (*).		
	Cancel << Back Finis	h	

7. When deployment is successful, you will be able to see the message "jconn3.jar deployed successfully" and jconn3.jar listed on the deployment page.

Step 3: Wait a few minutes for the JAR file to be detected and listed in the driver list by WildFly or restart WildFly application server to make the JAR file detected and listed immediately.

4.3.3.1.2 Configuring the data source

You can configure a data source with the management console or the configuration file. In this example, we will take the management console approach as an example. If you want to use the configuration file approach, you may refer to the corresponding JBoss documentation.

Step 1: On the home page of WildFly management console, click **Start** for **Create a Datasource**.

Figure 4.48: Start to create a new data source

€ ⇒ 🤆	localhost:9990/console/App.html#home		$ \bigcirc \forall \mathcal{C} \boxed{\$ + Google} \mathcal{P} \clubsuit$
WildF	Υ.		Messages: 0 💧 🛔 appeon 🗸
Home	Deployments Configuration Runtime Access Control I	Patching	
Wil	Deployments Add and manage deployments		Configuration Configure subsystem settings Create a Datasource Start Define a datasource to be used by deployed applications. The proper JBDC driver must be deployed and registered. Select the Datasources subsystem Add a Non-XA or XA datasource Juse the 'Create Datasource' wizard to configure the datasource settings Create a JMS Queue Start
** [1] ** [1] ** [2]	Runtime Monitor server status	<u>.</u>	Access Control Manage user and group permissions for management operations

Step 2: On the **Configuration** page, select **Subsystems** > **Datasources** > **Non-XA**, and then click **Add**.

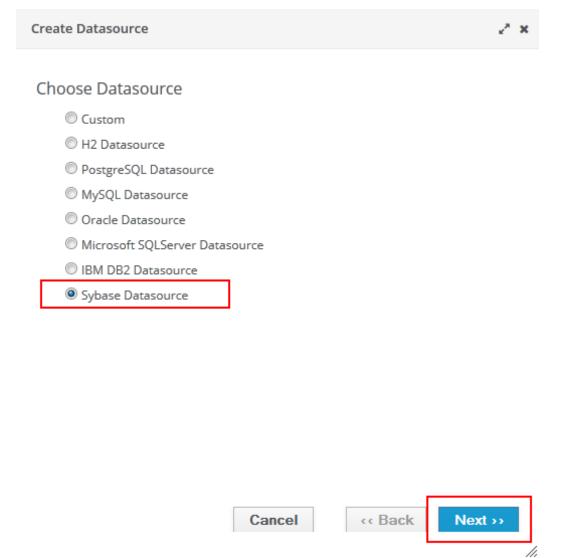
Figure 4.49: Start to create a new data source

♦ ⇒ ③ localhost:9990/cons	ole/App.html#p	orofile/ds-finder				☆ マ C 🛛 🗧 Google		ا ۹
Wild Fly							Messages: 0	å appeon
Home Deployments	Configurat	ion Runtime	Access Control	Patching				
Configuration		Subsystem (28)		Туре		Datasource	Add	
Subsystems	>	JCA		Non-XA	>	ExampleDS		Nc Da
Interfaces		Datasources	>	XA	>			Man whic
Socket Binding		Resource Adapters	>					whic appl tran:
Paths		Mail	>					data
System Properties		Transactions						
		EJB 3						
		EE						

Step 3: The Create Datasource wizard starts to guide you through creating a data source.

1. Select the data source type. In this example, select Sybase Datasource and click Next.

Figure 4.50: Select the data source type



2. Input any text as the data source name and the JNDI name. For example, "java:/ appeonsample". Click **Next**.

Note: The JNDI name will be used as the data source name in AEM.

Figure 4.51: Specify the data source attributes Create Datasource ** * Step 1/3: Datasource Attributes Need Help? Name *: appeonsample JNDI Name *: java:/appeonsample Required fields are marked with an asterisk (*).

Cancel	« Back	Next >>	
			//,

3. Click **Detected Driver**, and then select the JDBC driver, in this example, jconn3.jar. Click **Next**.

If you do not see the driver, make sure you have installed the driver by following instructions in <u>Installing the JDBC driver</u>.

Figure 4.52: Specify the JDBC driver

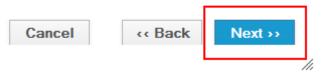
Create Datasource

č 🗙

Step 2/3: JDBC Driver

Select one of the installed JDBC driver. Don't see your driver? Please make sure it's deployed as a module and properly registered.

Specify Driver	Detected Driver
Name	
jconn3.jar	
appeonservei	ear_org.hsqldb.jdbc.JDBCDriver_2_2
h2	
	≪ < 1-3 of 3 > >>



4. Specify the connection information and click Next.

The following table describes how to specify the connection information for SAP ASA/ SQL Anywhere databases. The values are different according to database types. You can refer to <u>Data source parameters</u>.

Table 4.14:	Connection	properties
--------------------	------------	------------

Connection URL	For example, jdbc:sybase:Tds:192.0.3.150:2638?appeonsample
Username	Type the database login username. The username is set on the database server.
Password	Type the database login password. The password is set on the database server.

Figure 4.53: Specify the connection information

Create Datasource 🖉 🦉

Step 3/3: Connection Settings

	Need Help	»?
	jdbc:sybase:Tds:192.0.3.150:2638/appeonsample	
Connection URL*:		
	.::	
Username:	dba	
Password:	•••	
Security Domain:		
D . 10.11		
Required fields are	marked with an asterisk (*).	
	Cancel << Back Next >	>

5. Click **Test Connection** to make sure the database can be connected and then click **Finish**.

Figure 4.54: Test the database connection

Create Datasource

č 🗙

Test Connection

On this page you can test the connection of your datasource.

Test Connection

Cancel	« Back	Finish	
			//,

After the data source is created successfully, you will return to the data source page and you will be able to see the new data source in the list.

♦ ♦ Ø localhost:9990/con:	sole/App.html#	profile				☆ マ C 🛛 🖁 ד Google
Wild Fly						
Home Deployments	Configurat	t ion Runtime Acces	s Control Pat	tching		
Configuration		Subsystem (28)	т	Гуре		Datasource Add
Subsystems	>	JCA		Non-XA	>	ExampleDS
Interfaces		Datasources	>	XA	>	appeonsample
Socket Binding		Resource Adapters	> =			
Paths		Mail	>			
System Properties		Transactions				
		EID 0				

In JBoss EAP, you may need to manually enable the newly created data source by clicking the **Enable** button on top of the list.

RED HAT JBOSS' ENTERPRISE APPLICATION PLATFORM 6.4.0.GA					arch 🛛 🚢 adm			
Home Deployments	Configu	iration	Runtime	Administration				
ubsystems	~	DATAS	DURCES	XA DATASOURCES				
Connector JCA Datasources Resource Adapters Mail Container	J	DBC datasou	tasources rce configuratio Datasources	ons.		Add	Remove	Enable
Core		Name		JNDI			Ena	bled?
Infinispan		ExampleDS		java:jboss/datasources/Exar	npleDS		*	
Security Web		appeonsam	ple	java:/appeonsample			0	
General Configuration		Attributes	Connection	Pool Security Propertie	s Validation	X	< 1-2 of	12 > >>

4.3.4 Setting up data source for NetWeaver

The following section will take one database type (SAP HANA database with HANA JDBC driver) as an example to show you how to create a data source for NetWeaver Application Server, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

Step 1: Log in to SAP NetWeaver Administrator with the URL http://IP:50000/nwa. The IP here is your server's IP address.

Step 2: Click the **Site Map** in the right top of the page to view site map, as shown in the following figure.

Figure 4.57:	View	Site	Map
---------------------	------	------	-----

← → C ③ 192.0.0.102:50000/webdynpro/re	sources/sap.com/tc~lm~ltsam~ul~mainframe~wd/FloorPlanApp?home	e=brue#	\$ A
🔇 Customize Links 🔇 Appeon Web Library 🔇 New Tab 🖺	Options 🔇 192.0.3.117		📋 Other bookmark
Java HTTP Provider Configuration	XML DAS Administration	Distributed Transactions	
Start & Stop	Jobs	System Performance Statistics	
Session Management	Java Scheduler	Database	
Java System Properties	Processes and Tasks	JPA Monitors	
Connectivity Logging & Tracing	Manage Processes	Open SQL Data Browser	
Sequence Monitoring	Manage Flocesses Manage Tasks	Open SQL Monitors	
System Performance Statistics	Automation Wizard Administration		
Message Monitoring		Logs and Traces	
System Information	Configuration	Log Viewer	
Application Manager	Security	Security Troubleshooting Wizard	
Thread Dump Analysis	Authentication and Single Sign-On	Processes and Tasks	
Security Troubleshooting Wizard	Destinations	Business Logs	
Log Configuration	Identity Management	Rules Business Logs	
	Certificates and Keys	-	
Open SQL Data Browser System Connections	Trusted Systems	Process Troubleshooting	
Destinations	Virus Scan Provider	Advanced Troubleshooting Thread Dump Analysis	
	SSL		
Application Communication	Infrastructure	Heap Dump Analysis	
Manage Tasks	Adobe Document Services	SOA	
Process Troubleshooting	Application Modules	Technical Configuration	
JNDI Browser	Application Resources	Destination Template Management	
Compare Systems	Java Configuration Browser	SOA Middleware Global Settings	
Java Configuration Browser	Destinations	Destinations	
vailability and Performance	Java HTTP Provider Configuration	Services Registry Management	
ystem Overview	Internationalization	JCo RFC Provider	
System Overview	Java Class Loader Viewer	System Connections	
esource Monitoring	JCo RFC Provider	Application and Scenario Communication	
JCo Monitoring	JMS Server Configuration	Single Service Administration	
Locks	Licenses	Publication Rules	
Distributed Transactions	Log Configuration	Application Communication	
System Performance Statistics	Message Server	User Account Management	
Session Management	Services Registry Management	Business Scenario Communication	
History Reports	SLD Data Supplier Configuration	Logs and Traces	
Process Monitoring	System Information	Connectivity Logging & Tracing	
Message Monitoring	Java System Properties	Monitorina	

Step 3: Click **Application Resources** in the infrastructure of configuration to configure application resources, as shown in the following figure.

💇 Applic	ation Resources - SAP N × +			
	C 0 192.0.0.102:50000/webdynpro/resources/sap.com/tc~lm~itsam~ui~mainfran	ne~wd/FloorPlanApp?home=true#		公
Custom	ze Links 🔇 Appeon Web Library 🔇 New Tab 🛐 Options 🔇 192.0.3.117			Cther bookm
Appl	ication Resources: Overview		Restore Default View Carebook Back Forward	History Site Map Help Log Off
vorites .	Related Links _ Go To _ Support Details			Search for:
	Resources 💌			
esourc				E
eate Nev	V Resource A Delete Selected Resource Refresh More Actions A			1
State	Resource Name	Resource Type	Owner Name	Owner Type
	BPMCtxConnectionFactory	JMS Connection Factory Reference	sap.com/tc~bpem~index~ear	Java EE Application
	BPMMailsQueue	JMS Destination Reference	sap.com/tc~bpem~base~ear	Java EE Application
	BPMMailsTopic	JMS Destination Reference	sap.com/tc~bpem~base~ear	Java EE Application
	BPMQueueConnectionFactory	JMS Connection Factory Reference	sap.com/tc~bpem~base~ear	Java EE Application
	BPMTaskEventConnectionFactory	JMS Connection Factory Reference	sap.com/tc~bpem~tm~ear	Java EE Application
	BPMTaskEventTopic	JMS Destination Reference	sap.com/tc~bpem~tm~ear	Java EE Application
	BPMUpdateAclGueue	JMS Destination Reference	sap.com/tc~bpem~index~ear	Java EE Application
	CAFAuditQueue	JMS Destination Reference	sap.com/caf~runtime~ear	Java EE Application
	CAFAuditQueueConnectionFactory	JMS Connection Factory Reference	sap.com/caf~runtime~ear	Java EE Application
	CAFNotifTopic	JMS Destination Reference	sap.com/caf~km~ear	Java EE Application
	tates: 🗃 Fully available 🛆 Partly available 👰 Not Available 🔷 Unknown			
esourc	e Details			E,C
8	PMCtxConnectionFactory			
JMS	Connection Factory Reference			
ave				
Settings	Properties Aliases			
	sap.com/c~bpern~index~ear			
Applicatio	n Name: Cooperating appendiate com			
lient ID:				
escriptio	n L			

Step 4: If it is the first time that you create an SAP HANA database connection in the NetWeaver, you need to deploy the HANA JDBC driver at first.

Click **Create New Resource**, and then select **Deploy New JDBC Driver**. On the page that appears, enter a JDBC driver name in the **JDBC Driver Name** text box. It is required, but you can enter any name, which is only used to identify the type of JDBC drivers. For simplicity, enter "com.sap.db.jdbc.Driver", and then click **Add New Driver File** to select the JDBC driver jar file. Finally, click **Save** to deploy JDBC driver.

Figure 4.59: Deploy New JDBC Driver

227 Application Resources - SAP N 🗙 🙂			- 0 ×
🗲 🔶 C 🔇 192.0.0.102:50000/webdynpro/resources/sap.com/tc~lm~itsam~ul~mainframe~wd/FloorPlanApp?home=true#			☆ ੨
🔇 Customize Links 🔇 Appeon Web Library 🔇 New Tab 📓 Options 🔇 192.0.3.117			C Other bookmark
Application Resources: Overview	Restore Default View	History History	Site Map Help Log Off
Favorites, Related Links, Go To, Support Details		Search for:	
Show: All Resources			
New JDBC Driver Creation			E
Save Cancel			
Settings			
JDBC Driver Name: * com.sap.db.jdbc.Driver			
Add New Driver File Remove Selected Driver File			T Da
File Name			4
No files to display			5

Step 5: After the JDBC driver is deployed successfully, click **Create New Resource** and then select **New JDBC Custom DataSource** to create a new database connection. On the page that appears, do the following:

- 1. In the **Database Name** text box, Enter a DataSource name;
- 2. In the Diver Name dropdown list box, select the correct Driver Name;
- 3. In the SQL Engine dropdown list box, select Vendor SQL;
- 4. In the Isolation Level dropdown list box, select Default;
- 5. In JDBC Version dropdown list box, select 1x (without XA support);
- 6. In Driver Class Name text box, enter "com.sap.db.jdbc.Driver";
- 7. In **Database URL** text box, enter "jdbc:sap://Host:Port?reconnect=true", for example, enter "jdbc:sap://imdbhdb:30015?reconnect=true".
- 8. In the **User Name** text box, enter the correct user name, and in the **Password** text box, enter the correct password;
- 9. Click **Save** to finish creating a database connection.

Figure 4.60: New JDBC Custom DataSource Creation

277 Application Resources - SAP N × 🕀	- 0 ×
← → C 🔇 192.0.0.102:50000/webdynpro/resources/sap.com/tc~lm~itsam~ui~mainframe~wd/FloorPlanApp?home=true#	A 3
🔇 Customize Links 🔇 Appeon Web Library 🔇 New Tab 😫 Options 🔇 192.0.3.117	C Other bookmarks
Application Resources: Overview	Restore Default View 🗢 Back Forward 🖨 History A Site Map Help Log Off
Favorites, Related Links, Go To, Support Details	Search for:
Show: JDBC Custom DataSources	
New JDBC Custom DataSource Creation	E
Save Cancel	
Settings Connection Pooling Additional Properties JDBC DataSource Aliases	
Application Name:	
DataSource Name: * MyHana	
Driver Name: * com.sap.db.jdbc.Driver 💌	
SQL Engine: * Vendor SQL	
Isolation Level: * Default	
JDBC Version: * 1x (without XA support)	
Driver Class Name: * com.sap.db.jdbc.Driver	
Database URL: * jdbc: sap://mdbhdb:30015?reconnect=true User Name: * SYSTEM	
Password: *	
Description:	

Step 6: To verify whether it is created successfully, select **JDBC Custom DataSource**, and you can see a list of database connections. If the state of the database connection is a green icon, then it indicates that the database connection is created successfully.

Figure 4.61: Database Connection State

207 Application Resources - SAP N × +			— 8 ×
← → C 🔇 192.0.0.102:50000/webdynpro/resources/sap.com/tc~lm~itsam	~ui~mainframe~wd/FloorPlanApp?home=true#		公 🕹
			C Other bookmarks
Application Resources: Overview		Restore Default View 📔 🖕 Back Forward 🛶 🔒	istory Site Map Help Log Off
			ch for: Go
Favorites _ Related Links _ Go To _ Support Details			
Show: JDBC Custom DataSources			
Resource List			EO
Create New Resource / Delete Selected Resource Refresh More Actions /			
State Resource Name	▲ Resource Type	Owner Name	Owner Type
P			
HSQLJ2EDB	JDBC Custom DataSource	sap.com/JDBCConnector_HSQLJ2EDB.xml	Java EE Application
auanxzdatasource	JDBC Custom DataSource	sap.com/duanxzapp	Java EE Application
lisongderno_db	JDBC Custom DataSource	sap.com/JDBCConnector_lisongdemo_db.xml	Java EE Application
salesdemo_db	JDBC Custom DataSource	sap.com/JDBCConnector_salesdemo_db.xml	Java EE Application
sapdemo_db	JDBC Custom DataSource	sap.com/JDBCConnector_sapdemo_db.xml	Java EE Application
ossible States: 🍵 Fully available 🛆 Partly available 🎽 Not Available 🔷 Unknown			
Resource Details			E.E
sapdemo_db			
JDBC Custom DataSource			
Save			
Settings Connection Pooling Additional Properties JDBC Driver DataSource A	liases		
Driver Name: * com.sap.db.jdbc.Driver 👻			
SQL Engine: * Vendor SQL 👻			
Isolation Level: * Default			
JDBC Version: 1x (without XA support)			

4.3.5 Setting up data source for JEUS

The following section will take one database type (Oracle database with Oracle JDBC driver) as an example to show you how to create a data source for JEUS, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

Detailed steps are as below:

Step 1: Start JEUS and log on to the JEUS Manager.

Step 2: Click the node name: **JEUS Manager Resources** > **JDBC** in the JEUS Node Tree.

Step 3: Click Creating a new JDBC DataSource.

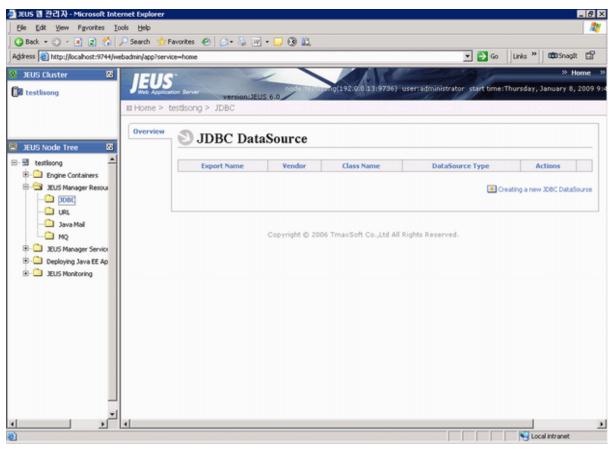
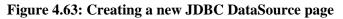
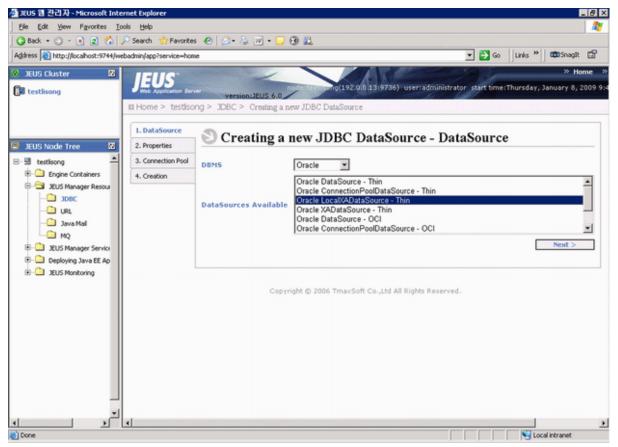


Figure 4.62: JDBC DataSource page

Step 4: In the **DBMS** dropdown list box, select **Oracle**, and in the **DataSources Available** list box, select **Oracle LocalXADataSource -- Thin**.





You must select LocalXADataSource or XADataSource. LocalXADataSource is preferable to XADataSource because it improves the application performance. For ASA/SQL Anywhere databases, you can only select LocalXADataSource. Following are the recommended datasources for different database drivers:

- MS SQL Server 2000 JDBC driver: MS-SQ LocalXADataSource
- MS SQL Server 2005 JDBC driver: Custom DataSource
- jTDS/IBM JDBC Driver: BlackBox LocalXADataSource
- Oracle JDBC driver: Oracle LocalXADataSource -- Thin, or Oracle XADataSource -- Thin
- jConnect: SAP jConnect 5.5 LocalXADataSource

Step 5: Specify the datasource properties and click Next twice.

叠 JEUS 웹 관리자 - Microsoft Internet Explo	rer	_ # ×
Ele Edit Yew Favorites Tools Help		- 27
🛛 😋 Back 🔹 🕤 👻 😰 🐔 🔎 Search	😚 Favorites 🐵 😥 - 😓 🔟 - 🗔 🕲 📖	
Address a http://localhost:9744/webadmin/app	riservice=home 🔽 🔁 Go 🛛 Units 🎽 🏙 Snagil	: 🗳
JEUS Cluster Testlisong JEUS Node Tree Testlisong JEUS Node Tree Tegine Containers Tegine Containers JOBC JOBC JOBC JURL JOBC JURL JUS Manager Resou MQ B- JUS Manager Service B- JEUS Monitoring JEUS Monitoring	Database Name * @racietest01 Database Q OIE. Oracle은 databaseQ SID. Network Protocol Database Y Oracle E access LEMED. Port Number * 1521 Database listenerQI XEEDS. Server Name * 192.00.91 Database J & Statement Q XEEDS. Server Name * 192.00.91 Database J & Statement Q XEEDS. Server Name * 192.00.91 Database J & Statement Q XEEDS. User * dba DB & VBR IDE transaction XEIDE Reset DB & VBRQI passwordDICL. Statement Q XEID X Xatement Query timeout B NBOUL. (msec) Additional Properties Description DataSource에 IDD Alge B StatementQIEL. < Previous	
a <u>x</u> a		Ł
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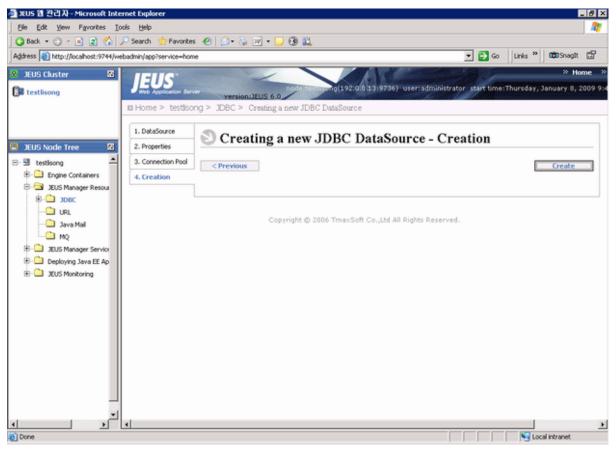
Figure 4.64: Datasource properties page

The following table lists instructions for how to specify the properties for a datasource.

Export Name	Input any text as the datasource name. For example, "oracle_datasource1". This name will be recognized as the data source name in AEM.
Database Name	Type the database name. For example, "oracletest01".
Port Number	Type the database port. The default port is 1521.
Server Name	Type the database server name. For example, 192.0.0.91.
User Name	Type the database login username. The username is set on the database server.
Password	Type the database login password. The password is set on the database server. If the password has no effect in the Password field, input "password=password" to the Additional Properties box.

Step 6: Click **Create** and ensure that the JDBC data source is successfully created.

Figure 4.65: Create a new JDBC DataSource page



A message pops up if the JDBC data source is successfully created.

Figure 4.66: Datasource successfully created



4.3.6 Setting up data source for EAServer 6.x

The following section will take one database type (ASA/SQL Anywhere database with jConnect JDBC driver) as an example to show you how to create a data source for EAServer, you can later create data sources for other database types by taking the same steps below but specifying different parameters according to <u>Data source parameters</u>.

Detailed steps are as below:

- 1. Start EAServer.
- 2. Log on to the Web Console and go to Services > JDBC > Data Sources.
- 3. Click Add to create a data source. Specify the new Data Source Name and click Next.

Figure 4.67: Datasource name

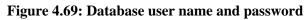
🦉 Sybase Management Console - Windows Interne	t Explorer		
G S + Ktp://localhost:9988/console/index.jsp	💌 🐓 🗙 Live S	earch	P -
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp			
😪 🎄 🦉 Sybase Management Console	🙆 • E	3 - 🖶 - 📴 B	age \star) Tools \star »
		Sybase Mana	gement Console
SYBASE	Account Info 🛈	Help 🗿	Logout 📀
Add Delete Child Nodes Refresh Node appeonsample_test cluster.db db_gxzy default JavaCache license_test message.db session.db test t_manager DMS Connection Facto DMS Message Queues DMS Message Topics DMS Message Topics DMS Message Topics DMS Queue Connection DMS Topic Connection DMS Topi	New Data Source Wizard - Introduction – Pag Enter a name for the data source. Data Source Name: Back Next Finish Cancel Help		
		al intranet	🔍 100% 🔻 //.

4. Specify the database type, the database driver/class settings, and the database server settings for the new Data Source. In this example, SAP ASA/SQL Anywhere database type is selected, and the default values for the other settings are used, as shown below.

Figure 4.68: Database type

🖉 Sybase Management Console - Windows Interne	t Explorer			
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<u>File E</u> dit <u>Vi</u> ew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp				
🖕 🏟 🦉 Sybase Management Console		🟠 - 6	3 - 🖶 - 🔂 B	age 🕶 🎯 T <u>o</u> ols 👻 🎽
			Sybase Mana	agement Console
SYBASE	Accou	int Info 🛈	Help 🕜	Logout 📀
Data Sources appeondb appeonsample	New Data Source Wizard - Datai	base Type – P	age 3 of 7	^
e appeonsample2 e appeonsample_test e cluster.db e db_gxzy	A database type contains driver deta commonly used values. A data sourc used in the database type should be	ce value of [def		
ies default is JavaCache icense_test	Database Type:	Sybase_AS/	A 🔽	
😻 message. db 🧟 session. db	Database Driver Class Name:	[default]		
test	Database DataSource Class Name:	[default]		
i tx_manager	Database XADataSource Class Name:	[default]		
⊕ 🗀 JMS Message Topics ⊕ 🗀 JMS Queue Connectio	Database Server Name:	[default]		
 	Database Server Port Number:	[default]		
	Back Next Finish Cancel	Help		
Actions: Select An Action 💌		_	al intranet	▼ € 100% ▼ //
ļ			annuraneu	100% • //

5. Click **Next**. Specify the User Name and Password.



🖉 Sybase Management Console - Windows Interne	t Explorer	_ 🗆 🗙
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😪 🎄 🦉 Sybase Management Console	🐴 + 🗟 - 🖶 Eas	ge 🕶 🎯 T <u>o</u> ols 👻 🎽
	Sybase Manag	gement Console
SYBASE	Account Info 🕘 🛛 Help 🞱	Logout 🕝
Image: Sources appendix ap	New Data Source Wizard - Data Source User – Page 4 of 7 A user name and password are required to connect to the database User Name: [default] Password: Back Next Finish Cancel Help	

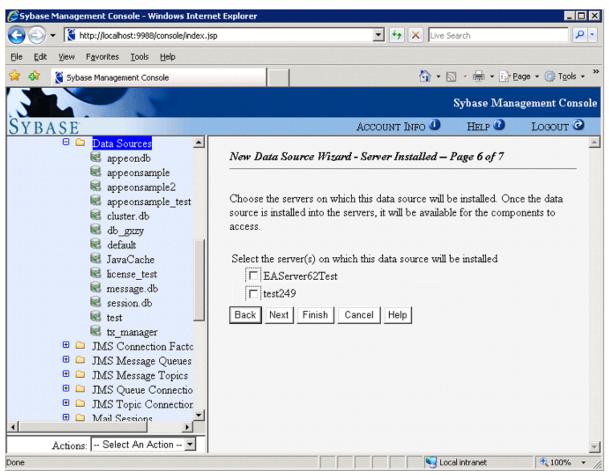
6. Click **Next**. Input the values in the corresponding text box. You can use default values for the options.

Figure 4.70: Connection settings

🔗 Sybase Management Console - Windows Interne	t Explorer
🕞 😔 👻 🕅 http://localhost:9988/console/index.jsp	Live Search
Eile Edit View Favorites Tools Help	
😭 🏟 🦉 Sybase Management Console	A v B v B Page v Ø Tools v
	Sybase Management Console
SYBASE	Account Info 🛈 🛛 Help 🗿 🛛 Logout 🧟
 Data Sources appeondb appeonsample appeonsample2 appeonsample_test cluster.db db_gxzy default JavaCache license_test message.db session.db test tx_manager JMS Connection Facto JMS Message Queues JMS Message Queues JMS Message Topics JMS Queue Connection JMS Topic Connection Mail Sessions 	New Data Source Wizard - Connection Settings - Page 5 of 7 On startup, EAServer opens and pools the specified minimum number of connections. When a component requests a connection, a connection is allocated from the pool or a new connection is opened. When the connection is released, it is returned to the pool for use by other components. EAServer never pools more than the specified maximum number of connections. Application performance may suffer if the maximum number of connection set too low. Minimum Connection Pool Size: Maximum Connection Pool Size: Maximum Idle Time(seconds): Back Next Finish Cancel Help
Done	Local intranet 🔍 100% 👻

7. Clear all check boxes, and then click **Next**.

Figure 4.71: Server installed



Note: If any server instance is selected, the Appeon user sessions running on that server instance will be caused to expire and the following error will display to the user right after the data source is installed.

Figure 4.72: Session expired

Appeon Web Application	
Session Expired	
You have been inactive in the application during the specified period, so your session has timed out. Please click <u>Close</u> to exit the current application or click <u>Restart</u> to log into the application again.	
Appeon	

8. Click Finish.

Note that you should change the Database URL and input a new one. For different Database URL, please refer to <u>Data source parameters</u>.

Figure 4.73: Database URL

🖉 Sybase Management Console - Windows Inter	net Explorer					
G S + T http://localhost:9988/console/index.	jsp				• ++	× Live S
Eile Edit View Favorites Tools Help						
😭 🏘 🦉 Sybase Management Console						🙆 • 6
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4.3.7 Data source parameters

The main two requirements for data source configuration are: (1) the driver must be JDBC type; (2) the data source must connect to the database used by the application. The settings discussed in this section focus on meeting these two requirements. Configure the other data source parameters that are not mentioned here based on your own knowledge about data source configuration or simply use the default settings.

Unless specified, the settings given in this chapter apply to the following application servers that Appeon supports: WebLogic, WebSphere, JBoss, JEUS, NetWeaver, and EAServer.

Note that the values of driver class name and Database URL are case sensitive.

4.3.7.1 Data source parameters for SAP ASA/SQL Anywhere

SAP ASA/SQL Anywhere databases support jConnect (recommended), iAnywhere JDBC-ODBC, and Sun JDBC-ODBC bridge. jConnect is preferable than iAnywhere JDBC-ODBC and Sun JDBC-ODBC bridge because it delivers much better performance at runtime. However, the Appeon Demo uses the Sun JDBC-ODBC bridge because this driver can be automatically configured by the Appeon installation program.

Note:

1) WebSphere server and JEUS server do not support JDBC-ODBC bridge driver, and supports only jConnect driver.

2) To use jConnect to connect with ASA/SQL Anywhere, you must start ASA/SQL Anywhere as service before configuration.

3) jConnect 6.0 is preferable to jConnect 5.5.

Driver	Parameter	Value	Note
jConnect JDBC driver (Recommende		ame com.sybase.jdbc2.jdbc.SybDriver stands For JConnect 6.0: com.sybase.jdbc3.jdbc.SybDriver or IP a	Hostname stands for the database server name or IP address.
iAnywhere JDBC-ODBC driver	Database URL Driver class name Database URL	jdbc:sybase:Tds:Hostname:Port/ ServiceName For JDBC 2.0: ianywhere.ml.jdbcodbc.IDriver For JDBC 3.0: ianywhere.ml.jdbcodbc.jdbc3.IDriver jdbc:odbc:dsn=DSNname	Port stands for the database server port. The default ASA/SQL Anywhere port is 2638.
Sun JDBC- ODBC driver	Driver class name Database URL	sun.jdbc.odbc.JdbcOdbcDriver jdbc:odbc: <i>DSNname</i>	ServiceName stands for the name of the ASA/SQL Anywhere database service specified during configuration. DSNname refers to the name of the ODBC DSN that is created for the database.
User Name	(Type the data server.)	base login username. The username is set on the	ne database

 Table 4.16: Data source parameters for SAP ASA/SQL Anywhere

Driver	Parameter	Value	Note
Password	(Type the datal server.)	base login password. The password is set on the	e database

4.3.7.2 Data source parameters for ASE

ASE databases support jConnect JDBC driver only. ASE 15 supports JConnect 6.0 only.

Parameter	Value	Note		
Driver class name	For JConnect 5.5: com.sybase.jdbc2.jdbc.SybDriver	<i>Hostname</i> stands for the database server name or IP address.		
	For JConnect 6.0: com.sybase.jdbc3.jdbc.SybDriver	<i>Port</i> stands for the database server port. The default ASE port is 2048.		
Database URL	jdbc:sybase:Tds:Hostname:Port/ DBName	<i>DBName</i> stands for the name of the database.		
User Name	(Type the database login username. ' server.)	vpe the database login username. The username is set on the database ver.)		
Password	(Type the database login password. server.)	The password is set on the database		

Table 4.17: Data source parameters for ASE

4.3.7.3 Data source parameters for SAP IQ

SAP IQ databases support JConnect JDBC driver or Sun JDBC-ODBC driver.

Table 4.18: Data source parameters for SAP IQ

Driver	Parameter	Value	Note
JConnect JDBC driver (Recomm ended)	Driver class name	For JConnect 5.5: com.sybase.jdbc2.jdbc.SybDriver For JConnect 6: com.sybase.jdbc3.jdbc.SybDriver	Hostname stands for the database server name or IP address. Port stands for the
	Database URL	jdbc:sybase:Tds:Hostname:Port/ ServiceName	database server port. <i>ServiceName</i> stands
Sun JDBC- ODBC driver	Driver class name	sun.jdbc.odbc.JdbcOdbcDriver	for the name of the database service
	Database URL	jdbc:odbc:DSNname	specified during configuration. <i>DSNname</i> refers to the name of the ODBC DSN that is created for the database.
User Name	(Type the database login username. The username is set on the database server.)		
Password	(Type the database login password. The password is set on the database server.)		

4.3.7.4 Data source parameters for SAP HANA

SAP HANA databases support SAP In-Memory Database JDBC driver.

Driver	Parameter	Value	Note	
SAP In- Memory	Driver class name	com.sap.db.jdbc.Driver	<i>Hostname</i> stands for the database server	
Database JDBC driver	Database URL	jdbc:sap://Host:Port?reconnect=true	name or IP address. <i>Port</i> stands for the database server port.	
User Name	(Type the data server.)	Type the database login username. The username is set on the database erver.)		
Password	(Type the database login password. The password is set on the database server.)			

 Table 4.19: Data source parameters for SAP HANA

4.3.7.5 Data source parameters for Microsoft SQL Server

Appeon recommends using jTDS JDBC driver (or WebLogic JDBC driver for WebLogic hosting Appeon Server) rather than the Microsoft SQL Server JDBC driver, because it can eliminate memory leak and boost performance.

Driver	Parameter	Value	Note
jTDS JDBC driver	Driver class name	net.sourceforge.jtds.jdbc.Driver	<i>Hostname</i> stands for the database server
(Recomm ended)	Database URL	jdbc:jtds:sqlserver://Hostname: Port/DBName; SelectMethod=cursor	name or IP address. <i>Port</i> stands for the
WebLogic SQL Server	Driver class name	weblogic.jdbc.sqlserver. SQLServerDriver	database server port. The default SQL
JDBC driver (for WebLogic server only)	Database URL	jdbc:bea:sqlserver://Hostname:Port	Server port is 1433. <i>DBName</i> stands for the name of the database to which the
Microsoft SQL Server JDBC driver	Driver class name	For Microsoft SQL 2000: com.microsoft.jdbc.sqlserver.SQL ServerDriver For Microsoft SQL 2005: com.microsoft.sqlserver.jdbc.SQL ServerDriver	data source connects. "SelectMethod=cursor must be specified, otherwise errors will occur when inserting data.
	Database URL	jdbc:sqlserver://Hostname:Port; DatabaseName=DBName; SelectMethod=cursor	
User Name	(Type the data server.)	abase login username. The username is s	set on the database

Table 4.20: Data source parameters for Microsoft SQL Server

Driver	Parameter	Value	Note
Password	(Type the data server.)	base login passwore	d. The password is set on the database

4.3.7.6 Data source parameters for Oracle

Oracle databases support the Oracle JDBC driver only.

Parameter	Value	Note
Driver class name	oracle.jdbc.driver.OracleDriver	Hostname stands for the database
Database URL	jdbc:oracle:thin:@ <i>hostname:port:D</i> for Oracle 9i, 10g, and 11g jdbc:oracle:thin:@// <i>hostname:port/</i> . for Oracle 12c	<i>Port</i> stands for the database server
User Name	(Type the database login username. The username is set on the database server.)	
Password	(Type the database login password. database server.)	The password is set on the

4.3.7.7 Data source parameters for IBM DB2

IBM DB2 databases support the IBM JDBC driver only.

 Table 4.22: Data source parameters for IBM DB2

Parameter	Value	Note	
Driver class name	COM.ibm.db2.jdbc.net.DB2Driver	Hostname stands for the	
Database URL	jdbc:db2://Hostname:Port/DBName	database server name or IP address.	
		<i>Port</i> stands for the database server port. The port used by JDBC will be different than the one used by db2 client. The default JDBC port is 6789 while the port used by db2 client is 50000. <i>DBName</i> stands for the name of the database to which the data source connects.	
User Name	(Type the database login username. Th server.)	e username is set on the database	
Password	(Type the database login password. The password is set on the database server.)		

4.3.7.8 Data source parameters for Informix

Informix databases support the IBM Informix JDBC driver only.

Parameter	Value	Note		
Driver class name	com.informix.jdbc.IfxDriver	<i>Hostname</i> stands for the name or IP address		
Database URL	jdbc:informix-sqli://Hostname:Port/DBName: informixserver=DBServerName For example: jdbc:informix- sqli://192.0.2.117:1527/ mytestdb:informixserver=ol_s_122005_144417	of the machine hosting the database server. One machine can host several database servers. <i>Port</i> stands for the database server port. <i>DBName</i> stands for the		
		name of the database to which the data source connects. DBServerName stands		
		for the name of the database server.		
User Name	(Type the database login username. The usernam server.)	e is set on the database		
Password	(Type the database login password. The passwor server.)	tabase login password. The password is set on the database		

 Table 4.23: Data source parameters for Informix

4.3.7.9 Data source parameters for MySQL

MySQL databases support MySQL Connector/J driver. Different servers use different driver class names. See the following table for details.

Application Server	Paramete	Value	Note
JBoss & WebSphere	Driver class name	com.mysql.jdbc.jdbc2.optional.MysqlXADataSource	Hostname stands for the
	Database URL	jdbc:mysql:Hostname:Port/ServiceName	database server name or IP
EAServer Driver com.mys & class WebLogic name	com.mysql.jdbc.Driver	address. <i>Port</i> stands	
	Database URL	jdbc:mysql:Hostname:Port/ServiceName	for the database server port.

 Table 4.24: Data source parameters for MySQL

Applicatior Server	Paramete	Value	Note
JEUS	Driver class name	com.mysql.jdbc.jdbc2.optional.MysqlConnection PoolDataSource	ServiceNam stands for the name
	Database URL	jdbc:mysql:Hostname:Port/ServiceName	of the database service specified during configuration
User Name	(Type the database login username. The username is set on the database server.)		
Password	(Type the database login password. The password is set on the database server.)		

4.3.7.10 Data source parameters for Teradata

Teradata databases support the Teradata JDBC driver only.

Table 4.25: Data source parameters for Teradata

Parame	Value	Note	
Driver	For WebLogic/JBoss/JEUS:	Hostname stands for the	
class	com.teradata.jdbc.TeraDriver	database server name or IP	
name	For WebSphere:	address.	
	com.teradata.jdbc.TeraConnectionPoolDataSource	<i>DBPort</i> stands for the database server port. The default	
Databas	ejdbc:teradata://Hostname/DATABASE=DBName,	Teradata port is 1025.	
URL	DBS_PORT=DBPort,TMODE=ANSI,CHARSET= UTF8	<i>DBName</i> stands for the name of the database to which the data source connects.	
User Name	(Type the database login username. The username	is set on the database server.)	
Password Type the database login password. The password is set on the database server.)			

4.3.7.11 Data source parameters for PostgreSQL

PostgreSQL databases support the PostgreSQL JDBC driver only.

Table 4.26: Data source	parameters fo	or PostgreSQL
-------------------------	---------------	---------------

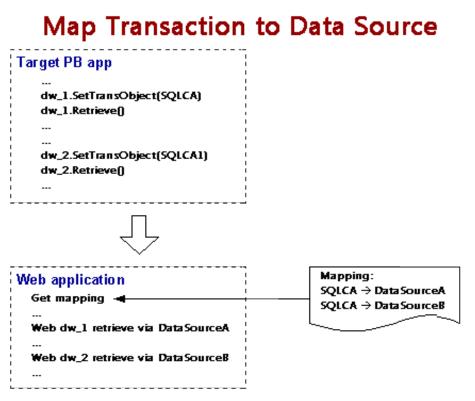
Parameter	Value	Note
Driver class name	org.postgresql.Driver	<i>Hostname</i> stands for the database server name or IP address.
Database URL	jdbc:postgresql://Hostname:DBPort/	DBRUME stands for the database server port. The default PostgreSQL port is 5432.

Parameter	Value	Note	
		<i>DBName</i> stands for the name of the database to which the data source connects.	
User Name	(Type the database login username. The username is set on the database server.)		
Password	(Type the database login password. The password is set on the database server.)		

4.4 Setting up transaction object to data source mapping

The purpose of setting up the mapping is to make sure the configured data source can access the database server for the Appeon Web or mobile application as the replacement of the transaction object in the PowerBuilder application.

Figure 4.74: Map transaction to data source



Once Appeon Server data sources are configured, you can set up the transaction object to data source mapping in two different ways:

- Higher priority: Dynamic transaction object to data source mapping via PowerScript.
- Lower priority: Static transaction object to data source mapping in AEM. The mapping in PowerScript has priority over the static mapping in AEM.

Dynamic mapping is of higher priority, meaning that if a transaction object named "SQLCA" is both mapped to data source A via PowerScript and mapped to data source B in AEM, the transaction in effect is mapped to data source A.

Note that if Appeon Server is installed to WebLogic, WebSphere, JBoss, NetWeaver Application Server, or JEUS, Appeon Server and AEM reads data source JNDI names as data source names.

4.4.1 Dynamic transaction object to data source mapping

Transaction object to data source mapping can be dynamically set up or changed by setting or changing the DBMS and DBParm properties of the Transaction object in the application source code.

To set or change the data source dynamically, code the DBParm property of the Transaction object in this format:

SQLCA.DBParm="CacheName='ASEDataSource1'"

"ASEDataSource1" can be replaced by the name of the data source you want to use for the Transaction object.

To set or change the database type dynamically, code the DBMS property of the Transaction object using this format:

```
SQLCA.DBMS = "ODB-SYC"
```

The value of the DBMS property should be set based on the database type; refer to the table below.

Database Type	ODBC Interface	JDBC Interface	OLE Interface	Native Interface
MS SQL Server	ODB-MSS	JDB-MSS	OLE-MSS	MSS
Oracle 8i	ODB-O84	JDB-O84	OLE-O84	O84
Oracle 9i	ODB-O90	JDB-O90	OLE-O90	O90
Oracle 10g/11g	ODB-O10	JDB-O10	OLE-O10	O10
SAP ASE	ODB-SYC	JDB-SYC	OLE-SYC	SYC
SAP SQL Anywhere	ODB-ASA	JDB-ASA	OLE-ASA	-
SAP IQ	ODB-SYI	JDB-SYI	OLE-SYI	-
SAP HANA	ODB-HAN	JDB-HAN	-	-
IBM DB2 UDB	ODB-DB2	JDB-DB2	OLE-DB2	DIR
Informix	ODB-IN9	JDB-IN9	OLE-IN9	IN9
MySQL	ODB-MYS	JDB-MYS	-	-
Teradata	ODB-TER	JDB-TER	-	-
PostgreSQL	ODB-PGS	JDB-PGS	OLE-PGS	PGS
Other	ODB-Oth	JDB-Oth	OLE-Oth	Oth

In the table above:

• The names are not case-sensitive (for example: ODBC is the same as odbc).

• If ODB or ODBC is set as the DBMS property, Appeon will regard the database type as ASA/SQL Anywhere. The "odb-asa" and "odb-db2" are Appeon defined values. They can be recognized by Appeon without affecting the running of the PowerBuilder application, because only the first three letters of the DBMS setting are valid in PowerScript syntax.

4.4.2 Static transaction object to data source mapping

For an Appeon Web or mobile application, you can set up transaction object to data source mapping in the **Applications** settings in AEM. This is a static way for mapping the Transaction object to the data source. For detailed instructions, refer to <u>Transaction Objects</u>.

4.5 Advanced configurations related with database connection

4.5.1 Application Security

For typical PowerBuilder applications, security is implemented at two levels: script coded security and database security. After conversion, the Appeon system provides an additional built-in layer of application security on top of PowerBuilder application security. Appeon security is "either-or": the user either has or does not have access to the application.

You can implement security for the deployed Web or mobile applications in many ways. PowerBuilder script-coded security can convert direct to the Web or the mobile, and it provides security for the applications. There are also ways to implement database security in the Web or mobile applications. Finally, you can use the Appeon user/group management system to restrict access to the Appeon applications.

In addition, a way to incorporate the Appeon user/group management for use with the coded security in PowerBuilder applications is discussed in <u>Incorporate Appeon security in</u> <u>PowerBuilder code</u>. You can also implement your own security using other technologies.

4.5.1.1 Database security

Depending which user logs into an application, a PowerBuilder application can dynamically change the Transaction properties (user ID and password etc.) and connect to the database with different identities that determine the user privileges to access, read or modify the database tables.

Appeon Web applications and Appeon mobile applications rely on the data sources to interact with the Database Servers. In the Web or mobile application, transaction object to data source mapping can be dynamically set up or changed by setting or changing the DBMS and DBParm properties of the Transaction object in the application source code, or it can be statically set up in AEM database configuration. There is a limitation with data source configuration: the user ID and password of a connection must be pre-configured in AEM or application server console. Due to this limitation, you may want to consider the workarounds introduced in this section to improve the migration of database security in the original application.

4.5.1.1.1 Workaround one: Predefined data sources

You can pre-define in AEM or application server console a certain number of data sources that correspond to different security access levels in the database with different user IDs and

passwords. When the user logs in, the application decides which transaction object to data source mapping to use for establishing the database connection.

You should set up an equal number of data sources in AEM or application server console that connect to the database with different privileges, and map the data sources dynamically using the Transaction DBParm property to the PowerBuilder Transaction objects. Transaction object to data source mapping can be dynamically set up or changed by setting or changing the DBMS and DBParm properties of the Transaction object in the application source code. See Dynamic transaction object to data source mapping for the details.

4.5.1.1.2 Workaround two: The distributed application technique

The distributed application technique is supported by Appeon to work around the database security features in a PowerBuilder application. The methodology is to encapsulate the PowerBuilder source code that implements the database securities into NVOs and run them on EAServer. The NVOs may perform actions like creating database connections (manipulation of Transaction object properties), manipulating DataStore objects or executing SQL statements, and transferring the returned information to the Client.

For example, you can encapsulate the user authentication logic into an NVO, and then deploy the NVO to EAServer. In the application source code, you only need to pass the username and the password from the login window to the NVO.

Step 1: Create an NVO and declare a method in the NVO for user authentication. The method compares the user information entered in the application login window with that retrieved from the system table.

The method declared in the NVO:

```
public function boolean of_checkuser (string
as_userid, string as_password);
String ls_DBPass
SELECT fpassword
INTO :ls_DBPass
FROM t_user
WHERE t_user.fuserno = :as_userid;
if sqlca.SQLCode <> 0 Then
return false
End If
if ls_DBPass <> as_password Then
return false
End If
return false
End If
return true
End function
```

Step 2: Deploy the NVO to EAServer and create a proxy object for the NVO in the Client application.

Step 3: Modify the user authentication logic in the Client application to get the user information from the login window and pass it to the NVO.

The modified script in the Client application:

```
String ls_User,ls_Pass,ls_DBPass,ls_Err
Long ll_ID
String ls_Mess = 'Please enter a valid user
ID/password.'
If Trim(sle_name.Text) = '' Then
   sle_name.SetFocus()
```

```
MessageBox('Login Not Valid', ls_Mess, exclamation!)
Return
End if
ls_User = Trim(sle_name.Text)
ls_Pass = Trim(sle_Pass.Text)
If i_logsec.of_checkuser(ls_User,ls_Pass) then
MessageBox("Infomation","Login successful!")
Else
MessageBox("Infomation","Login failure!")
End if
```

4.5.1.2 Using INI files for connection security

You can set connection properties for a PowerBuilder application either by assigning values to the properties in the application script or using PowerScript Profile functions to read from an initialization (INI) file. It is recommended by Appeon that you set connection properties by reading from INI files only if your environment meets the following requirements:

• The browser for accessing the application must be cookie-enabled.

Reason: Appeon Developer deploys the INI files as XML to Appeon Server. When a Client accesses the deployed application that uses the INI file profiles, a copy of the original XML file is specially created and carries all the profile information of the Client. The cookie on the Client browser enables the Client to read the correct copy of its XML file located on Appeon Server.

• Make sure the Windows user account profile on the Client is only used by one user for accessing the application.

Reason: As the Cookie will reside in the Windows user profile cookie directory (for example, C:\Documents and Settings\Administrator\Cookies) any user with full access rights who also uses the Client computer will be able to gain access to another user's application identity.

If the same Windows user account profile will be used by multiple users on the Client, consider using another security method, Database security, as introduced in the <u>Database</u> <u>Security</u> section.

The initialization file should at least consist of the Database section:

```
[Database]
variables and their values
...
```

The following script example assigns connection properties to SQLCA. The database connection information is stored on the Web Server after application deployment; on some network configurations this can leave the database server unsecured:

```
SQLCA.DBMS = "MSS Microsoft SQL Server"
SQLCA.Database = "appeon_test"
SQLCA.ServerName = "192.0.0.246"
SQLCA.LogId = "sa"
SQLCA.AutoCommit = False
...
```

To set the Transaction object to connect to a database, the following script example reads values from App.INI, an initialization file. This method is much more secure in comparison to the preceding script.

```
sqlca.DBMS = ProfileString(App.INI, "database",&
"dbms", "")
sqlca.database = ProfileString(App.INI,&
"database", "database", "")
sqlca.userid = ProfileString(App.INI, "database",&
"userid", "")
sqlca.dbpass = ProfileString(App.INI, "database",&
"dbpass", "")
...
```

4.5.2 Appeon security

Appeon security features are set in Appeon Enterprise Manager (AEM), the Web application that manages the Appeon system and deployed Web or mobile applications. Appeon security is at the application level and is "either or": the user either has or does not have access to the application. By default, Appeon security is turned off for each deployed application.

When the security for a Web or mobile application is turned on, the Appeon Login dialog box pops up at the beginning of the application startup and prompts the user to enter the user name and password. The user name and password are verified by Appeon Server against the authentication schema that can be set in an LDAP server or in Appeon system database. If the user name or password is not correct, the user is not allowed to access the Appeon application.

For more information on using Appeon security features for Appeon Web or Appeon mobile applications, refer to the <u>Server Security</u> section.

4.5.2.1 Incorporate Appeon security in PowerBuilder code

If your PowerBuilder application has not coded user name/password verification at application startup that restricts access to the application, you can utilize Appeon's built-in user group management. When the application runs, the user is prompted to enter the Appeon user name and password in the Appeon Login dialog box.

The Appeon user name can be passed to the application so that it can be utilized to implement script coded security features for the application. You can use the of_getappeonusername function in the Appeon Workarounds PBL to get the Appeon user name. For detailed information, refer to Section 2.3.1, "AppeonExtFuncs Object" in *Workarounds & API Guide*.

4.5.2.2 Database auditing

In Client/Server architecture, the database can easily keep track of every logged-in user if you enable the AUDITING option in the database.

Appeon Web applications and Appeon mobile applications run in a three-tier architecture. Each time the Client wants to connect with the database, the call reaches Appeon Server first. Appeon Server will validate the user ID and password of the call. If the validation passes, Appeon Server connects with the Database Server using a unified user ID and password. The user ID and password that the database keeps track of is not the user ID and password that makes the call at the Client.

4.5.2.2.1 Passing user ID/password to database from EAServer data source

If you are using a SAP ASE database, you can use the SSA data source property. This property changes the ID at the database to whatever user ID/Password is used by end users

for accessing the server. If you are using an SAP database, you can set this property in your data source props file. This cannot be used if you are using a different database type.

The following information is taken from the EAServer Administrator Guide Appendix B - Data Source Properties; please refer to the EAServer documentation for more detailed instructions.

The data source property, *com.sybase.jaguar.conncache.ssa*, enables set-proxy support for connections to databases that support this feature. By default, the property is set to false, which disables set-proxy support.

This feature can be used with any database that recognizes this command:

set session authorization "login-name"

When proxy support is enabled, connections retrieved from the cache are set to act as a proxy for the user name associated with the EAServer client. To set the proxy to another user name, use the Java JCMCache.getProxyConnection() method or the C JagCmGetProxyConnection() routine in your component.

The user name specified in the cache properties (com.sybase.jaguar.conncache.username) must have set-proxy privileges in the database and/or server used by the cache.

In EAServer Manager, set this property using the All Properties tab in the Data Source Properties dialog box.

4.5.2.2.2 Re-configuring database auditing functionality

To work around the database auditing functionality, you can also re-configure the auditing information that is saved on the database by adding a new field to it: user ID.

With the Client/Server application, make sure that a combination of user ID and password cannot hold multiple connections with the database at one time.

Add in the necessary code in the Client Server application so that every time the user wants to connect with the database, the call sent to the Database Server includes user ID information. For example, when sending the user ID as a column in the DataWindow or to the Stored Procedure, the user ID information in the call from the client-side will be saved in the user ID field on the Database Server.

5 AEM User Guide

5.1 Introduction

5.1.1 Overview

Appeon Enterprise Manager (AEM) is a Web-based application that is automatically installed with Appeon Server to manage the Appeon Server and the Appeon deployed applications (including both the Web application and the mobile application).

AEM is designed to manage both single-server installations and multiple-server installations with the same ease and power, and it provides an additional layer of security to the existing security already coded into your PowerBuilder applications. It also allows the administrator to use the built-in Appeon security management system or LDAP security (recommended) to control the access rights at the application level.

All settings configured in AEM are saved to several XML files in the <AppeonHome> \repository\<instancename>\config folder. For example, if Appeon Server runs on JBoss, the XML files are saved in the %jboss%\appeon\repository\<instancename>\config folder, where %jboss% stands for the installation path of JBoss on the computer.

5.1.2 AEM Tools

AEM contains three sets of tools: Server, Application, and Mobile UI Resizing. After login, you can access each tool from the treeview window on the left.

AEM Console		Welcome	Appeon for PowerBuilder 201
™ <u>Welcome</u> ⊒-Server	*	Welcome to Appeon Ent	erprise Manager
E Sessions Logging F-Resources			ger (AEM) provides a comprehensive set of easy-to-use tools for managing the entire Appeon system and lications (including both Web and Mobile).
Product Activation Server Security		Frequently-Used Tools	
Configuration Summary		Licensing	Displays license information and allows you to process the Appeon license.
		Active Sessions	Lists the active sessions for all Appeon Servers.
PB Features		Active Transactions	Lists the active transactions for all Appeon Servers.
Web Browser Client Features ⊞Data Transfer		Logging	Configures the log file settings, including Appeon Server log list, log operation mode, and log replacement.
⊕ Performance	«	Data Source	Specifies the settings used to connect to the database at runtime.
Client Security Mobile UI Resizing Screen Size	~	Transaction Objects	Configures the connection caches used by the deployed applications. This configuration must be performed each time a new application is deployed or when the transaction object/connection cache has changed.
Window Size		Client Features	Configures various client settings related to the user interface and general user experience of the application, for example application title, graphic theme, application auto update, run mode, error message mode, start and exit behaviors, client storage location.
•	*		
Description			
Appeon Enterprise Manager (AEM) provides a comprehensive set of easy-to -use lools for managing the entire Appeon system and all Appeon deployed applications (including both Web and Mobile).			

Figure 5.1: AEM Console

5.1.3 Supported Web browsers

AEM can be viewed on the following Web browsers and versions.

- Microsoft Internet Explorer 10/11
- Google Chrome 35 or later

Considering that Web browsers are usually downward compatible, versions higher than the above listed may also be supported.

If you view your AEM using Web browsers other than those listed above, you may run into errors, such as that UI cannot be displayed properly or some functions may not be available.

5.2 Getting started

5.2.1 Running Appeon Server

Appeon Server must be running before you start AEM. If using an Appeon Server cluster, AEM should only be used in one server to manage all the servers in the cluster.

Start Appeon Server, which means starting the application server (JBoss, JEUS, WebLogic, WebSphere, or EAServer) that Appeon Server is installed to.

For example, if Appeon Server is installed to JBoss, you can start Appeon Server with the following method:

In Windows: choose **Programs** > **Appeon for PowerBuilder 2016** > **Appeon Server for JBoss** > **Instances** > *InstanceName* > **Start JBoss** from the **Windows Start** menu.

In Unix\Linux: change to the \$jboss/appeon/bin/ folder and run the appeonserverstart.sh file.

5.2.2 Starting AEM

5.2.2.1 AEM URL

The URL for launching AEM for a given Appeon Server is HTTP://HOST_NAME:PORT/ AEM/ or HTTPS://HOST_NAME:PORT/AEM/, where HOST_NAME is the machine name or IP address of the server, and PORT is the HTTP or HTTPs port for the server.

The default ports for JBoss, JEUS, WebLogic, WebSphere, and EAServer are:

- JBoss: 8080
- JEUS: 8088
- WebLogic: 7001
- WebSphere: 9080
- EAServer: 9988

5.2.2.2 Three ways to launch AEM

There are three ways to launch AEM:

- Type the AEM URL in any Web browser that is able to connect via HTTP or HTTPS to the Web port of the Appeon Server.
- On the computer where Appeon Server is installed, select Programs > Appeon for PowerBuilder 2016 > Appeon Server > Appeon Enterprise Manager from the Windows Start menu.
- On the computer where Appeon Developer is installed, click the **AEM** button (**W**) in the Appeon Developer toolbar. Before doing this, ensure that the AEM URL has been configured correctly in Appeon Developer.

5.2.2.3 AEM user name and password

Enter a valid user name and password for AEM. During the Appeon Server installation, you can specify the user name and password. If you did not specify the user name and password during the installation, you can use the default user name and password (both "admin") to log in to AEM. For security purposes, Appeon recommends that you change the user name and password after the initial login. Refer to <u>AEM Login</u> for more information about changing the user name and password.

5.2.2.4 Installing Appeon Workspace

If you click the link on the AEM login page, the Appeon Workspace download center (http://server_ip_address/aws/) will display and allow you to download the built-in version of Appeon Workspace from there.

If you are a server administrator, it is highly recommended that you read through Chapter 3, *Installing Appeon Workspace* in *Appeon Workspace User Guide (Mobile only)* carefully, as it talks about how to prepare and deploy Appeon Workspace to the Web server in great details.

Figure 5.2: AEM login

Jser name:	
Password:	
	Logon

5.2.2.5 AEM language

AEM supports to display its content in multiple languages, such as English (en/en-us), Japanese (ja), Simplified Chinese (zh-cn) and Traditional Chinese (zh-hk/zh-tw).

The AEM language is determined by the language settings of the Web browser. Take Internet Explorer as an example. Select menu **Tools** > **Internet Options** from Internet Explorer.

Click the **Languages** button on the **General** tab. Add the language and move it to the top of the list. For example, if you want to display the AEM contents in simplified Chinese, select **Chinese (PRC)** [**zh-CN**] and move it to the top, as shown in the following figure.

Figure 5.3: Language settings

Internet Options	? 🛛
Language Preference	X nced
Language Preference Add the languages you use to read websites, listing in order of preference. Only add the ones you need, as some characters can be used to impersonate websites in other languages.	₿,
Language:	r .
Chinese (PRC) [zh-CN] English (United States) [en-US]	
Move <u>d</u> own	
Remove	
<u>A</u> dd	
Prefix and suffix options	EI
Do not add 'www' to the beginning of typed web addresses	
Specify the suffix (for example .net) that should be added to typed web addresses when you press Ctrl + Shift + Enter.	
Suffix: .	
OK Cancel	
Colors Languages Fonts Access	sibility
OK Cancel	Apply

5.2.3 AEM Help

On the index page of Appeon Enterprise Manager, the **Help** button provides easy access to AEM Help:

Figure 5.4: Help button



Click the **Help** button, find the topic on the left pane, and view the content on the right pane.

Figure 5.5: Appeon Help

APP <u>=</u> ON [®]	HOME + APPEON MOBILE + APPEON MOBILE ONLINE HELP +	<u>D01</u>	WNLOAD PDF	
	II SID	EBAR	NEXT ►	
CONTENTS Q SEARCH	Table of Contents		^	
⊕ Appeon Server Configuration Guide for J2EE	Appeon Server Configuration Guide for J2EE			
	Server Configuration Tasks		=	
	Scope of configurations discussed in this book			
	Configuration stages and tasks			
	Configuration during application deployment			
	Configuration during debugging			
	Configuration during security management			
	E Configuration during performance management			
	Configuration during server information management			
	Configuration for emergency control			

5.3 Server

Server is a set of tools for viewing and modifying all the configurable system settings. There are five tools: Sessions, Logging, Resources, Product Activation, and Server Security.

Figure 5.6: Server

AEM Console		<u>Welcome</u> > Server	
Welcome Server Berver Bersesions Logging Besources Product Activation Bever Security Application Berver Security Berver Security Berver Security	*	Server	
		Views and modifies a	l of the configurable settings on the server.
		Sessions	Contains active sessions, active transactions, deployment sessions, and offline configurations.
		Logging	Configures the log file settings, including Appeon Server log list, log operation mode, and log replacement.
		Resources	Contains cluster server list and settings and other maintenance settings.
		Product Activation	Contains product activation and technical support.
		Server Security	Contains AEM login, user management, group management, system security, and deployment security settings.

5.3.1 Sessions

Sessions is a set of tools for viewing and modifying all the sessions and the transactions. There are three tools: Active Sessions, Active Transactions, and Deployment Sessions.

Figure 5.7: Sessions

AEM Console	<u>Welcome</u> > <u>Server</u> :	> Sessions	
r™Welcome ▲ ⊟-Server	Sessions		
Active Sessions	Contains active sessio	Contains active sessions, active transactions, deployment sessions, and offline configurations.	
Active Transactions	Active Sessions	Lists the active sessions for all Appeon Servers.	
Deployment Sessions Logging	Active Transactions	Lists the active transactions for all Appeon Servers.	
	Deployment Sessions	Lists all the currently active deployment sessions. Each deployment session represents an Appeon Developer machine deploying an application to this Appeon Server. You may need to kill a deployment session if it terminates abnormally on the Appeon Developer machine.	

5.3.1.1 Active Sessions

The AEM Active Sessions tool helps you manage and monitor all the active sessions and the devices (for mobile applications only) in the system.

Figure 5.8: Active Sessions

Ī	<u>Welcome</u> > <u>Server</u> > <u>Sessions</u> > Active Sessions									
	Active Sessions									
	Lists the active sessions for <i>all Appeon Servers</i> .									
	View active sessions for: all Appeon Servers 💌									
	Session ID User name IP Address Application Name Server ID State Started Last Accessed Duration (s)									
	Kill Checked Sessions Refresh									
	Device List (Mobile Only)									
	List devices for all Appeon Servers.									
	View devices for all Appeon Servers									
	Total: 0 Record(s)									
	Session ID User name IP Address Application Name Server ID State Started Last Accessed Duration(s)									
	Kill Checked Sessions Refresh									

5.3.1.1.1 Viewing active sessions and devices on an Appeon Server

Viewing active sessions

This part is only for Web applications.

By default, the Active Sessions table lists the current active and passive sessions on all Appeon Servers. If you want to view sessions on a particular Appeon Server, select the Appeon Server from the **View active sessions for** dropdown list box, and click the **Refresh** button. The dropdown list displays all the servers configured in the <u>Cluster</u> tool.

You can sort the Active Sessions table by clicking any heading of the columns.

Each session will have the following two states:

- Active sessions: if the session is created by an Appeon Server, the session will be recognized as an active session for that Appeon Server.
- Passive sessions: if the session is backed up in another Appeon Server (randomly picked according to the load balancing algorithm), the session will be recognized as a passive session for that Appeon Server. The passive sessions only exist when you enable session backup in the <u>Cluster</u> tool.

Viewing active devices and sessions that belong to the device(s)

This part is only for mobile applications.

By default, the Device List table lists all the active devices and sessions that belong to the device(s) on all Appeon Servers.

A device may have several sessions depending on the applications the device is accessing.

If you want to view devices on a particular Appeon Server, select the Appeon Server from the **View devices for** dropdown list box, and then click the **Refresh** button.

You can sort the **Device List** table by clicking any heading of the columns.

Each session of a device will have the following two states:

- Active sessions: if the session is created by an Appeon Server, the session will be recognized as an active session for that Appeon Server.
- Passive sessions: if the session is backed up in another Appeon Server (randomly picked according to the load balancing algorithm), the session will be recognized as a passive session for that Appeon Server. The passive sessions only exist when you enable session backup in the <u>Cluster</u> tool.

5.3.1.1.2 Killing session(s) and device(s)

Killing session(s)

This part is only for Web applications.

You can kill a single or multiple sessions in the Active Sessions table to release Appeon Server resources or if you want to perform database maintenance. Each session may include several transactions. When you kill an active session, the active transactions that belong to the session will be rolled back.

Step 1: Check the sessions you want to kill.

Proceed with caution when checking sessions you want to kill.

Step 2: Click the Kill Checked Sessions button.

A message box displays for you to confirm the action. Once you confirm the action, the selected sessions are immediately killed and the Active Sessions table is refreshed.

Killing device(s) or session(s) that belong to the device(s)

This part is only for mobile applications.

You can kill a single or multiple devices and/or sessions that belong to the device(s) in the Device List table to release Appeon Server resources or if you want to perform database maintenance. Each session may include several transactions. When you kill an active device, the active transactions that belong to the session will be rolled back.

Step 1: Check the device(s) or the session(s) that belong to the device(s) you want kill.

If you kill a device, the session(s) that belong to the device will be killed correspondingly.

Step 2: Click the Kill Checked Sessions button.

A message box appears for you to confirm the action. Once you confirm the action, the selected devices or sessions are immediately killed and the Device List table is refreshed.

5.3.1.2 Active Transactions

The AEM Active Transactions tool helps you manage and monitor all active transactions in the system.

8			
AEM Console		<u>Welcome</u> > <u>Server</u> > <u>Sessions</u> > Active Transactions	
Velcome	E	Active Transactions	
Active Sessions		Lists the active transactions for all Appeon Servers.	
<u>Active Transactions</u> Deployment Sessions		View active transactions for: all Appeon Servers 💌	
-Logging -Logging		Kill Session Transaction ID Session ID User name IP Address Application Name Server ID Duration (s)	
		Rollback Checked Transactions Refresh	

Figure 5.9: Active Transactions

5.3.1.2.1 Viewing active transactions

By default, the Active Transactions table lists the current active transactions on all Appeon Servers. If you want to view active transactions on a particular Appeon Server, select the Appeon Server from the "**View active transactions for**" dropdown list, and click the **Refresh** button. The dropdown list displays all the servers configured in the <u>Cluster</u> tool.

You can sort the Active Transactions table by clicking any heading of the following columns: Transaction ID, Session ID, User Name, IP Address, Application Name, Server ID, Client Type, and Duration.

5.3.1.2.2 Rolling back active transaction(s)

You can roll back a single or multiple active transactions in the Active Transactions table to release Appeon Server resources or in case of a database deadlock.

Step 1: Check the active transaction(s) that you want to roll back.

Proceed with caution when checking transactions you want to roll back.

Step 2: Click the Rollback Checked Transactions button.

A message box displays for you to confirm the action. Once you confirm the action, the selected transactions are immediately killed and the Active Transactions table is refreshed.

5.3.1.3 Deployment Sessions

The Deployment Sessions tool can help you manage and monitor all the active deployment sessions in the system.

Figure 5.10: Deployment Sessions

AEM Console		<u>/elcome</u> > <u>Server</u> > <u>Sessions</u> > Deployment Sessions	
', [™] Welcome ⊟∴Server	Â	Deployment Sessions	
		Lists all the currently active deployment sessions. Each deployment session represents an Appeon Deve deploying an application to this Appeon Server. You may need to kill a deployment session if it terminates Appeon Developer machine.	
Logging		Deployment Session ID Application Name	
Product Activation E-Server Security		Kill Checked Sessions	

An active deployment session automatically starts and displays in the Deployment Sessions table when Appeon Developer starts to upload the embedded SQL statements, DataWindow SQLs, and INI files of an application to Appeon Server. It ends and disappears automatically from the table when the upload process is complete.

There is one special scenario in which you need to manually kill a deployment session in AEM. If the Deployment Wizard of Appeon Developer abnormally exits during the above-

mentioned upload process, the deployment session stays in active status in Appeon Server, and Appeon Developer cannot resume the upload process. Only after you kill the deployment session (by checking the session and clicking the **Kill Checked Sessions** button) or restart Appeon Server can the Deployment Wizard continue its job and upload the application.

Note: Killing a deployment session does not affect the ongoing deployment process. It does not have a negative effect if you kill a deployment session by mistake.

5.3.2 Logging

Logging is a set of tools for viewing and configuring all the logs.

Figure 5.11: Logs

AEM Console	Welcome > Server > Logging			
Welcome	Appeon Server Logs			
E- Sessions	Actions Log	Size (KB)		
Product Activation	🔍 View 🥙 Download 💰 Clear Server Log	186.61		
E- Server Security Application Mobile UI Resizing	🔍 View 🥙 Download 🔇 Clear Error Log	28.71		
Ear Mobile of Resizing	🔍 View 🥙 Download 💰 Clear 🛛 Deployment Log	0.00		
	Application Server Logs			
	Actions Log	Size (KB)		
	💐 View 🥙 Download Server Log	60.75		
	□ Log Files Path			
	Appeon log files are stored in %AppServer%\appeon\repository\%Instan	ce%llog.		
	∃ Log Mode	Replace Log Files		
	Off	Never replace log files		
	Standard mode (default)	Replace log files		
	Developer mode	When size exceeds 2 MB		
*	Oebug mode	Every 1 day(s)		
		Backup log files before replacing		
Description	Save			
Configures the log file settings, including	Odvo			

5.3.2.1 Viewing logs

Appeon Server creates three different log files for record keeping and for future use in troubleshooting. You can view these log files using the **View** button or directly locate them in the <AppeonHome>\repository\<InstanceName>\log folder.

On a click on a **View** button either in the **Appeon Server Logs** table or in the **Application Server Logs** table, you direct access the log files created by Appeon Server and the host application server of Appeon Server, such as JBoss.

• Appeon Server Logs

Server Log: the main log file. Records messages logged from services and the core Appeon Server runtime.

Error Log: the error log.

Deployment Log: records messages logged during application deployments.

• Application Server Log

Server Log: the main log file of the host application server.

The Log Viewer tool provides the following manipulations:

• To view a log file

Click **View** to view the detailed information in the browser. Click the links of different log files to switch between them.

If the size of the specified log file exceeds 2 MB, a message will pop up indicating that the file should be downloaded before viewing.

Figure	5.12:	View	log files
Inguit	J.12.	10.10	ing mes

Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Construction Image: Constructi	🥖 AppeonSc	erver.log - Windows Internet Explorer			
1286132662296:1 (00-03-04 10:11:22:296) [com.appeon.Server (run)] It's not a duster version server. 1286147376461 [00-03-04 13:31:17:03] [com.appeon.Server (run)] It's not a duster version server. 1286147325515 [00-03-04 14:15:25:515] [com.appeon.Server (run)] It's not a duster version server. 12861549056401 [00-03-05 09:19:07:20] [com.appeon.Server (run)] It's not a duster version server. 12826159059901 [00-03-05 09:19:07:20] [com.appeon.Server (run)] It's not a duster version server. 12826125909901 [00-03-05 09:19:07:20] [com.appeon.Server (run)] It's not a duster version server. 12826125909901 [00-03-05 09:19:07:20] [com.appeon.Server (run)] It's not a duster version server. 12826259096203:1 [00-03-05 12:25:06:203] [com.appeon.Server (run)] It's not a duster version server. 128262290767937:1 [00-03-05 13:26:07:937] [com.appeon.Server (run)] It's not a duster version server. 12826230767937:1 [00-03-05 13:26:07:937] [com.appeon.Server (run)] It's not a duster version server.	- 00	http://192.0.3.127:8000/AEM/configA	ssistant/showLog.do?t=3	✓ → × Google	٩
128614376546611 [09-03-04 131:15:703] [com.appeon.Server (run)] It's not a duster version server. 128614477037511 [09-03-04 14:15:25:515] [com.appeon.Server (run)] It's not a duster version server. 12861549765011 [09-03-04 14:15:25:515] [com.appeon.Server (run)] It's not a duster version server. 12861590564011 [09-03-06 09:13:07.280] [com.appeon.Server (run)] It's not a duster version server. 1286129055011 [09-03-05 09:13:07.280] [com.appeon.Server (run)] It's not a duster version server. 128621590563011 [09-03-05 09:13:07.280] [com.appeon.Server (run)] It's not a duster version server. 12862159053011 [09-03-05 09:13:07.280] [com.appeon.Server (run)] It's not a duster version server. 12862290765937:1 [09-03-05 13:26:07.937] [com.appeon.Server (run)] It's not a duster version server. 12862290767937:1 [09-03-05 13:26:07.937] [com.appeon.Server (run)] It's not a duster version server.	🚖 🎄	📕 AppeonServer.log		🟠 🔹 🗟 🔹 🖶 🔁 <u>P</u> age	 ▼
	123614376 123614467 123614732 123615480 12362150 123621594 123621594 123622890	55468:1 [09-03-04 13:16:05.468] [com.a 77703:1 [09-03-04 13:31:17.703] [com.a 25515:1 [09-03-04 14:15:25.515] [com.a 25640:1 [09-03-04 16:20:05.640] [com.a 18640:1 [09-03-05 09:03:38.640] [com.a 7250:1 [09-03-05 09:19:07.250] [com.a 38900:1 [09-03-05 09:33:03.890] [com.a 36203:1 [09-03-05 12:55:06.203] [com.a	ppeon.Server (run)] It's not a duster version server. ppeon.Server (run)] It's not a duster version server.		
Done 👘 Internet Protected Made: Off 👘 100% 💌	Done			🙀 🌒 Internet Protected Mode: Off	€ 100% -

• To download a log file

Click **Download** and click Save on the popup dialog.

• To clear a log file

Click **Clear** to remove the contents in the Appeon Server log files.

Contents in the application server log file cannot be cleared, because the application server log file may contain records that are not related with Appeon operations.

5.3.2.2 Log mode

Select one of the following four modes for log file operation.

• Mode 1: Off

Off mode does not generate any log files **except** error log files. It offers the fastest performance.

• Mode 2: Standard mode

Standard mode is the default mode, and should be used when the system is stabilized. It generates standard log files that are sufficient for providing basic system activity information and notifies you if errors have occurred. This mode may be inadequate for detailed troubleshooting.

• Mode 3: Developer mode

Developer mode generates detailed log files that are sufficient for routine checking and troubleshooting. Performance speed decreases when using this mode.

• Mode 4: Debug mode

Debug mode generates log files that record every system activity in detail and provide the user with information for troubleshooting **obscure** or **hard to find** issues. Debug mode log files are useful for technical support. There is a noticeable slowdown in performance when using this mode.

5.3.2.3 Replace log files

Log files accumulate over time, and if they become too large, they can decrease Appeon Server performance. Select the "Replace log files..." option to replace the log files periodically. This section is specifically applicable to AppeonServer.log, AppeonDev.log files and AppeonError.log file.

To configure log file settings:

Step 1: Decide whether the log files should be replaced.

• Option 1: Never replace log files

If you select this option, the log files will never be replaced. This option may compromise system performance when the log files become large, in which case they should be manually deleted.

• Option 2: Replace log files ...

If you select this option, this option will replace log files according to conditions configured in Step 2. It is highly recommended that you use this option. To create and keep an archive of all logs, check the "Backup log files before replacing" option.

Step 2: Set the condition for replacing log files by checking one of the options.

• Option 1: Replace log files when size exceeds ____ MB.

The system automatically replaces the log files when the file size exceeds the value set here.

• Option 2: Replace log files every <u>day</u> (s).

The system automatically replaces the log files as stipulated by the value set here.

Step 3: Decide whether the log files should be backed up.

• This setting allows Appeon Server to back up the log files before replacing them. If this option is checked, all log files are backed up before they are replaced so an archive of the

log files is maintained. Maintaining this archive does not compromise system performance, but there must be adequate hard disk space for the backup log files.

• All backup log files are named according to the following format: Log File name ("LogSystem") + an underscore ("_") + the time of the creation of the backup file (yyyy/mm/dd/hh/mm) + ".bak". For example: LogSystem_200504081213.bak.

5.3.3 Resources

Resources is a set of tools for viewing and configuring the servers cluster, temporary files and configuration backups. There are two tools: Cluster and Maintenance.

Figure 5.13: Resource

AEM Console		Welcome > Server > Resources		
r Welcome ⊟- Server	^	Resources		
E- Sessions Logging		Contains cluster serv	er list and settings and other maintenance settings.	
Resources Cluster Maintenance Product Activation		Cluster	Configures the connection settings for all Appeon Servers that are being load-balanced so that AEI/I can interface with all the Appeon Servers included in the logical cluster. Single Appeon Server installations should skip this configuration.	
		Maintenance	Configures the temporary file and profile file cleanup settings, and backs up the AEM configuration files.	

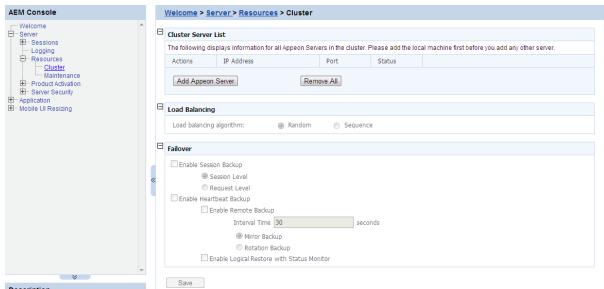
5.3.3.1 Cluster

Once you installed Appeon Server to several application servers, you can use the AEM Cluster tool to create an Appeon Server cluster and configure the load balancing and failover settings of the cluster.

Note that the load balancing and failover features mentioned in this section are implemented using a plug-in specially provided by Appeon. You will need to configure this Appeon plug-in after creating the Appeon Server cluster in AEM. For detailed instructions, refer to Chapter 6, *Tutorial 5: Configure Appeon Server Cluster* in *Appeon Mobile Tutorials (Mobile only)*.

You can also implement the load balancing feature (but not failover) using the plug-in provided by the application server. Detailed instructions can also be found in the Web Server Configuration Guide.

Figure 5.14: Cluster



5.3.3.1.1 Cluster Server List

Use the **Cluster Server List** to create an Appeon Server cluster. The Appeon Servers listed in the **Cluster Server List** group share the same AEM settings, and can work as a cluster in supporting the requests from their associated Web server.

Important requirements

- All of the Appeon Servers to be added into the cluster must have the same connection type: HTTP or HTTPS; it cannot be a mix.
- Use the IP address or machine name of the Appeon Server when adding an Appeon Server. Do not use "localhost" or "127.0.0.1".
- The IP address or machine name and port number must match the HTTP or HTTPS settings in the application server.
- Add the server that the current AEM runs on as the first member of the cluster, and if you want to remove all servers from the list, remove it last.
- To successfully synchronize/save a specific setting to all servers in the list, verify that servers are running before you save it.
- An application must be deployed to all servers in the cluster to make sure the cluster functions properly. Use the Appeon Developer Deployment Wizard to perform the application deployment. For detailed instructions, refer to the Chapter 6, *Deploying PowerBuilder Applications* in *Appeon Developer User Guide*.
- To ensure the most efficiency and stability of the Appeon Server cluster, verify that the environment of all Appeon Servers is identical. For example, the application server (type and version) and Appeon Server (version and license) must be the same.
- If you need to reinstall the operating system of an Appeon Server in the cluster, be sure to remove the Appeon Server from the cluster first.

Adding an Appeon Server

Step 1: Select the connection type (HTTP or HTTPS) for the Appeon Server cluster.

All of the Appeon Servers to be added into the cluster must have the same connection type: HTTP or HTTPS.

Step 2: Click the **Add Appeon Server** button in the **Cluster Server List** table. The Add Appeon Server page opens.

Figure 5.15: Add Appeon Server

Ī	<u>Nelcome</u> > <u>Server</u> >	Resources > <u>Cluster</u> > Add Appeon Server
Ξ	Add New Appeon Serve	
		e cluster contain the same deployed applications. When creating a cluster, add the server that the current AEM runs on e cluster. It is recommended to install the same Appeon Server version in a cluster.
	Connect type:	ITTP
	IP Address:	161.0.0.1
	Port:	80
	AEM User Name:	admin
	AEM Password:	•••••
	Save and Add	ve

Step 3: Verify that the Appeon Server to be configured is running and provide the required information (IP address, port, and the AEM login user name and password). For example:

- IP address: 161.0.0.1
- Port: 80
- AEM User Name: admin
- AEM Password: admin

Step 4: Click the **Save** and **Save and Add** button. The program will automatically test the connection and add the Appeon Server if the test is successful.

Adding an Appeon Server will succeed only if:

- 1. The Appeon Server is new to AEM.
- 2. The information provided is correct.
- 3. The Appeon Server is running.
- 4. The first Appeon Server that you add is the one hosting AEM.
- 5. The password is correct.

Removing an Appeon Server

To remove an Appeon Server from the list:

Step 1: Click the **Delete** button in the Actions column of the Appeon Server in the Appeon Server Cluster table.

Step 2: A message box appears requiring confirmation. Choose **OK** to proceed with the deletion, or choose **Cancel** to cancel.

Step 3: By clicking on the **OK** button, the Appeon Server is removed from the Appeon Server list. AEM no longer interfaces with the Appeon Server.

To remove all Appeon Servers from the list:

Click the **Remove All** button and then click **OK** in the popup message box to confirm the deletion.

Checking status of Appeon Server

An Appeon Server in a cluster must be in the "Running" status in order to handle the requests from Web server. Appeon Server has the following status:

- Shut down: Appeon Server is not started or not available.
- Ready: Appeon Server is preparing itself to accept user requests by taking the essential initialization process.
- Running: Appeon Server is started and accepts user requests.
- Failed: Appeon Server failed to start or failed to verify license.

5.3.3.1.2 Load Balancing Settings

Load Balancing Settings determine how requests will be distributed among the servers in the cluster to optimize system performance and how servers in the cluster will be picked as peer servers. Appeon Server cluster supports the following two load balancing algorithms:

- Random -- distributing requests across servers in random order, regardless of the status of servers.
- Sequence -- directing requests to servers in an allocated order. The sequence algorithm, which is also known as round-robin, is simple, cheap and very predictable.

Either algorithm can provide optimal performance for servers of similar configuration and specification, because it evenly sends requests to each server in the cluster.

5.3.3.1.3 Failover Settings

Failover Settings determine how the session information in the servers of the cluster is backed up in the system for failover support. With the backup settings, the sessions at a failed server can be continuously supported by the same server after the server is restarted by its status monitor, or supported by another server in the cluster. Because session backup does not back up transaction information, there may be some loss to the operations in the sessions, but the users can continue running the sessions without re-login.

Appeon Server cluster provides two major backup options for failover: session backup and heartbeat backup.

Session backup

Session backup options enable a session to be backed up when Appeon Server detects that the session status changes or it receives a request from the same session. You can specify the backup with different levels:

- Session level -- backing up a session when Appeon Server detects that the session is created or destroyed, or when a transaction starts or ends in the session.
- Request level -- backing up a session each time when Appeon Server receives a request from the same session, regardless of the session status.

Heartbeat backup

Heartbeat backup options enable Appeon Server to automatically back up sessions at the internals you specify.

- Remote backup: backing up all sessions from the local machine to the peer server (another server in the cluster which was picked randomly or in sequence) at the intervals you specify in the Interval Time box. Remote backup includes mirror backup and rotation backup.
 - Mirror backup: periodically backing up all sessions from the local machine to the peer server. A session is backed up at a fixed peer server. If the peer server fails, the session backup no longer works.
 - Rotation backup: periodically backing up all sessions from the local machine to the peer server. The peer server at which a session is backed up can be changed. That is, if the first peer server fails, another server will be picked as the peer server for the backup.
- Logical Restore with Status Monitor -- backing up all sessions from the local machine to the peer server and allowing both "active" and "passive" sessions to be restored after a failed server is restarted by status monitor. If this option is disabled, only "active" sessions on the failed server will be recovered. Each server in the cluster maintains a list of "active" sessions and a list of "passive" sessions. The server recognizes a session as an "Active" session if it is created here and recognizes a session as a "Passive" session if it is created in another server and backed up here. The interval of this backup option is specified in the configuration file (monitor.props) of Status Monitor.

5.3.3.1.4 Synchronizing AEM settings to servers in a cluster

Once an Appeon Server is added to the Cluster Server list, you can use the AEM which maintains the list to manage all servers in the cluster. Whenever you change the settings of this AEM and click **Save**, the settings will be saved to the other servers in the cluster. Therefore, you do not need to repeat the configuration in each AEM. However, not all of the AEM settings can be synchronized, because some settings are not necessary to be the same for all servers. The following settings will not be synchronized:

- Logging: displays the log files on the current server only.
- Auto cleanup and Manual cleanup in Maintenance: clears the temporary files of the current server only.
- Deployment Sessions: displays the active deployment sessions of the current server only.
- Licensing: displays the license information and status of the current server only.

- Data Source: displays and configures the data source related with the current server only.
- DataWindow Data Cache: displays and configures the DataWindow data cache related with the current server only.
- AEM login: displays and configures the login information of AEM on the current server only.

The following action will not be synchronized:

• Killing active sessions: this action will terminate the session on the current server only.

5.3.3.2 Maintenance

Maintenance is a set of tools for clearing temporary files and backing up configurations.

Figure 5.16: Maintenance

AEM Console		Welcome > Server > Resources > Maintenance	
		Clean Up Periodically Clean up the information that is last accessed over: Image: Clean up temporary registry and profile configuration files. Save Clean Up flow Image: Clean up temporary registry and profile configuration files. Clean Up and periodic configuration files. Clean Up	e hour(s) ago
	«	Configuration Backup You can back up You can back up the configuration files, once these files are comupted, you can File Name aem-configurat aem-configurat cutar-configurat both properties anne-configurat both properties anne-configurat both properties backup Modes Backup Mode	Description Contains security settings for validating users logging into Appeon AEM. Contains the settings for the maximum memory cache of Appeon Server. Contains the settings for all applications, such as, application name, transaction object, and so on. Contains the settings for configuring Appeon clutter. Contains the settings for configuring Appeon clutter. Contains the settings for configuring Appeon clutter. Contains the settings for configuring appen clutter. Contains the settings for configuring appen clutter. Contains the settings for configuring appen clutter. Contains the settings for the maximum number of concurrent requests in Appeon Server.
▼ Description		Archive Mode Non-Arc	chive Mode
You can back up the configuration files, once these files are		Back up mport	

5.3.3.2.1 Auto cleanup

To perform an auto-cleanup for temporary files in the "Cleanup Periodically" group box: Step 1: Select the file types to clean up and specify cleanup time.

- Option 1: Clean up DataWindow data files, DataWindow image files, PDF files This option is only available for Appeon Server installed to EAServer.
- Option 2: Clean up temp register and profile config files

Both Option 1 and Option 2 are checked by default. You can choose whether or not to perform these two cleanup jobs by selecting or deselecting these two options.

• Option 3: Clean up the temporary files _____ days ago at ____ am/pm.

This option is only available for Appeon Server installed to EAServer.

Use this option to specify a particular time for temporary DataWindow data files, DataWindow image files, and PDF files to be cleaned up. For example, "Clean up the

temporary files $\underline{2}$ days ago at $\underline{8:00am}$ " denotes that all temporary files generated 2 days ago will be cleaned up everyday at 8:00 am.

• Option 4: Clean up the info that is last accessed: <u>days</u> hours ago.

Use this option to specify a particular time based on which the temporary register and profile configuration files will be cleaned up. For example, "Clean up the info that is last accessed: $\underline{2}$ days $\underline{4}$ hours ago" denotes that all temporary register and profile configuration files that were accessed over 2 days and 4 hours ago will be cleaned up everyday.

Step 2: Click the **Save** button to apply changes.

5.3.3.2.2 Manual cleanup

This feature is not usually necessary if the auto-cleanup feature is used, but it can be helpful between scheduled cleanups if a sudden increase in activity on the system causes an influx of temporary files resulting in declines in performance.

To perform a manual cleanup in the "Cleanup Now" group box:

Step 1: Select the temporary files to be cleaned up.

Determine which temporary files are to be cleaned up by selecting the following options: "Clean up DataWindow data files, DataWindow image files, PDF files", and "Clean up temp register and profile config files". Both of these options are checked by default.

The "Clean up DataWindow data files, DataWindow image files, PDF files" option is only available for Appeon Server installed to EAServer.

Step 2: Click the **Cleanup Now** button to commit the cleanup.

The selected temporary files will be deleted immediately from all the Appeon Servers that are configured in the <u>Cluster</u> tool.

5.3.3.2.3 Configuration Backup

The AEM configuration files can be backed up and restored easily using the Configuration Backup tool.

Conf	Configuration Backup					
You o	You can back up the configuration files, once these files are corrupted, you can restore them from the backup files.					
	File Name		Description			
	aem-config.xml		Contains security settings for validating users logging into Appeon AEM.			
	appeoncache.conf		Contains the settings for the maximum memory cache of Appeon Server.			
	applications-config.xml		Contains the settings for all applications, such as, application name, transaction object, and so on.			
	cluster-config.xml		Contains the settings for configuring Appeon cluster.			
	log4j.properties		Contains the settings of Appeon AEM log. Contains the settings for configuring log mode and LDAP security.			
	server-config.xml					
	threadqueue.xml		Contains the settings for the maximum number of concurrent requests in Appeon Server.			
Back	kup Mode:	◎ Server-side	side			
Dest	Destination Directory:					
	🔘 Archive Mode 💿 Non-		-Archive Mode			
R	ack up Import					
	ack upmport					

Figure 5.17: Configuration Backup

To back up the AEM configuration files:

Step 1: Select one or more configuration file from the file list.

Step 2: Select the backup mode.

- Server Mode -- Backs up the configuration files and stores on the Appeon Server machine.
- Client Mode -- Backs up the configuration files and stores on the local client machine. You will be prompted to specify the location to store the backup file after clicking the **Back Up** button.

Step 3: If you select Server Mode in Step 2, then specify the destination location for the backup files. The destination location must be an existing directory on the Appeon Server machine.

Step 4: Specify the archive mode for the backup files.

- Archive Mode indicates the backup files will be packaged into a zip file. If Client Mode is selected as the backup mode, Archive Mode will be used by default.
- Non-Archive Mode indicates the backup files will be existing in separate files.

Step 5: Click the Back Up button to back up files.

To import the AEM configuration files:

Step 1: Click the **Import** button.

Step 2: In the **Import Configuration File** page, click **Browse** to select the backup file to import. The backup file can be a single file or a zip file which contains multiple files.

Step 3: Click Import to import the selected backup file.

5.3.4 Product Activation

Product Activation is a set of tools for viewing product license information and activating products. There are two tools: Licensing and Support.

Figure 5.18: Product Activation

AEM Console		Welcome > Serve	er > Product Activation
└── Welcome ⊟─ Server		Product Activation	1
E Sessions		Contains product act	tivation and technical support.
Resources Product Activation		Licensing	Displays license information and allows you to process the Appeon license.
Licensing		Support	Displays product support information and allows you to process the support license.
Support			

5.3.4.1 Licensing

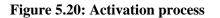
The Licensing tool enables you to view the detailed license information, activate or deactivate an Appeon Server, and update the license.

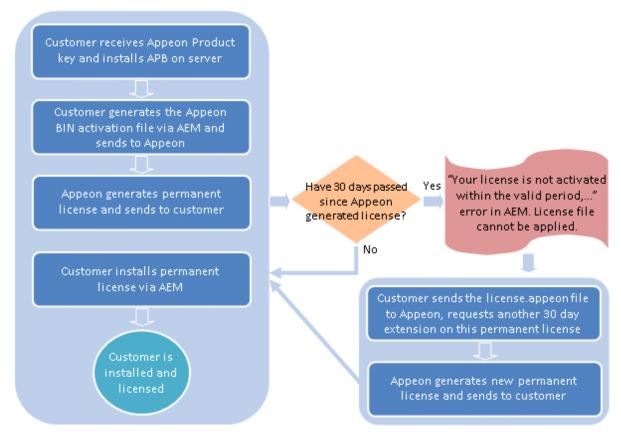
AEM Console		<u>Welcome</u> > <u>Server</u> > <u>Product Activa</u>	tion > Licensing
™Welcome ⊟ Server	^ I	Licensing	
E-Sessions		You are entitled to the following product fe	atures. Each copy of Appeon Server could be activated on a specific machine only.
E Resources		Product Information	
Product Activation		Product Edition:	Unlicensed edition (Appeon)
<u>Licensing</u> Support		Product Version:	6.6.0265.01 32-bit Edition
E Server Security		Operating System:	Windows 7
		Application Server:	NET
-Mobile UI Resizing		Web Activation Information	
		Web Product Key:	*
		Web Maximum Sessions:	*
		Other Activation Information	
	~	Server ID:	Kg==
		Activation Status:	UNACTIVATED
		Days Remaining:	493
		Activation Date:	N/A
		Features Licensed	
4	*	Clustering Option:	Yes
*		Offline Option:	Yes
Description		Number of CPUs Licensed:	*
Beschphon		Number of Cores Per CPU:	*
Displays license information and		Type of CPU Licensed:	Logic
allows you to process the Appeon license.		Activate De-Activate Upgra	ide License

Figure 5.19: Licensing

5.3.4.1.1 Product Activation

After you purchase the product, you will need to activate Appeon Server for permanent use. See the following flowchart for the activation process.





The following are detailed instructions for you to activate the product via AEM:

Step 1: Generate the activation request (the Appeon BIN activation file).

- 1. On the **Licensing** page, click the **Activate** button.
- 2. On the **Product Activation** page, do the following:
 - From the **Product Key Type** dropdown list box, select the product type that you have purchased.

The difference between **Appeon Web & Appeon Mobile** and **Appeon Universal** is mainly the way of allocating the sessions/devices. For **Appeon Universal**, Web apps and mobile apps can share the unused sessions/devices; while for **Appeon Web & Appeon Mobile**, the Web apps and the mobile apps are strictly limited by their own session counts. For example, if the Web session is set to 5, and the Mobile session is set to 10, then for **Appeon Web & Appeon Mobile**, the Web sessions cannot exceed 5 and the Mobile sessions cannot exceed 10, while for **Appeon Universal**, so long as the total sessions do not exceed 15, the Web session can go over 5 if there are unused Mobile sessions, or the Mobile sessions can go over 10 if there are unused Web sessions.

- From the Control Type dropdown list box, select a control type.
 - a. Application: it controls how many applications on this Appeon Server can be accessed at a particular time.
 - b. Session/Device: it controls how many sessions and/or devices can access the apps on this Appeon Server at a particular time. For Web applications, each application instance running on the client is considered as one session, for mobile applications, each mobile device that is accessing the app (no matter how many apps) is considered as one device.

The Appeon Mobile app will need to get the device ID when running on the mobile device, so that the app as well as other Appeon Mobile apps running on the same mobile device can be recognized as running on one device by the Appeon license file, not running on multiple devices.

About App ID for iOS apps

For iOS apps, to enable the app to get the device ID successfully, you will need to correctly specify the App ID Prefix and the App ID Suffix (Bundle ID):

i. App ID Prefix: you should always input the same App ID Prefix for all Appeon Mobile apps.

You can specify the App ID Prefix when packaging the mobile project in the Appeon Developer Package tool in *Appeon Developer User Guide*.

ii. App ID Suffix (Bundle ID): Bundle ID is used to identify the application, therefore it must be unique for different applications.

You can specify the Bundle ID when packaging the mobile project in the Appeon Developer Package tool in *Appeon Developer User Guide*.

You should specify the consistent Bundle ID in the Xcode project for the same application. For details, refer to Section 5.2.3.1, "Task 3.1: Set App ID and Bundle Identifier" in *Appeon Mobile Tutorials (Mobile only)*.

- In the product key field(s), double check the product key and modify it if it is incorrect.
- (Optional) Check the **Is Virtual Machine** checkbox, if the server is running on a virtual machine rather than a physical machine.
- (Optional) Check the **Support Offline** checkbox, if your license supports offline features.
- Click the Generate Activation Request button.

Figure 5.21: Product activation

Product Activation	
	ease click the "Generate Activation Request" button. The information displayed in the table will be packaged into a Appeon to activate your software on this machine.
Product Edition:	Unlicensed edition (appeon)
Product Version:	Appeon for PowerBuilder 2015 Build 0330.00
Application Server:	.NET
Operating System:	Windows 7
Product Key Type:	Appeon Universal
Control Type:	Session/Device
Universal Product Key:	APFA-DEWN-EAEN-UNAP-GGEE-EEEE-FQHS
Server ID:	MCM30C00NS1DNC0xMS00Ni0yRg==
Is Virtual Machine:	Gelect this checkbox if server is a virtual machine.)
Support Offline:	

3. Click the **Download File** button to download the request file which is by default named as license.activation.bin and send it to <license@appeon.com>. The request will be processed in Appeon and an activated permanent license (license.appeon) will be sent to you later.

Figure 5.22: Download activation request

Download Activation Request
Download the application file and store it in a safe place. To get an activated license file please send the application file to license@appeon.com.
Download File

Step 2: Install the permanent license file.

The license file must be installed within 30 days after it's generated. If this 30-day install period has expired, the license file cannot be installed, and there will be an error in AEM when you try to install it. In this case, you will need to send the license file back to Appeon

and have Appeon extend the install period for this file. Once you get the license file, follow the steps below to install it via AEM.

1. After getting the permanent license (license.appeon) from Appeon, click the **Apply** License button.

Figure 5.23: Product activation

Į	<u>Nelcome</u> > <u>Server</u> > <u>Produc</u>	t Activation > Licensing > Product Activation
Ξ	Product Activation	
		lick the "Generate Activation Request" button. The information displayed in the table will be packaged into a n to activate your software on this machine.
	Product Edition:	Unlicensed edition (appeon)
	Product Version:	Appeon for PowerBuilder 2015 Build 0330.00
	Application Server:	.NET
	Operating System:	Windows 7
	Product Key Type:	Appeon Universal
	Control Type:	Session/Device -
	Universal Product Key:	APFA-DEWN-EAEN-UNAP-GGEE-EEEE-FQHS
	Server ID:	MCM30C00NS1DNC0xMS00Ni0yRg==
	Is Virtual Machine:	Select this checkbox if server is a virtual machine.)
	Support Offline:	V
	Generate Activation Request	Apply License

2. Click the **Browse...** button and select the license.appeon file. The file name must be exactly license.appeon, and it is case-sensitive. Click the **Import** button to import the license file. Please make sure the license file is imported successfully, and then restart Appeon Server.

Figure 5.24: Apply license

Apply License	
Click Browse a	nd find the license file from the specified directory, then click Import to upload the license file. Restart the Appeon server to activate the license.
License File:	Browse
Import	

3. After you restart Appeon Server, go back to the **Licensing** page, and verify that **Activation Status** is shown as **Activated**.

Licensing		
You are entitled to the following product features. Each copy of Appeon Server could be activated on a specific machine only.		
Product Information		
Product Edition:	DEVELOPER (Appeon)	
Product Version:	6.6.0077.00 32-bit Edition	
Operating System:	Windows 7	
Application Server:	.NET	
Mobile Activation Information		
Mobile Product Key:	8	
Maximum Mobile Devices:	10	
Other Activation Information		
Server ID:	MCNGMC00RC1BMi0yQS0wQi1GOXwwMC01MC01Ni1DMC0wMC0wMXwwMC01MC01Ni1DMC0wMC0wOA==	
Activation Status:	ACTIVATED	
Days Remaining:	*	
Activation Date:	12/01/2012	
Features Licensed		
Clustering Option:	No	
Offline Option:	Yes	
Number of CPUs Licensed:	1	
Number of Cores Per CPU:	s	
Type of CPU Licensed:	Physics	
Activate De-Activate Upgrade	License	

Figure 5.25: Licensing

4. Back up your permanent license file so you can use it again in case you will reinstall Appeon Server within the 30-day install period.

5.3.4.1.2 Re-activation

Each copy of Appeon Server can only be activated on one machine. If you want to activate an Appeon Server on a different machine, you would need to de-activate Appeon Server on the previous machine first and then activate it on the new machine, by following the instructions below.

Step 1: De-activate Appeon Server on the previous machine.

1. Click the **De-Activate** button in the **Licensing** page.

Licensing	
You are entitled to the following product features.	Each copy of Appeon Server could be activated on a specific machine only.
Product Information	
Product Edition:	DEVELOPER (Appeon)
Product Version:	6.6.0077.00 32-bit Edition
Operating System:	Windows 7
Application Server:	.NET
Mobile Activation Information	
Mobile Product Key:	*
Maximum Mobile Devices:	10
Other Activation Information	
Server ID:	MCNGMC00RC1BMi0yQS0wQi1GOXwwMC01MC01Ni1DMC0wMC0wMXwwMC01MC01Ni1DMC0wMC0wOA==
Activation Status:	ACTIVATED
Days Remaining:	*
Activation Date:	12/01/2012
Features Licensed	
Clustering Option:	No
Offline Option:	Yes
Number of CPUs Licensed:	1
Number of Cores Per CPU:	e
Type of CPU Licensed:	Physics
Activate De-Activate Upgrade License	

Figure 5.26: License deactivation

2. You will be prompted by two sequential messages to confirm whether you want to deactivate Appeon Server on this machine. **IMPORTANT**: Please be cautious with this action, as it is irreversible, and once you click **OK**, the license file will become invalid and can no longer be installed on this machine unless it is re-generated. Click **OK** to continue if you are sure to de-activate this Appeon Server.

Figure 5.27: Product De-activate

e	Product De-activate Webpage Dialog
	Once you de-activate your software, it will continue to operate for a 30-day grace period and thereafter cease to operate. You must de-activate your software if you wish to activate it on a machine.
	OK

Figure 5.28: Confirm De-activation

e	Confirm De-activation? Webpage Dialog
	De-activating your software will cause your software to no longer operate on this machine (after 30-day grace period). Are you sure you want to de-activate your software?
	OK Cancel

3. Click the **Download File** button to download the file whose name is license.reactivation.bin by default.

Figure 5.29: De-activate License

<u>AEM Console</u> > <u>Server</u> > <u>Licensing</u> > De-activate License
De-activate License
Your license was successfully de-activated. To make sure this Appeon Server stably runs for another 30 grace days, you must restart the server. Please download the de-activated license file from license.reactivate.bin and store in a safe place. You must provide Appeon with the de-activated license together with information about the new machine in order to re-activate the software. If any questions about the re-activation process please email <u>license@appeon.com</u> .
Download File

Step 2: Generate the activation request for Appeon Server on the new machine.

Follow the steps in <u>Generate the activation request</u> to get the license.activation.bin file and save it in a safe place.

Step 3: Email Appeon to generate the license file for the new server.

You should send both the license.reactivation.bin file and the license.activation.bin file to <license@appeon.com> to apply a reactivated license for the new server.

Step 4: Install the license on the new server.

Appeon will process the reactivation request and send you a valid reactivated license file (license.appeon). You need to install this license file on the new server. For detailed instructions, please refer to <u>Install the permanent license file</u>.

5.3.4.1.3 Upgrade license

Step 1: On the Licensing page, click the Upgrade License button.

Step 2: On the Upgrade License page, input the information for upgrading the license.

Figure 5.30:	Upgrade	license
--------------	---------	---------

Upgrade License	
To upgrade the license, please e or an asterisk and the asterisk ind	nter an appropriate value in the corresponding items. The value must be a positive integer dicates it is unlimited.
Product Key Type:	Appeon Mobile 👻
Control Type:	Session/Device -
Mobile Product Key:	APFA-DEWN-EAEN-UNAP-GGEE-EEEE-FQHS
Maximum Mobile Devices:	
Number of CPUs Licensed:	*
Order Date:	07/20/2012
Expiration Date:	07/20/2013
Renew Time:	0 year(s)
IsVMWare:	
Support Offline:	

Step 3: Click the Generate License Upgrade Application button.

Step 4: Click the **Download File** button to download the request file which is by default named as license.update.bin and send it to <license@appeon.com>. The request will be processed in Appeon and an upgraded license will be sent to you later.

Figure 5.31: Download license upgrade request



Step 5: After receiving the upgraded license from Appeon, click the **Apply License** button in the **Upgrade License** page.

Step 6: Click the **Browse...** button and select the license.appeon file. Click the **Import** button to import the license file. Please make sure the license file is imported successfully, and then restart Appeon Server.

Figure 5.32: Apply license

	AEM Console > Server > Product Activation > Licensing > Apply License
⊟	
	Apply License
	Click Browse and find the license file from the specified directory, then click Import to upload the license file. Restart the Appeon server to activate the license.
	License File: Browse
	Import

Step 7: After you restart Appeon Server, go back to the **Licensing** page, and verify that the license information is updated, and the **Activation Status** is shown as **Activated**.

5.3.4.2 Support

The Support tool enables you to view the valid product support period, which starts from the day you place the product order and expires in 1 year later. You can renew the support before or after the license expires, and apply the renewed license to extend the support period. **Renew Support** and **Apply License** will be enabled when the product is activated.

Figure 5.33: Support

AEM Console	Welcome > Server > Product Activation > Support
── Welcome ▲ ── Server ── Sessions	Product Support
Logging 	Order Date: N/A
Product Activation Licensing	Expiration Date: N/A Days Remaining: N/A
Support Server Security Application Mobile UI Resizing	Renew Support Apply License

5.3.4.2.1 Renew Support

Support Expiration will not affect the normal running of Appeon. However, after the expiration you are no longer entitled to install product upgrades/EBFs or get technical support assistance from Appeon. You can renew your product support prior to the expiration date to ensure you are benefiting from the latest product enhancements, maintenance releases and the technical support assistance.

If you want to extend the Support, follow the steps below:

Step 1 - Click the **Renew Support** button. In the **Renew Support** page, enter the time you want to extend, which should only be an integer. Click the **Generate Renew Request** button. Note: The order date is counted from the first date when your last license expired.

Figure 5.34: Renew support

Renew Support		
he new support service period is	calculated from the last support end-date.	
Renew Time:	1 year(s)	
Order Date:	01/01/2013	
Expiration Date:	01/01/2014	
IsVMWare:		

Step 2 - Click the **Download File** button to download the request file which is by default named as license.support.bin and send it to <license@appeon.com>. The request will be processed in Appeon and a new license with extended support period will be sent to you later.

Figure 5.35: Generate renew request

	<u>AEM Console</u> > <u>Server</u> > <u>Support</u> > <u>Renew Support</u> > Generate Renew Request
Ξ	
	Download Activation Request
	Download the request file and store it in a safe place. To get an activated license file please send the request file to license@appeon.com.
	Download File

Step 3 - When you get the new license named license.appeon, click the **Apply License** button.

Figure 5.36: Product support

AEM Console	Welcome > Server > Product Activation > Support
── Welcome ▲ ── Server ── Sessions	Product Support
Logging	Order Date: N/A
Resources Product Activation	Expiration Date: N/A
Licensing Support	Days Remaining: N/A
Berver Security Application Mobile UI Resizing	Renew Support Apply License

Step 4 - In the **Apply License** window, click the **Browse...** button to select the license.appeon file delivered by Appeon. Click the **Import** button to import your license file.

Figure 5.37: Apply license for support

	<u>AEM Console</u> > <u>Server</u> > <u>Product Activation</u> > <u>Licensing</u> > Apply License						
	Apply License						
	Click Browse and find the license file from the specified directory, then click Import to upload the license file. Restart the Appeon server to activate the license.						
	License File: Browse						
	Import						

Step 5 - Restart Appeon Server after importing the license file, and go back to the **Support** page to ensure the support is correctly extended.

5.3.5 Server Security

Server Security is a set of tools for viewing and modifying all the security on the server side and prevents unauthorized access to the Appeon Web or Appeon mobile applications using an existing LDAP installation or Appeon's built-in application security. There are five tools: AEM Login, User Management, Group Management, System Security, and Deployment Security.

AEM Console		Welcome > Server > Server Security			
I Welcome ⊒ Server	*	Server Security			
E Sessions Logging		Contains AEM login, use	er management, group management, system security, and deployment security settings.		
Resources Product Activation		AEM Login	Changes the administrator user name and/or password that is used to log in to AEM.		
Errer Server Security		User Management	Defines and manages user accounts. For non-LDAP systems only.		
····· AEM Login ····· User Management		Group Management	Defines and manages security groups including user assignments. For non-LDAP systems only.		
Group Management		System Security	Sets the system security mode, security type, and LDAP interface settings (if using LDAP).		
System Security Deployment Security Application	«	Deployment Security	Enables or disables security on every Appeon application and assigns access rights to the security groups defined in LDAP or the Group Management of AEM.		

Figure 5.38: Server Security

5.3.5.1 AEM login

The user can change the default or current username and password to log in to AEM.

Figure	5.39:	AEM	Login
I Igui C	0.07.	TREATOR	LUGII

AEM Console			<u>Welcome > Server > Server Security</u> > AEM Login
── Welcome ⊟ Server □ □ Sessions	*	Ē	Change AEM Password
Logging Image: Resources			Once you have successfully changed your password, you will need to use your new password and the existing user name the next time you log in to AEM.
Product Activation Server Security AEM Login			Old password:
User Management Group Management System Security			New password:
Deployment Security			Confirm Password:
⊞ Mobile UI Resizing		«	Change
		Ξ	Change AEM User Name
			Once you have successfully changed your user name, you will need to use your new user name and the existing password the next time you log in to AEM.
*	-		Old user name:
Description			New user name:
Changes the administrator user name and/or password that is used to log in to AEM.	*		Confirm user name:
			Change

1) Change AEM Password

The new password will overwrite the user's existing password, but the existing username will be used to login. In order to successfully change the password, the user must enter information in the following fields:

- Old password Correctly enter the current password (case sensitive).
- New password Enter a new password to replace the old password (case sensitive).
- Confirm password Retype the new password. The value entered in this field must match the 'New password' field (case sensitive).

2) Change AEM Username

The new username will overwrite the user's existing username, but the existing password will be used to login. In order to successfully change the username, the user must enter information in the following fields:

- Old username Correctly enter the current username (case sensitive).
- New username Enter a new username to replace the old username (case sensitive).
- Confirm username Retype the new username. The value entered in this field must match the New username field (case sensitive)

Note that if this is the first time you are using this AEM Login tool, the old username and password are those you specified when installing the Appeon Server. If you did not specify

the username and password during the installation, the old user name and password are both "admin" by default. For security purposes, Appeon recommends that you change the username and password after the initial login.

5.3.5.2 User Management

The User Management tool in AEM can be used to manage two types of users:

- 1. user accounts for all Appeon applications including Web apps and Mobile apps
- 2. Appeon Workspace clients for Appeon mobile applications running in Appeon Workspace

You can create, edit and remove users in this tool. After you create the user, you can assign the users to groups in the <u>Group Management</u> tool.

Figure 5.40: User Management

AEM Console		Welcome > <u>Server</u> > <u>Se</u>	erver	<u>Security</u> > User Ma	anagement		
		User Management The User Management func configurations. If the Secur take effect. Search for User Name	ty Tog		Security Type is set to LD		ded for non-LDAP security m Security, these settings will not Show All
User Management Group Management		Actions		User Name	Full Name	Account Status	Description
System Security Deployment Security	J	Add User					
-	_⊟	Appeon Workspace Clien	t (Mo	bile Only)			
		Configures the Appeon Wor	kspac	e client. The Appeon Wo	rkspace client will need	to be assigned to the Ap	opeon Workspace group later.
		Search for Client ID	•	contains	Ex	act search Filter	Show All
		Actions		Client ID	Client Name	Client Status	Description
*		Add Client					
Description							

5.3.5.2.1 User Management

If the security type is Appeon security, you can use the User Management tool of AEM to set up user accounts. This feature is not applicable to LDAP systems. For LDAP systems, use LDAP to add or remove security groups.

On the User Management page, you can view which users are currently in the system and whether their accounts are enabled or disabled. By default, all existing users are displayed.

User names and associated user information can be viewed in the following two ways:

- 1. Click the **Show All** button to display all users.
- 2. Specify filter criteria to view users:

Step 1: Select **User name**, **Full Name**, **Account Status**, or **Description** in the dropdown list as the type of filter criteria.

Step 2: Enter the contents that are expected to be included in the item specified in the dropdown list.

Step 3: Enable or disable the "Exact search".

Step 4: Click the **Filter** button. Users that meet the criteria will be displayed.

Adding a new user

If you want to add one or more users, click the **Add User** button on the **User Management** page and the **Add User** page will be displayed.

Figure 5.41: Add a user

User Accou	nt	
The user yo	u are adding will not be able to log in to the Appeon applicatio	n until the user has been assigned to at least one group.
User Name	:	
Full Name:		
Descriptior	:	▲ ▼
Password:		
Confirm Pa	Account is disabled	

- Username -- The user identifier. This field is required. Chinese characters are unsupported.
- Full name -- The full name of the user. This field is optional. Chinese characters are unsupported.
- Description -- Any appropriate user information. This field is optional.
- Password -- The password of the new user. This field is required.
- Confirm password -- The user must enter the new password again to confirm the password. This field is required.
- Account is disabled -- If this checkbox is checked, the user account is disabled.

When the account status is disabled, the user cannot load any application with the username and password if the application requires user authentication.

When the account status is enabled, the user can load an application with the username and password if the account is assigned to a group that is in turn assigned to the application (with application access status enabled).

Editing an existing user

By clicking the **Edit** button on the **User Management** page, you can enter the **Edit User** page to edit an existing User.

Figure 5.42: Add a user

Į	<u>Nelcome</u> > <u>Server</u> > <u>Se</u>	erver Security > <u>User Management</u> > Edit User
	Edit User Account	
	The user you are adding wil	I not be able to log in to the Appeon application until the user has been assigned to at least one group.
	User Name:	AppeonTest
	Full Name:	admin
	Description:	AppeonTest
	Password:	•••••
	Confirm Password:	
		Count is disabled
	Save	

The Edit User is similar to the Add User page except that the user name is not editable. You can modify the full name, the description, or change the password or account status in the same way as you were instructed in <u>Adding a new user</u>.

After making any changes, click the Save button. The changes are updated in Appeon Server.

Deleting a user

Delete a user by clicking the **Delete** button on the **User Management** page. A message box will prompt you to confirm the action.

Click the **OK** button to confirm the deletion or the **Cancel** button to cancel the deletion.

5.3.5.2.2 Appeon Workspace Client (Mobile only)

Appeon Workspace Client is intended for security configurations for mobile applications. It works along with Appeon Workspace Group to add extra security to your Appeon Workspace applications.

Viewing Appeon Workspace clients

In the **Appeon Workspace Client** table on the **User Management** page, you can view all the existing clients and associated client information in the system. And you can view them in the following two ways. By default, all the existing clients are displayed.

- 1. Click the **Show All** button to display all the clients.
- 2. Specify a filter criteria to view certain clients:

Step 1: Select **Client ID**, **Client Name**, **Client Status**, or **Description** from the **Search Field** dropdown list box.

Step 2: Type your relevant keywords in the keyword text box.

Step 3: Enable or disable the **Exact Search** check box.

Step 4: Click Search. Clients that meet the criteria will be displayed.

Adding an Appeon Workspace client

To add an new Appeon Workspace client:

Step 1: Click Add Client in the Appeon Workspace Client table.

Step 2: On the **Appeon Workspace Client ID** page that displays, type a client ID in the **Client ID** text box; enter a client name in the **Client Name** text box; and then enter some descriptions for the client in the **Description** text box.

Figure 5.43: Add Appeon Workspace Client

Ī	<u>Nelcome</u> > <u>Server</u>	<u>Server Security</u> > <u>User Management</u> > Add Appeon Workspace Client Information
	Add Appeon Workspa	ace Client Information
	The client you are add one Appeon Workspa	ding has no access to the applications deployed to this server until the client has been assigned to at least ice group.
	Client ID:	
	Client Name:	
	Description:	· · ·
		This Appeon Workspace Client is Disabled
	Save and Add	Save

Step 3: (Optional) If you want to disable the Appeon Workspace client so that it cannot access any Appeon mobile application on this Appeon Server, select the **This Appeon Workspace Client is Disabled** checkbox.

Detailed configuration descriptions are shown in the following table.

Table 5.1: Add Appeon Workspace Client Items

Items	Descriptions
Client ID	The unique identifier to identify the mobile device. It must be the same value as the Appeon Workspace ID which can be obtained from the About window of Appeon Workspace . See the Appeon Workspace User Guide (Mobile only) for details.
Client Name	The display name of the mobile client. It can be any text you like.
Description	Any other information for this mobile client. This field is optional.
This Appeon Workspace Client is Disabled	The client's accessbility to the Appeon mobile application on this Appeon Server.

Items	Descriptions				
You can select this checkbox to disable the client account, instead o					
deleting it. The disabled client cannot access any mobile applicatio					
Appeon Server.					

Step 4: Click the **Save** button to add the client, or click **Save and Add** to save the client and begin to add another one.

Editing an Appeon Workspace client

To edit an Appeon Workspace client:

Step 1: In the **Appeon Workspace Client** table, click the **Edit** button associated with an Appeon Workspace client ID, and then make the changes you intend to.

You can only change the Appeon Workspace client name and description, and/or you can also enable or disable a client by selecting or deselecting the **This Appeon Workspace Client is Disabled** checkbox.

Figure 5.44: Edit Appeon Workspace Client

Appeon Workspace Client (Mobile Only)							
Configures the Appeon Workspace client. The Appeon Workspace client will need to be assigned to the Appeon Workspace group later.							
Search for Client ID	Bearch for Client ID contains Exact search Filter Show All						
				Total: 7 Record(s)			
Actions	Client ID	ClientName	Client Status	Description			
Break Strate St	000062D957F6627E02B0454F0000410C	000062D957F6627E02B0454F0000410C	Enabled	Automatically registered client.			
Belete	00006CE85E6010237D320BF100002539	00006CE85E6010237D320BF100002539	Enabled	Automatically registered client.			
Belete	000077F82E33532E4510214A00007570	000077F82E33532E4510214A00007570	Enabled	Automatically registered client.			
Belete	000079110CD137000FE225D600002279	000079110CD137000FE225D600002279	Enabled	Automatically registered client.			
📴 Edit 🖄 Delete	85CD096E5DFA412EAF9F97E491A1EFFD	85CD096E5DFA412EAF9F97E491A1EFFD	Enabled	Automatically registered client.			
Break Strate St	8E0D0354637E423A93BB09E2C9C5A608	8E0D0354637E423A93BB09E2C9C5A608	Enabled	Automatically registered client.			
Breat Strate	969F84D809C143319CBAAFB14BFDB02C	969F84D809C143319CBAAFB14BFDB02C	Enabled	Automatically registered client.			
Add Client							

Step 2: Click **Save** to save the changes.

Deleting an Appeon Workspace client

To delete an Appeon Workspace client, click the **Delete** button associated with an Appeon Workspace client ID in the **Appeon Workspace Client** table, and click **OK** to confirm the deletion in the popup dialog box.

You can only delete the Appeon Workspace client one by one.

5.3.5.3 Group Management

The **Group Management** tool in AEM is used to manage user groups and Appeon Workspace groups.

AEM Console	1	<u>Nelcome > Server > Server</u>	<u>Security</u> > Group N	Management	
Welcome Server Sessions Logging Product Activation Server Security Activation Anagement System Security Deployment Security Deployment Security Deployment Security Deployment Security Deployment Security Deployment Security				Security Type is set to LD	ecurity system. It is intended for non-LDAP security AP Security in the System Security, these settings will not Exact search Filter Show All Description
	_⊟	Appeon Workspace Group (M	obile Only)		
	4	Configures the Appeon Workspace later.	e group. The Appeon Wo	orkspace group will nee	d to be granted with access rights to the mobile application
		Search for Group Name -	contains		Exact search Filter Show All
		Actions	Group Name	Numbers Assigned	Description
×		Add Group			
Description		Aud Group			

Figure 5.45: Group Management

5.3.5.3.1 Group Management

If the security type is Appeon security, you can use the Group Management tool of AEM to set up various security groups and assign user accounts to the groups. This feature is not applicable to LDAP systems. For LDAP systems, use LDAP to add or remove security groups.

Viewing groups

The group information and associated user information can be viewed in the following two ways:

- 1. Click the **Show All** button to display all the groups.
- 2. Specify filter criteria to view groups:

Step 1: Select Group or Description in the dropdown list as the type of the filter criteria.

Step 2: Enter the contents that are expected to be included in the item specified in the dropdown list. Based on the criteria, groups that contain the specified information will be displayed.

Step 3: Enable or disable the **Exact search**.

Step 4: Click the Filter button and the groups that meet the criteria will be displayed.

Adding a new group

To add one or more groups, click the **Add Group** button in the **Group Management** table and the **Add Group** page will be displayed.

Figure 5.46: Add a group

1	AEM Console > Server	Server Security > Group Managem	ent > Add Group		
Ξ					
_	Add Group				
	Inputs the detailed inform	ation about this new group.			
	Group Name:				
	Group Description:			·	
	Assign users to this group.	All of the users configured in the User Manage	ement tool will be listed.		
		Unassigned Users		Assigned Users	
			>>>		
	Save and Add	Save			

- Group name The group identifier. This field is required. Chinese characters are unsupported.
- Group description Some explanation about the group. This field is optional.
- Assign or unassign users to the group.
 - 1. To assign a user to the group

Select a user from the **Unassigned Users** list. Click the forward button to shift the user to the **Assigned Users** list.

By default, all the users are listed in the **Unassigned Users** list. The users are configured in the <u>User Management</u> tool.

2. To unassign a user from the group

Select a user from the **Assigned Users** list by clicking it. Click the back button to shift the user to the **Unassigned Users** list.

Editing an existing group

To edit a specific group, click the **Edit** button in the **Group Management** page and enter the **Edit Group** page.

The **Edit Group** page is similar to the **Add Group** page except that the group name is not editable. You can modify the group description, or assign (unassign) users to the group in the same way as instructed in <u>Adding a new group</u>.

Deleting a group

Delete a group by clicking the **Delete** button in the **Group Management** page. A message box will prompt you to confirm the action.

Click the **OK** button to confirm the deletion or the **Cancel** button to cancel the deletion.

5.3.5.3.2 Appeon Workspace Group

Appeon Workspace Group is intended for security configurations for mobile applications.

Viewing Appeon Workspace user groups

In the **Appeon Workspace Group** table, you can view all the groups and associated group information in the system. And you can view them in the following two ways. By default, all the existing groups are displayed.

- 1. Click the **Show All** button to display all the groups.
- 2. Specify a filter criteria to view certain groups:

Step 1: Select Group Name or Description from the Search Field dropdown list box.

Step 2: Type your relevant keywords in the keyword text box.

Step 3: Enable or disable the **Exact Search** check box.

Step 4: Click **Search**. Groups that meet the criteria will be displayed.

Adding an Appeon Workspace group

To add a new Appeon Workspace group:

Step 1: In the Appeon Workspace Group table, click Add Group.

Figure 5.47: Add Appeon Workspace Group

Welcome > Server > Server :	ecurity > Group Managemer	nt > Add Appeon Workspace Gr	oup
Add Appeon Workspace Group			
Input the detailed information abo	ut this new Appeon Workspace gro	up.	
Group Name: Group Description:			6
Assign the Appeon Workspace cliv will be listed. Unassigned Appeon W		Workspace clients configured in the A Assigned Appeon	
APPEONTEST	× ×		•
Save and Add Save			

Step 2: On the Add Appeon Workspace Group page that displays, type a group name in the Group Name text box, and then enter a description in the Group Description text box.

Step 3: Assign users into the **Assigned Appeon Workspace Clients** group by selecting a client name from the **Unassigned Appeon Workspace Clients** list box and then clicking the

forward ______ icon. You can create clients in the <u>Appeon Workspace Client</u> tool.

Step 4: Click the **Save** button to save the group, or click **Save and Add** to save the group and begin to add another one.

Editing an Appeon Workspace Group

To edit an Appeon Workspace Group:

Step 1: In the **Appeon Workspace Group** table, click the **Edit** button associated with an Appeon Workspace group, and then make the changes you intend to.

Figure 5.48: Appeon Workspace Group

Ξ	Appeon Workspace Group (Mobile Only)					
	Configures the Appeon Workspace group. The Appeon Workspace group will need to be granted with access rights to the mobile application later.					
	Search for Group Name -	contains	E 6	Exact search Filter Show All		
				Total: 1 Record(s)		
	Actions	Group Name	Numbers Assigned	Description		
	🚱 Edit 🛛 🖹 Delete	AppeonTest	1	AppeonTest		
	Add Group					

You can only change the descriptions and assign new users into the group or delete assigned users from the group, as showing in the following figure.

Figure 5.49: Edit Appeon Workspace Group

Į	<u>Welcome</u> > <u>Server</u> > <u>Ser</u>	ver Security > Group Ma	anagement > Edi	it Appeon Workspace Grou	р
	Edit Appeon Workspace G	roup			
	Input the detailed informati	on about this new Appeon Wo	orkspace group.		
	Group Name:	AppeonTest			
	Group Description:	AppeonTest			<i>i</i>
	Assign the Appeon Workspa will be listed.	ace clients to this group. All of	the Appeon Worksp	ace clients configured in the Appe	eon Workspace Clients tool
	Unassigned App	eon Workspace Clients		Assigned Appeon Wo	rkspace Clients
			× ×	APPEONTEST	*
	Save				

Step 2: Click **Save** to save the changes.

Deleting an Appeon Workspace Group

To delete an Appeon Workspace Group, click the **Delete** button associated with an Appeon Workspace group in the **Appeon Workspace Group** table, and then click **OK** to confirm the deletion in the popup dialog box.

You can only delete the Appeon Workspace Group one by one.

5.3.5.4 User and Group Management at LDAP server side

Managing users and groups "at the LDAP server side" means that the administrator adds/ removes/modifies users and groups in the LDAP/LDAPS server rather than in the user management and group management of AEM. The following are the steps to perform LDAP/ LDAPS user and group management:

1. Set up the LDAP/LDAPS server in the system

Refer to the documentation supplied by the LDAP/LDAPS server vendor for installation and setup instructions for your LDAP/LDAPS server.

2. Create an organization unit in the LDAP server.

Only a single organization unit can be used to host all the groups and users for the Appeon Web or Appeon mobile application.

3. Create/manage users and groups in the organization unit in accordance with the LDAP/ LDAPS server documentation.

5.3.5.5 System Security

AEM Console		Welcome > Server > Server Security > System Security
E-Server	Ê	Security Toggle
⊢ Logging	E	
Group Management System Security Deployment Security Application Monitor UT Resizing	E	LDAP Interface You must only provde LDAP settings if the Security Type is set to LDAP Security. Ignore this section if you plan to use Appeon's bulk-in application security management system. If you want to use LDAPS, please check the Use SSL option and provide the correct LDAPS port, and upload at least one vaid certificate authority (CA) fie.
een moone of Resizing		LDAP Host: 192.0.0.92 LDAP Port: 389
	«	LDAP OU: CN=users.DC=appect
		Admin User Name: zhaokai Admin Password: Use SSL: O Yes O No
		If "Yes" is selected, please configure the correct LDAPS port and upload at least one valid CA file. CA File: Choose File No file chosen
*	Ŧ	Test LDAP Settings
Description		Save

Figure 5.50: System Security

As the above figure illustrates, the System Security covers three important settings:

• Security Toggle -- Turns application security on and off at the system level. All application security and settings in <u>Client Security</u> are ignored when set to off, but the settings will not be lost.

- Security Type -- Determines which system, Appeon built-in system or LDAP server, is applied to implement the security feature. Note that the Group Management and User Management tools only work with the Appeon built-in system.
- LDAP Interface Settings -- If you are using LDAP server, the user must configure LDAP interface settings to connect the LDAP server with Appeon Server. If using LDAPS, only Microsoft LDAP is supported when the application server is EAServer.

5.3.5.5.1 Security Toggle and Security Type

The following table shows how the Security Toggle and Security Type settings determine which security tools are applied and what security features are performed.

Security Toggle	Security Type	Settings in Security	Security Feature	
Off	Not Available	Not Available	Disabled. Unauthorized users have access to load or deploy applications.	
On	Appeon Security	User Management Group Management Client Security Deployment Security	The Appeon built-in security is enabled. Only authorized groups and users of a deployed application are allowed to load or deploy the application. Three consecutive invalid logins will result in an exceptional exit of the login dialog from the application. In this case, the user can click the <i>Refresh</i> button to obtain the login dialog again and re- log in with the correct username and password.	
	LDAP Security	LDAP Interface Settings Client Security Deployment Security	Enabled. Any authorized LDAP groups and users of an application are allowed to load or deploy the application. Three consecutive invalid logins will result in an exceptional exit of the login dialog from the application. In this case, the user can click the Refresh button to obtain the login dialog again and re-log in with the correct username and password.	

Table 5.2: Security toggle, Security type and Security Settings

- Appeon security and LDAP security provides the user with options of using Appeon Server or LDAP to assign groups to the application. The security groups will be read from either LDAP (if it is LDAP security) or Appeon Server (if it is Appeon security).
- When the user attempts to change the security type, a message box will prompt the user to confirm the change.

5.3.5.5.2 LDAP Interface Settings

If you are using the LDAP security, you must perform additional steps to access and manage the user/group information.

Limitations

There are several limitations about using LDAP with Appeon Server:

- 1. One Appeon Server can be configured with only one LDAP domain, which means, all the users and groups must be in a single domain.
- 2. Only the "Security" type of LDAP Group is supported, not the "Distribution" type.
- 3. Only "User logon name" (not the "Display name") can be used in the LDAP Logon Dialog when running the application.

For detailed information, please refer to the Appeon LDAP Security Configuration Guide at <u>http://support.appeon.com/index.php?/Knowledgebase/Article/View/22/0/appeon-ldap-security-configuration-guide/</u>.

LDAP Interface Settings in AEM

To access the user and group information on your LDAP server, it is necessary to provide the LDAP interface settings in AEM. AEM interfaces with the LDAP server every time it opens the page that displays the users and groups information stored in the server.

All the fields in the LDAP Interface Settings group box are required:

- LDAP host -- The IP address or domain name of the LDAP Server.
- LDAP port -- Port of the LDAP Server.
- LDAP OU -- The LDAP organization unit where the users and groups are created.

If using Netscape LDAP or Sun LDAP, the LDAP OU should be "ou=*AAA*, o=*BBB*", where *AAA* stands for the organization unit in which all the groups are created, and *BBB* stands for the domain name (DN).

For Microsoft LDAP, the LDAP OU should be "DC=AAA, DC=BBB, (DC=CCC)", where AAA stands for the domain component (DC) that contains all the groups, and BBB stands for the domain component that contains the AAA component.

If using IBM LDAP, the LDAP OU should be "o=AAA, c=BBB", where AAA stands for the organization suffix, and BBB stands for the country.

• LDAP type -- Type of the LDAP server.

There are four options (the LDAP servers that Appeon supports): Netscape LDAP, Sun LDAP, Microsoft LDAP, and IBM LDAP.

LDAP types	Requirements
Netscape LDAP	Netscape LDAP 4.2 or above
Sun LDAP	Sun LDAP 5.1 (Sun LDAP is very similar to Netscape LDAP)
Microsoft LDAP	Windows 2000, 2003, & 2008 Active Directory
IBM LDAP	Directory Services (LDAP) 5.1

Table 5.3: Supported LDAP types

• Admin username -- The administrator username.

If using Microsoft LDAP, the username should be the username for the domain of the LDAP (The username has access rights to the specified LDAP domain component).

- Admin password -- The administrator password.
- Use SSL -- If Yes is selected, the communication between Appeon Server and LDAP Server will use LDAPS protocol. You need to provide the Certificate Authenticated file of LDAPS. If No is selected, the communication between Appeon Server and LDAP server will use LDAP protocol.
- Certificate File -- The Certificate authenticated file of LDAPS.

After all the fields are filled, do the following:

- 1. Click the **Test LDAP Settings** button to test whether the settings are correct or not. If the message indicates that the settings are incorrect, continue to verify the settings until the LDAP settings are correct.
- 2. Click the **Save** button.

5.3.5.6 Deployment Security

You can use the Deployment Security tool to manage Appeon Server deployment security, which controls what PowerBuilder developers are allowed to deploy applications to Appeon Server.

Corresponding to the Deployment Security in AEM, Appeon Developer requires PowerBuilder developers to specify deployment user name and password in the Appeon Server profile configuration. If the user name and password of the Appeon Server profile does not match the setting in Deployment Security, the Appeon Server profile will not take any application deployments.

	Figure	5.51:	Deploymen	t Security
--	--------	-------	-----------	------------

AEM Console	<u>Welcome</u> > <u>Server</u> > <u>Server Security</u> > Deployment Security	
Welcome Server Sessions Logging Resources Product Activation Server Security AEM Login USE Management	Deployment Security User Authentication: Security Off Security On	
	Security Permissions If the Security Type is set to LDAP Security, all user groups configured in LDAP are listed in th Security, all user groups configured in Group Management will be listed below.	ie table below. If the Security Type is set to Appeon
Group Management System Security Deployment Security Application Hobite UI Resizing	Unassigned Groups	Assigned Groups
	Domain Admins Enterprise Admins Group Policy Creator Owners HelpServicesGroup IIS_WPG Schema Admins	*
	Save	

The Deployment Security tool enables you to do the following:

1. Disable deployment security for Appeon Server

Select the **Security Off** radio button in the "Application Deployment Security Settings" group box. When the deployment security is off, the user name and password in the

Appeon Server profile will be ignored, and the Appeon Server profile will always work for application deployments.

2. Enable deployment security for Appeon Server

Step 1: Select the Security On radio button.

Step 2: Select a group from the Unassigned Groups list and click the forward button (">>>") to shift the group to the Assigned Groups list. By doing this, that group obtains the permission to deploy applications to Appeon Server. If a user name and password that belongs to the group is specified in the Appeon Server profile configuration in Appeon Developer, the profile will work for application deployments. Otherwise, application deployments to the Appeon Server profile give an error message "Failed to call methods in Appeon Server; cannot find the user..."

By default, all groups are listed in the Unassigned Groups list. The groups are read from the Appeon Server (if the security type is Appeon security) or the LDAP server (if the security type is LDAP security) in use. You can use back button ("<<<") to shift the group to the Unassigned Groups list.

5.4 Application

Applications deployed to Appeon Server are registered in AEM with their application profile names.

Application are a set of tools for setting the server-related properties for the Appeon Web or Appeon mobile applications. There are eight tools: Configuration Summary, Transactions, Local Database, PB Features, Web Browser, Client Features, Data Transfer, Performance, and Client Security. The settings for each application profile affect application(s) deployed from the application profile.

AEM Console			Welcome > Application			
™Welcome ⊞∵Server	*		Application			
Application Configuration Summary			Configures various setting	is of the deployed applications.		
Transactions			Configuration Summary	Views all the configurations of each application.		
Local Database ⊞PB Features			Transactions	Contains transaction objects and timeout settings.		
Web Browser			Local Database	Views the local data source on the mobile device.		
Client Features Data Transfer Client Security Client Security Mobile UI Resizing	«		PB Features	Contains PB-related features, such as registry mode, INI files, DLL/OCX files, decimal precision, and Web Service DataWindow.		
			Web Browser	Configures various client settings related to the user interface and general user experience of the application, for example, application title, graphic theme, application auto update, run mode, error message mode, start and exit behaviors, client storage location.		
		«	<u>Client Features</u>	Configures various client settings related to the user interface and general user experience of the application, for example application title, graphic theme, application auto update, run mode, error message mode, start and exit behaviors, client storage location.		
		ľ	Data Transfer	Contains charset and transfer encoding.		
					Performance	Contains multi-thread download, application server cache and DataWindow data cache.
			Client Security	Contains the security settings for the deployed application and the Appeon Workspace client.		

Figure 5.52: Application

5.4.1 Configuration Summary

The Configuration Summary of applications lists all the deployed applications and their configuration summaries.

AEM Console		Welcome > Applicat	tion > Configuration Summary							
Welcome Server Application Configuration Summary ⊕ Transactions Coal Database ⊕ PB Features	*		pplication Configuration Summary rews all the configurations of each application.							
		Application Name	PowerBuilder Version	Application Size (KB)	DLL Size (KB)	Cache Usage (KB)				
		acf	12.5	6364.60	0.00	0.00				
Web Browser Client Features		codeexamples	12.5	6667.20	76.00	0.00				
Data Transfer Performance Client Security Mobile UI Resizing		order	12.5	1179.18	0.00	0.00				
		sales	12.5	2449.41	0.00	0.00				
		sapteched	12.5	3946.03	0.00	0.00				
		youhoops	12.5	3169.69	0.00	0.00				

Figure 5.53: Application Summary

Click Application Name to sort the applications.

Click on an application to view the summary of the application.

Figure 5.54: Application Configuration Summary

Application Configuration Summary								
The following lists the configuration and runtime information of	the current application.							
Item	Value							
Session Number	0							
Transaction Number	0							
Application Title	Beta -							
Transaction Object Number	1							
Session Timeout	3600							
Transaction Timeout	120							
Download Timeout	3600 3600							
Request Timeout								
Charset Number	0							
Application Server Cache	3							
Application Cache Setting (Server Side)	No							
Application Cache Setting (Client Side (Browser))	No							
Install Mode Of DLL/OCX Files	Install automatically without asking user							
Conflict Resolution Mode Of DLL/OCX Files	Install anyway without asking user							
Registry Mode	Use Appeon registry emulation							
Maximum Threads	2							
INI File Mode Settings	Client-side							
Run Mode	Normal Mode							
Encodina	UTF-16LE							

5.4.2 Transactions

Transactions is a set of tools for viewing and modifying all the transaction objects and timeout. There are two tools: Transaction Objects and Timeout.

AEM Console		<u>Welcome</u> > <u>Application</u> > Transactions						
Welcome Server Application Configuration Summary Transactions Transaction Objects Timeout Local Database PB Features Web Browser	*	Transactions						
		Contains transaction ob	jects and timeout settings.					
		Transaction Objects	Configures the connection caches used by the deployed applications. This configuration must be performed each time a new application is deployed or when the transaction object/connection cache has changed.					
		<u>Timeout</u>	Configures timeout settings for deployed applications. Appropriate timeout settings could control the session, enhance the system security, avoid the dead lock, etc.					

5.4.2.1 Transaction Objects

A database-driven PowerBuilder application has at least one database connection, which is accomplished with the use of transaction objects. When the PowerBuilder application is deployed, Appeon Server handles the database connection using data sources configured in Appeon Server rather than transaction objects defined in the PowerBuilder application.

All transaction objects in the PowerBuilder application must be mapped to a correct Appeon Server data source. "Correct" means that the data source should be created as a JDBC data source in the application server hosting Appeon Server, and it should connect to the same database that the Transaction Object connects to in the application.

There are two types of transaction object to data source mapping methods:

- Dynamic Transaction object to data source mapping via PowerScript
- Static Transaction object to data source mapping in AEM

The dynamic mapping in PowerScript has priority over the static mapping in AEM. This section introduces how to set up the static mapping in AEM. For information about the mapping in PowerScript, refer to Dynamic transaction object to data source mapping.

5.4.2.1.1 JDBC requirement for transaction object mappings

Appeon Server is based on J2EE architecture and therefore requires JDBC to interface with the database. The JDBC data sources can use any of the following four types of JDBC drivers: JDBC-ODBC Bridge, Native-API/partly Java driver, Net-protocol/all-Java driver, or Native-protocol/all-Java driver.

Refer to <u>Setting up Appeon Server data sources</u> for more information on this topic, including recommendations on which JDBC driver to use and instructions for creating data sources.

5.4.2.1.2 Configuring transaction object mappings

When an application is deployed to Appeon Server, AEM automatically adds the application profile name into the application list of the Transaction Objects tool.

AEM Console		Welcome > Application	n > <u>Transactions</u>	> Transaction Objection	ects
	*	Transaction Object Settin The transaction objects for details or modify the config	each application are	configured individually	Please click an application name to view the configuration
Transaction Objects		Application Name	Number	Transaction Object	
Local Database		acf	1	[sqlca]	
⊕ PB Features Web Browser	codeexamples 3	[its_sqt,sqlca,its_sql]			
Client Features		order	1	[sqlca]	
⊞-Data Transfer ⊞-Performance		sales	1	[sqlca]	
Client Security Mobile UI Resizing		sapteched	1	[sqlca]	
minioplie of nesizing		<u>vouhoops</u>	1	[sqlca]	

Figure 5.56: Applications with transaction objects

To view the static transaction object mappings for an application, click the application in the Transaction Objects tool. A new page opens and displays the current transaction mapping(s) for the application.

Figure 5.57: Configuring transaction object mappings for an application

Welcome > <u>Application</u> > <u>Transa</u>	ctions > Transac	tion Objects > [order]	
Configure Transaction Object			
Actions	Transaction Object	Data Source	Database Type
🕼 Update 🛛 🖹 Delete 🖌 Test	sqlca	•	Sybase ASA 7/8/9/10/11/12
Add Transaction Object			

Adding a transaction object mapping

Step 1: Click the **Add Transaction Object** button. The Add Transaction Object page appears.

Figure 5.58: Add transaction object

Welcome > Applicati	ion > <u>Transactions</u> > <u>Transaction Objects</u> > <u>Add Transaction Object</u> > [order]
Add Transaction Obje	ct
Application Name: Transaction Object: Data Source: Database Type:	order
Save and Add	Save Test Connection

Step 2: Enter the transaction object name in the "**Transaction Object**" field. The transaction object name is case insensitive and is the same as the one used in the original PowerBuilder application.

Step 3: Select the data source from the "**Data Source**" dropdown list. The list displays the data sources created in Appeon Server.

Make sure the selected data source connects to the same database that the transaction object connects to. Click **Test Connection** button to test the database connection.

Note: For .NET server, the data source is created in the Appeon Server AEM; while for Java server, the data source is created in the server console provided by the corresponding application server.

Step 4: Select the database type from the "Database Type" dropdown list.

Make sure the selected database type is identical to what the transaction object connects to.

Step 5: Double-check the information entered because AEM does not validate user-entered data.

Step 6: Click the **Test Connection** button to test the specified database connection.

Step 7: Click the Save or Save and Add button if testing data source succeeded.

To add more transaction object mappings, repeat the above steps.

Modifying an existing transaction object mapping

1) To change the data source

For each transaction object, there is a dropdown list in the "Data Source" column. The list box lists the data sources created in Appeon Server.

Make sure the selected data source connects to the same database that the transaction object connects to.

You can change the current data source by selecting another from the dropdown list. Click **Test Connection** to verify the database connection is successful and then click **Update** to apply the change.

2) To change the database type

If the database the transaction object connects to is changed (for example, if all the data are moved from Oracle to SAP), AEM must be updated.

Change the current database type by selecting a database from the dropdown list in the *Database type* column. Click **Update** to apply the change.

Deleting an existing transaction object mapping

Clicking the **Delete** button will delete a transaction object mapping. A pop-up message will ask you to confirm deletion.

5.4.2.2 Timeout

The Timeout provides configuration for four important functions of Appeon Server for the deployed applications:

- When the session will timeout (Session Timeout)
- When the transaction will timeout (Transaction Timeout)
- When the file download will timeout (Download Timeout)
- When the message request will timeout (Request Timeout)

Figure 5.59: Timeout settings

AEM Console		Weld	come > <u>Application</u> >	Transac	ctions > Time	eout			
Welcome Gener Application Configuration Summary Transactions Transaction Objects Timeout Local Database PB Features Web Browser ClientFeatures Data Transfer Perofirmance ClientSecurity Mobile UI Resizing	*	Cor	Timeout Configures timeout settings for deployed applications. Appropriate timeout settings could control the session, enhance the system security, avoid the dead lock, etc.						
			lication Name		Session (sec)	Transaction (sec)	Download (sec)	Request (sec)	
		acf			3600	120	3600	3600	
		cod	leexamples		3600	120	3600	3600	
		orde	er		3600	120	3600	3600	
		sale	<u>25</u>		3600	120	3600	3600	
		sap	teched		3600	120	3600	3600	
		you	hoops		3600	120	3600	3600	

Click the application name in the **Application Name** column of the table to configure the settings. After making any changes to the configuration, remember to click the **Save** button.

Figure 5.60: Timeout settings

	<u>Welcome > Application > Transactions > Timeout > [codeexamples]</u>	
⊟	Session Timeout	1
	Session timeout ends the user session and rolls back all database updates since the last commit for a user session. Setting the session timeout to "0" will disable this timeout.	
	Session Timeout: 3600 seconds	
Ξ	Transaction Timeout	
	Transaction timeout rolls back all database updates since the last commit in a transaction. Setting the transaction timeout to "0" will disable this timeout.	
	Transaction Timeout: 120 seconds	
Ð	Download Timeout	
	Specifies the timeout value for file downloads. If the time to download exceeds the specified value, the download will abort and an error message will display.	
	Download Timeout: 3600 seconds	
⊟	Request Timeout	
	Specifies the timeout value for receiving response from the server to fulfill a client request. If the time to fulfill the request exceeds the specified value, the response will abort and an error message will display.	
	Request Timeout: 3600 seconds	
	Save	

5.4.2.2.1 Session timeout

A session starts when the user sends a request to load an Appeon application from the server, and ends if the user closes the application or has not sent any requests to the server during the "session timeout" period.

- By default, the timeout period for a session is 3600 seconds. Session Timeout period should be greater than the Transaction Timeout period. Generally speaking, the session timeout period should not be smaller than 3600 seconds.
- You can set a timeout interval that is shorter or longer than the default setting. The session timeout can be removed altogether by setting the timeout value to 0. This is not recommended because it will eventually exhaust system resources unless old sessions are manually cleared out using the Active Sessions functionality of AEM.

5.4.2.2.2 Transaction timeout

Appeon supports COMMIT and ROLLBACK transaction management statements, and provides a "transaction timeout" setting in AEM that can force a transaction to roll back and release database resource.

The transaction timeout can be removed altogether by setting the timeout value to 0; it is recommended that you set the timeout interval to a small non-0 value (1 to 3600), because a small transaction timeout value can prevent:

• Database locking. When an Appeon Web or Appeon mobile application closes abnormally, the active transaction in it can neither commit nor roll back.

• Application locking. If an application is deadlocked, other applications cannot proceed.

The default value is 120 seconds. Transaction Timeout should be less than Session Timeout.

If transaction timeout in the application database is set to 1800 seconds, then Transaction Timeout in AEM should be set to 1810 or larger. If transaction timeout in the application database is not set, then Transaction Timeout in AEM should be set to a number greater than the maximum time needed to execute regular database operations for the application, suppose the most time-consuming table query operation takes 3000 seconds to complete, then Transaction Timeout should be set to 3010 or larger.

5.4.2.2.3 Download timeout

Files that are downloaded by the user often include the JS files, Weblibrary.cab package, DLL/OCX files and application files. They may have a considerable size and therefore take a long time to download. If the user has not received any data during the "download timeout" period, AEM will end the download and prompt an error message.

- By default, the timeout period for file download is 3600 seconds.
- You can set a timeout interval shorter or longer than the default setting. It is required to input a whole number within the range from 60 to 7200.

5.4.2.2.4 Request timeout

It takes time for each request to receive response from Appeon Server especially when the server is busy or the bandwidth is low. Requests will queue a while to get the server response. Set a proper request timeout value regarding to the application and network condition. Request will be aborted if when the time for waiting response exceeds the value that specified here.

- By default, the timeout period for receiving data is 3600 seconds.
- You can set a timeout interval shorter or longer than the default setting. It is required to input a whole number within the range from 60 to 7200.

5.4.3 Local Database

In the Local Database tool, you can view the local database settings configured in the Local DB Settings tab in Appeon Developer after the application is deployed. For details, refer to Section 4.2.1.2.6, "Offline Settings" in *Appeon Developer User Guide*.

When an offline application is deployed to the Appeon Server, AEM automatically adds the application profile name into the application list of the Local Database tool.

AEM Console		<u>Welcome</u> > <u>Application</u> > Local	Database	
r™Welcome ^ ⊕-Server ⊟⊸Application	E	Local Database		
Configuration Summary		Views the local data source on the mo	bile device.	
Transactions Local Database		Application Name	Last Modified Time	
PB Features Web Browser		sales	2013-09-09 13:27:52	

5.4.3.1 Viewing local database connections for an application

To view the local database connections for an application, click the application name in the **Local Database** table, and the **Local Database Connections** table appears.

You can only view the local database connections. To modify the local database connections for an application, you need to modify them in Local DB Settings in *Appeon Developer User Guide* (in Appeon Developer), and deploy the application again to make the changes take effect.

Figure 5.62: Local database connections for an application

<u>Welcome</u> > <u>Application</u> > <u>Local Database</u> > [sales]									
Local Database Connections									
The local database is configured in Appeon Developer. You can view the configuration here, but cannot modify it. To modify the configuration, you will need to go to Appeon Developer, modify the configuration and deploy the application again.									
Type Data Source/ Transaction Name Database Type Database File Name User Name									
Transaction	ultralite	Ultralite	en_asa80.udb						

5.4.4 PB Features

PB Features is a set of tools for viewing and modifying Registry Mode, INI Files, DLL/OCX Files, Decimal Precision, and Web Service DataWindow.

Figure 5.63: PB Features

AEM Console		<u>Welcome</u> > <u>Application</u> > PB Features			
E Server □ Application	њ.	PB Features Contains PB-related featu	res, such as registry mode. INI files, DLL/OCX files, decimal precision, and Web Service DataWindow.		
──Configuration Summary ──Transactions		Registry Mode	Specifies the mode to execute PowerBuilder Registry functions.		
Local Database PB Features Registry Mode		INI Files	If the application utilizes any NI files, you may configure how the INI files are deployed or modify the INI file contents by clicking on the appropriate application name below.		
INI Files DLL/OCX Files Decimal Precision		DLL/OCX Files	DLLIOCX files are custom libraries that contain custom user code that is called by Appeon Web applications. Appeon can automatically download and install these files as required. Note: These settings are available for Web applications only.		
└─Web Service DataWindow ─Web Browser ─Client Features E─Data Transfer E─Performance		Decimal Precision	Selects a proper decimal precision for the Web application. 15-digit Decimal supports numbers with up to 15 digits and offers high performance. It is available for all PowerBuilder developed applications. 28-digit Decimal supports numbers with up to 28 digits but offers lower performance than 15-digit Decimal. 28-digit Decimal is only available for applications developed with PowerBuilder 10.5 or above. It is not recommended to apply 28-digit decimal unless high precision number is necessary.		
	~	Web Service DataWindow	Configures the Web service URL for Web service DataWindow objects at runtime.		

5.4.4.1 Registry Mode

The Registry Mode tool determines whether the Appeon deployed applications would read client machine Windows registry or Appeon emulation registry to execute registry functions.

Note: Mobile applications can only read Appeon emulation registry.

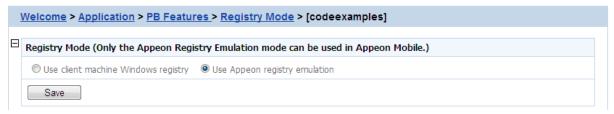
Appeon emulation registry refers to the mock registry file stored in the Appeon Server database. It keeps the registry settings users specify when executing RegistrySet. Because it initially has no values, with the Appeon emulation registry method, users must first set values using RegistrySet before reading values with RegistryGet or RegistryValues.

AEM Console		<u>Welcome</u> > <u>Application</u> > <u>PB Features</u> > Registry Mode					
Welcome Server -Application Configuration Summary	*		Registry Mode When using PowerBuilder registry functions, Web applications can directly access the client machine Windows registry or can use Appeon registry emulation, which emulates the Windows registry by storing information by using browser cookies.				
Local Database		Application Name	Registry Mode				
		acf	Use Appeon registry emulation				
DLL/OCX Files		<u>codeexamples</u>	Use Appeon registry emulation				
Decimal Precision Web Service DataWindow		order	Use Appeon registry emulation				
Web Browser		sales	Use Appeon registry emulation				
⊡Client Features ⊡⊡ata Transfer		sapteched	Use Appeon registry emulation				
Performance		<u>vouhoops</u>	Use Appeon registry emulation				

Figure 5.64: Registry Mode

Click the application name listed in **Registry Mode** table, and then select one registry mode on the page that appears, and then click **Save**.

Figure 5.65: Registry Functions Execution Mode



By default, all the Appeon applications are set to "Use Appeon registry emulation".

Appeon recommends you change the default value to "Use client machine Windows registry" if the application is deployed as a Web application. This option is recommended because it enables the application to directly interact with the client registry, the same as that in PowerBuilder.

Note: for "Client machine Windows registry", 32-bit IE browser and 64-bit IE browser use different registries, even they are on the same machine, which means, if the application runs in a 32-bit IE and a 64-bit IE separately on the same machine, it reads different registries, thus uses different registry settings to execute registry functions.

5.4.4.2 INI Files

The INI Files tool determines whether the Appeon deployed applications would download XML files that emulate INI files to the clients for profile functions, or directly use the XML files stored in Appeon Server database, and it also provides the function to allow you to view and modify the INI file contents of the application.

8				
AEM Console		<u>Welcome > Application > PB Fe</u>	eatures > INI Files	
Welcome Server Gerver Gonfiguration Summary ⊕ Transactions	É	IN Files If the application utilizes any INI files, you may configure how the INI files are deployed or modify the INI file contents by clicking on the appropriate application name below.		
Local Database		Application Name	DeploymentMode	
Registry Mode		acf	Client-side	
<u>INI Files</u> DLL/OCX Files		codeexamples	Client-side	
Decimal Precision		order	Client-side	
Web Browser		sales	Client-side	
— Client Features		sapteched	Client-side	
⊕ Performance		vouhoops	Client-side	

Figure 5.66: INI files

5.4.4.2.1 INI File Mode

Click the application name in the "Application Name" column of the table to select the deployment mode for the application and view or modify the contents of the INI Files.

Figure 5.67: INI file mode settings



In the server-side manipulations mode, the Appeon Server database creates an XML file for each application client, and differentiates the XML files for different clients with the client cookie information.

In the client-side manipulations mode, the XML file that stores the client profile information is kept:

- 1. in the %Windows%\system32\AppeonINI\ directory at the client side, if you have selected the **Default User Profile Location** or the **Browser Cache Folder** option in <u>Client Storage</u> <u>Location</u>.
- 2. in the specified directory, if you have selected **Customized Location** in <u>Client Storage</u> <u>Location</u>.

Select the appropriate mode by balancing the advantages and disadvantages of the two modes:

- A. The "Server-side" mode is supported by the Web application only, while the "Client-side" mode is supported by both the Web application and the mobile application.
- B. The "Server-side" mode requires that the Internet Explorer cookie is enabled at each client, while the "Client-side" mode does not. No matter in which Web browser (IE, Edge, Chrome, Firefox, or Opera) you run the application, you will need to enable the Internet Explorer cookie if you want to support the server-side mode.
- C. The "Server-side" mode does not work with Appeon Server cluster. The reason is that the servers in the cluster do not share database information (such as the INI/XML files). The "client-side" can work well with Appeon Server cluster.
- D. The "Server-side" mode keeps the confidential profile information in Appeon Server database. It is securer than the "Client-side" mode, which stores the profile information in the client computer.

There are two file-downloading methods in the "Client-side" mode for downloading the XML files to the clients:

- Auto-download: Default. The XML file is automatically downloaded to the client that executes the relevant profile information.
- Validation: The Web browser would prompt for the user's validation before it downloads the XML file for executing relevant profile function.

Notes:

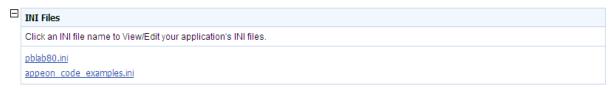
- 1. AEM does not allow the user to dynamically create an INI file on the local machine. Instead, AEM transfers the INI file from PowerBuilder into an XML file and allows the user to manipulate the XML file on the local machine. The INI file is transferred by Appeon Developer during the parsing process and deployed to Appeon Server (for how to deploy INI files, see Deploy INI Files in *Appeon Developer User Guide*).
- 2. When the "Client-side" mode is selected, the XML file will be downloaded to the local machine at the first time that the user manipulates the INI file. However, note that the INI file after downloaded to the local machine will be named differently and placed in a folder different than the application folder, therefore, it is not recommended to use the FileExists PowerScript function to determine whether the INI file exists. You should remove the FileExists function that checks any INI file to avoid errors when running the Web application.

Click the Save button to save changes.

5.4.4.2.2 INI Files

The INI file content tool allows you to view and edit the INI files after the deployment by clicking the name of INI file that you need to view or edit. You need to keep the INI content format here consistent with that in the PowerBuilder.

Figure 5.68: INI files



Click a file name of INI file to view or edit its content.

Figure 5.69: INI file content

<u>Welcome > Application > PB Features > INI Files > [codeexamples] > [appeon_code_examples.ini]</u>					
INI File Content					
INI file must be edit exactly same as the way you edit in PowerBuilder. Please note that all the relative values previously modified by end-users will lose if you modified any value and save it.					
[database] dbms=ODBC autocommit=false dbparm="ConnectString='DSN=AppeonSample;UID=dba;PWD=sql'"					
[user info] name=James Smith jobtitle=Window Washer user id=1002 security=9					
Save					

After making any change to the INI file, click the **Save** button, and then the content in the INI file will be automatically commit to Appeondb.

Notes:

- 1. If the <u>Registry Mode</u> of the ini-modified application is set to "use Appeon registry emulation", the information of Appeon registry emulation will be cleaned up after the INI modification
- 2. If the manipulation mode of the INI file is set to Client-side, the modified INI will be redownloaded to the client side, which means the client user may lose all the changes that they made in the previous INI file.

5.4.4.3 DLL/OCX Files

If your application calls to any DLL or OCX files, make the following two configurations to make sure the deployed Web application can successfully call the DLL or OCX files (these settings are available for Web application only):

- Configure the DLL or OCX files in the application profile, to deploy the files to Web server with the application. Refer to Deploy External Files in *Appeon Developer User Guide* on how to configure and deploy DLL or OCX files to Web server.
- Configure how the DLL or OCX files are downloaded to the Client using the AEM DLL/ OCX Files tool.

e				
AEM Console	Welcome > Applie	cation > PB Features > DLL/OCX Files		
	DLL/OCX files are c	DLL/OCX Files Download (Web Only) DLL/OCX files are custom libraries that contain custom user code that is called by Appeon Web applications. Appeon can automatically download and install these files as required. Note: These settings are available for Web applications only.		
	Application Name	Install Mode		
Registry Mode	acf	Install automatically without ask	ing user	
INI Files DLL/OCX Files	<u>codeexamples</u>	Install automatically without ask	ing user	
	order	Install automatically without ask	ing user	
	sales	Install automatically without ask	ing user	
	sapteched	Install automatically without ask	ing user	
	youhoops	Install automatically without ask	ing user	

Figure 5.70: DLL/OCX Files

5.4.4.3.1 Install mode

"Install Mode" defines how the DLL or OCX files of the selected application should be installed to a client browser. Whichever install mode is selected, when a DLL or OCX file is downloaded to a client, it will be saved to the "plugin" folder under the application directory.

Click the application name listed in the **DLL/OCX files** table, and then select a mode from the **Install Mode** table on the page that appears, and then click **Save**.

Figure 5.71: DLL/OCX Files settings

	Welcome > Application > PB Features > DLL/OCX Files > [codeexamples]				
	Install Mode				
	DLL/OCX files are custom libraries that contain custom user code that is called by Appeon Web applications. Appeon can automatically download and install these files as required. Note: These settings are available for Web applications only.				
 Install automatically without asking user Confirm with user, then install automatically Install manually (no automatic installation) 					
⊟	Conflict Resolution Mode				
	If a different file with the same name already exists, then: Install anyway without asking user Do not install; use existing file Ask the user what to do 				
	Save Apply to All Applications				

You can select the install mode that is most suitable for the application according to the description in the following table.

Table 5.4: Install mode options

Install Mode	Description Default. Before the Web application runs, the DLL and OCX files of the application are automatically downloaded and installed without giving any notification.		
Install automatically without asking user			
Confirm with user, then install automatically	Before the Web application runs, a message box will prompt the user to install the DLL and OCX files. If the user confirms this action, those files will be automatically installed.		
Install manually (no automatic installation)	With this option, Appeon does not handle the DLL and OCX files installation for the application. Users must manually install		

Install Mode	Description
	the DLL and OCX files of the application before accessing the application.
	This option is recommended if the DLL and OCX files used by the application are large size and take a long time to be downloaded over the network.

5.4.4.3.2 Conflict Resolution Mode

"Conflict Resolution Mode" defines how to resolve file conflicts when a different file with the same file name already exists in the folder to which a DLL or OCX is downloaded. There are three mode options.

Conflict Resolution Mode	Description		
Install anyway without asking user	Default. Directly replaces the file of the same name without notifying you.		
Do not install; use existing file	Continues using the existing file.		
Ask the user what to do	Displays a message box for the user to select whether to replace or keep the existing file.		

Table 5.5: Conflict resolution mode options

5.4.4.4 Decimal Precision

The Decimal Precision Settings specifies the decimal precision for the Web or mobile application, you can select a proper one according to your actual needs.

- 15-digit Decimal supports numbers with up to 15 digits and offers high performance. It is available for all PowerBuilder developed applications.
- 28-digit Decimal supports numbers with up to 28 digits but offers lower performance than 15-digit Decimal. 28-digit Decimal is only available for applications developed with PowerBuilder 10.5 or above. It is not recommended to apply 28-digit decimal unless high precision number is necessary.

AEM Console		<u>Welcome</u> > <u>Application</u>	> <u>PB Features</u> > Decimal	Precision
"Welcome Genver Application 'Configuration Summary 'Configuration Summary 'Local Database Local Database	*	performance. It is available offers lower performance th	for all PowerBuilder developed an 15-digit Decimal. 28-digit De	. 15-digit Decimal supports numbers with up to 15 digits and offers high applications. 28-digit Decimal supports numbers with up to 28 digits but crimal is only available for applications developed with PowerBuilder 10.5 inless high precision number is necessary.
Registry Mode		Application Name	Decimal Precision	
INI Files DLL/OCX Files		acf	15-digit Decimal	
<u>Decimal Precision</u> Web Service DataWindow		<u>codeexamples</u>	15-digit Decimal	
Web Browser		order	15-digit Decimal	
Client Features Data Transfer		sales	15-digit Decimal	
Performance		sapteched	15-digit Decimal	
	«	<u>youhoops</u>	15-digitDecimal	

Step 1: Click the application name listed in the **Decimal Precision** table, and then select a decimal mode on the page that appears.

Figure 5.73: Decimal Precision Settings

	<u>Welcome > Application > PB Features > Decimal Precision > [codeexamples]</u>							
⊟	Decimal Precision							
	Decimal Precision: 🔘 15-digit Decimal 🔘 28-digit Decimal							
	Save							

Step 2: Click the **Save** button to save changes.

5.4.4.5 Web service DataWindow

You select the Web service DataWindow object and then configure the Web service URL.

Figure 5.74: Web service DataWindow

AEM Console		<u>Welcome</u> > <u>Application</u> > <u>PB Fe</u>	atures > Web Servio	ce DataWindow
Welcome Server Application Configuration Summary	Ê	Web Service DataWindow Configures the Web service URL for V	Neb service DataWindow	/ objects at runtime.
Transactions Local Database		Application Name	DataObjectNumber	
PB Features Registry Mode INI Files		acf codeexamples	0	
		order	0	
Web Service DataWindow		sales	0	
Web Browser Client Features		sapteched	0	
⊞⊡Data Transfer ⊞⊡Performance		vouhoops	0	

This section takes the appeon_code_examples as an example to show how to configure the Web service URL in AEM.

Step 1: Choose **Application** > **PB Features** > **Web Service DataWindow** on the left pane of the AEM Console, and then click the application name listed in the **Web Service DataWindow** table.

Figure 5.75: Web service DataWindow for appeon_code_examples

1	Nelco	me > Application > PB Features > Web Service Data	aWindo	<u>ow</u> > [codeexamples]
Ξ	Web S	Service DataWindow		
	You ca	n select the Web service DataWindow object and then configure t	the Web	service URL.
		DataWindow Object		DataWindow Object
		d webservice arid		
Ξ	Web S	Service URL		
		in update the Web service URL for each DataWindow object by se URL below, and then clicking the Save button.	electing	the DataWindow object above and entering the correct Web
	Sa	/e		

Step 2: Select the DataWindow Object to configure or modify the Web Service URL(s).

To configure the Web Service URL for all methods of the selected DataWindow object(s):

- 1. In the **Web Service DataWindow** table, check the DataWindow object(s) for which you want to modify the Web Service URL.
- 2. In the Web Service URL table, input the Web Service URL.
- 3. Click **Save**. The input Web Service URL will be set to all methods of the selected DataWindow object(s).

To modify the Web Service URLs for a method of a DataWindow object:

- 1. In the **Web Service DataWindow** table, click the name of the DataWindow.
- 2. On the Web Service URL Settings page that displays, modify the Web Service URL for a method.

Figure 5.76: Modify URL for DataWindow methods

	Welcome > Application > Web Service DataWindow > codeexamples > [d_webservice_grid]						
	Web Service URL Settings						
You are allowed to specify the web service URL of each method in dataobject.							
	Actions Method N		Web Service URL				
	Update	of_delete	http://localhost/webservice_ace.asmx				
	Update	of_insert	http://localhost/webservice_ace.webservice_ace.asmx				
	🚯 Update	of_retrieve	http://localhost/webservice_ace.webservice_ace.asmx				
	Update	of_update	http://localhost/webservice_ace/webservice_ace.asmx				

3. Click Update.

5.4.5 Web Browser

The Web Browser tool helps you manage and configure IE compatibilities and views. **Note:** These settings are available for Web applications running in Internet Explorer only.

Figure 5.77: Web Browser

AEM Console	Welcome > Applica	tion > Web Browser
Welcome Server -Application Configuration Summary		nly) Int settings related to the user interface and general user experience of the application, for example, application plication auto update, run mode, error message mode, start and exit behaviors, client storage location.
Local Database	Application Name	Compatibility Mode
Registry Mode	acf	32-bit , 64-bit
INI Files DLL/OCX Files	<u>codeexamples</u>	32-bit , 64-bit
Decimal Precision	order	32-bit , 64-bit
Web Service DataWindow	sales	32-bit , 64-bit
Client Features	sapteched	32-bit , 64-bit
⊞ Performance	youhoops	32-bit , 64-bit

5.4.5.1 IE Compatibility

Appeon Web applications can be run in both 32-bit and 64-bit Internet Explorer; and it will automatically call the compatible Appeon Server Web Component. But if the application

calls OCX/DLL/OLE files, and depending how you compile the OCX/DLL/OLE files (in 32bit and/or 64-bit), you may want to specify the compatibility mode (32-bit and/or 64-bit) of the OCX/DLL/OLE files in this **IE Compatibility** tool, so if the OCX/DLL/OLE files run in an incompatible browser, the customized warning message will be displayed to the end user.

The other browsers such as Edge, Chrome, Firefox, or Opera only support 32-bit mode, therefore, if you have de-selected the 32-bit compatibility mode here, the warning message will be displayed at runtime when OCX/DLL/OLE files are executed.

Note: 32-bit DLLs can only work with 32-bit Internet Explorer, and cannot work with 64-bit Internet Explorer. As a workaround, you can modify the Windows system registry to start the Internet Explorer in 32-bit mode instead of 64-bit mode. To do this,

- 1. Run "regedit" command to open the Registry Editor.
- 2. Find the registry entry **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Main\TabProcGrowth**, and set it to a value greater than 0.
- 3. Close **Registry Editor** so changes will be saved, and restart Internet Explorer so it will be run in 32-bit mode.

Figure 5.78: IE compatibility settings

IE Compatibility	IE Compatibility			
application will use th	e same mode; otherw	ise the incomp	de and/or 64-bit mode. Make sure the OCX/DLL/OLE files that are deployed with the patibility between the IE mode and OCX/DLL/OLE files will cause malfunctions related ncompatibility and you can customize the warning message here.	
Compatibility Mode:	📝 32-bit	🗹 64-bit		
Warning Message:	Warning Message: You are running the Web application in an incompatible IE browser. The OCX/DLL/OLE			
IE Browser Interface	-	your needs. Se	ettings here only affect the IE interface when accessing this application.	
Display the Menu Bar in IE browser:		Yes	© No	
Display the Status B	Display the Status Bar in IE browser:		© No	
Display the Address Bar in IE browser:		Yes	© No	
Display the Address	Display all of the toolbars in IE browser:		© No	
	lbars in IE browser:	Yes		

Step 1: Specify the compatibility mode (32-bit or 64-bit or both) of the OCX/DLL/OLE files called by the Web application.

If the OCX/DLL/OLE files called by the Web application are compiled under 32-bit compatibility mode, then select 32-bit compatibility mode, if the OCX/DLL/OLE files are compiled under 64-bit compatibility mode, then select 64-bit compatibility mode; if there are two sets of OCX/DLL/OLE files: one complied under 32-bit compatibility mode for running in 32-bit IE browsers, the other complied under 64-bit compatibility mode for running in 64-bit IE browsers; then select both 32-bit and 64-bit compatibility modes. (To call the two sets

of OCX/DLL/OLE files for different IE browsers in your source code, you may need to use the of_is64browser function in the Appeon Workarounds PBL to determine if the IE browser is 64-bit. Refer to Section 2.3.1, "AppeonExtFuncs Object" in *Workarounds & API Guide*.

Step 2: In the Warning Message field, customize the warning message that will be displayed to end users when the OCX/DLL/OLE files run in an incompatible IE browser.

For example, if the OCX/DLL/OLE files called by the Web application are compiled under 32-bit compatibility mode (thus can only be run in a 32-bit IE browser), you may want to select 32-bit as Compatibility Mode, and then specify the following message in the Warning Message field so that it will be displayed if the user runs the Web application in a 64-bit IE browser: "You are running on a 64-bit IE browser now. Please notice that the Web application (mainly the OCX/DLL/OLE files) is compatible with 32-bit only, if you run on a 64-bit IE browser, the OCX/DLL/OLE related function may not work correctly. Do you want to continue running the 64-bit IE browser?".

5.4.5.2 IE Browser Interface

You can control the IE behavior by customizing the IE views in the IE Browser Interface tool in AEM. You can select to display or hide the menu bar, status bar, address bar, or all of the toolbars of IE browser, and open IE in full screen mode or normal mode, when a Web application runs in IE.

Figure 5.79: IE Browser Interface

E	IE Browser Interface				
	Configure the IE browser interface to satisfy your needs. Settings here only affect the IE interface when accessing this application.				
	Display the Menu Bar in IE browser:	Yes	© No		
	Display the Status Bar in IE browser:	Yes	© No		
	Display the Address Bar in IE browser:	Yes	© No		
	Display all of the toolbars in IE browser:	Yes	© No		
	Open the IE browser in Full Screen view:	Yes	No		

Save

Notes:

- 1. For IE 6, though the menu bar, status bar, address bar and all of the toolbars are set to display, they will be hidden if **Open the IE browser in Full Screen view** is set to **Yes**.
- 2. Address bar in IE 7/8/9/10/11 cannot be hidden, due to the new protection mechanism in Microsoft. You may want to see Microsoft help for details.
- 3. IE 7/8/9/10/11 toolbars include the Tab bar, the Menu bar, the Favorites or Links bar, and the Command bar, while IE 6 toolbars include the Menu bar, and the Address bar. Due to this difference, when **Display all of the toolbars in IE browser** is turned on or off, you will find different behaviours between IE 6 and IE 7/8/9/10/11.

For example, tabs in IE 7/8/9/10/11 will be shown, if both **Display all of the toolbars** in IE browser and **Display the Address bar in IE browser** are set to **Yes**, and will be hidden if either is set to **No**.

5.4.6 Client Features

The Client Features helps you configure various clients settings related to the user interface and general user experience of applications, for example, graphics theme, start and exit behaviors, and client deployment locations.

Figure 5.80: Client Features

AEM Console		Welcome > <u>Application</u> > Clier	nt Features			
™Welcome ∰-Server	Ξ	Client Features				
Application Configuration Summary TTransactions		Configures various client settings related to the user interface and general user experience of the application, for example application title, graphic theme, application auto update, run mode, error message mode, start and exit behaviors, client storage location.				
Local Database		Application Name	Web Application Theme	Web Application Auto Update	Client Storage Location	
Registry Mode		acf	Windows Vista/XP	Yes	Default User Profile Location	
INTFiles DLL/OCX Files		<u>codeexamples</u>	Windows Vista/XP	Yes	Default User Profile Location	
Decimal Precision		order	Windows Vista/XP	Yes	Default User Profile Location	
Web Service DataWindow Web Browser		sales	Windows Vista/XP	Yes	Default User Profile Location	
<u>Client Features</u>		sapteched	Windows Vista/XP	Yes	Default User Profile Location	
⊞-Data Transfer ⊞-Performance		<u>youhoops</u>	Windows Vista/XP	Yes	Default User Profile Location	

5.4.6.1 Application Title

You can configure the text shown in the title bar when the Web or mobile application is run. The default text is what defined in the Appeon license file.

This setting is effective only when you are using a Developer, Workgroup, or Enterprise Edition of Appeon Server.

Figure 5.81: Application Title

	<u>Welcome > Application > Client Features > [codeexamples]</u>				
Ξ	Application Title				
	Specifies the information shown in the IE title bar. This feature is not available for Trial Editions.				
	Beta -				

5.4.6.2 Web Application Theme

The Web Application Theme specifies the theme of the browser-based Web application that will be used on the client side. The IWA Web app will not take this theme setting, instead they will directly use the theme of OS.

Note: This setting is available for the browser-based Web application running in Internet Explorer only.

Figure 5.82: Web Application Theme

```
      Web Application Theme (Browser-Based Apps Only)

      Specifies the theme of the Web application user interface. Windows Vista/XP will yield a user interface consistent with what users expect from a Vista/XP environment. Note: This setting only takes effect on applications that run on Web browsers. If an application runs as IWA (Installable Web Application), it adopts the user interface theme of the underlying operating system.

        • Windows Vista/XP
        • Windows Classic
```

There are two options for Web Application Theme:

• Windows Vista: Applying this theme enables Appeon Web applications to show in Windows Vista style. The Windows Vista style also requires the end user set the Windows desktop Theme to Windows Vista.

• Windows Classic: Applying this theme makes Appeon Web application presented in traditional Windows 2000 style.

5.4.6.3 Web Application Auto Update

When an Appeon Web or Appeon mobile application is re-deployed and run, it will compare the application files on the client with the files on the server, if there are updated files on the server, it will download the files to the client if "Auto Update Web Files" is set to Yes, and will not download the files but directly use the cached files on the client if set to No. However, if there are new files on the server that do not exist on the client, then the new files will be downloaded regardless auto update is Yes or No.

If auto update is set to No, then the "Allow user to select run mode" setting in application Start & Exit Settings should be set to "No" and the "Default run mode" setting should be set to "Run after download", this will download all files to the client when the application is run for the first time, thus can avoid the following problems:

- If "Run now" rather than "Run after download" is selected, the files will be downloaded only when needed, which may cause the updated files (or part of them) to be downloaded unexpectedly, as they may not be used and downloaded already (thus do not exist on the client).
- If you switch the file generation mode (from release mode to debug mode, or vice versa, on Appeon Developer toolbar | Configure button | Application Profiles tab page) and redeploy the application, and if you select "Run now" rather than "Run after download", then you will see Web page errors when launching the Web application, as the application redeployed under release mode (or debug mode) cannot directly use the cached files which were generated under debug mode (or release mode).

Figure 5.83: Auto Update



5.4.6.4 Run Mode

The Run Mode sets whether the parameters transferred between the application and the server can be read and analyzed by stress-testing tools such as LoadRunner, QuickTest Professional (QTP).

Figure 5.84: Run mode

Ξ	Run Mode				
	Select the run mode for Web applications. If test mode has been turned on, Appeon Server will start in the performance test mode, allowing stress testing tools (such as LoadRunner) to read and write parameters in the plain text.				
	Run Mode:	Normal Mode	◎ Test Mode		

There are two Run Mode options:

- Normal mode: This is the default and recommended mode for running the Appeon Web or Appeon mobile applications.
- Test mode: This is the mode specifically for applications under performance testing. It enables the script to be recorded and transferred in the plain-text format, so that the script can be modified or parameterized to simulate a more realistic stress scenario.

Note:

- 1. If the Test mode is selected, be sure to disable the data cache in the <u>DataWindow Data</u> <u>Cache</u> page before the application is run.
- 2. If the settings in the Test Mode have been changed, restart the Web browser to begin a new session. The changes will not take effect if you only click the **Refresh** button of the Web browser.

5.4.6.5 Error Message Mode

The Error Message Mode sets whether the errors occurred at runtime shall block the running of the application or not.

Click an application in the **Application Name** column of the table. The Error Message Mode settings page displays.

Figure 5.85: Error mode configuration

Error Message Mode (Browser-Based Apps Only)				
Specifies w	here to display error messages. Note: In IWA and mobile apps, error messages always display in pop-ups.			
Error Level	Display Mode			
0	\odot Display in the status bar \odot Display in a popup message			
1	\tilde{O} Display in the status bar \tilde{O} Display in a popup message			
2	© Display in the status bar			
10	Display in the status bar Oisplay in a popup message			

- **Display in the status bar** mode means that the error displays in the Web browser status bar, and does not require the user to respond to it. The status bar only shows high-level error information.
- **Display in a popup message** mode means that the error shows in a popup message box, and requires the user to respond to it first before continuing with the application. The popup message shows all the information available for locating the error, including error ID, error description, most possible cause, solution, and links to the Online Help and Appeon Technical Support.

Note: Appeon Mobile apps, IWA apps, as well as Web apps running in non-IE browser (such as Edge, Chrome, Firefox, or Opera) can only support this mode.

Appeon Server divides all runtime errors into 4 levels according to their severity, and enables you to specify different display modes for different error levels.

- Level 0 Not severe. The error has little impact to the functions of the application and displays in the status bar.
- Level 1 Quite severe. The error is caused by incorrect configuration, and affects the running of the application. For example, no data source is set for the application. It displays in a popup message.
- Level 2 Very severe. The error is caused by incompatibility with Appeon product. For example, the specification of invalid Web URL. The error displays in a popup message.
- Level 10 Most severe. The error reflects a bug in the Appeon product and displays in a popup message.

5.4.6.6 Start & Exit

The Start & Exit settings determine the modes when you start or exit the Web application. It includes the settings for **Allow user to select run mode**, **Default Run Mode**, and **Exit Mode** when exiting the Web application. **Note:** These settings are available for Web apps running in the browser only, and not available for mobile and IWA apps.

Figure 5.86: Start & Exit Settings

	Start & Exit (Browser-Based Apps Only)				
	Specifies the Web application start and exit behaviors. Please note that the "Run after download" will result in the entire Web application to be downloaded into cache, which increases the initial download time.				
	Allow user to select run mode:	© Yes ◉ No			
	Default run mode:	Run now Run after download R			
	Exit Mode:	◎ Close browser ◎ Close tab ◎ Redirect to about:blank			

5.4.6.6.1 Allow user to select run mode

Before you start the Web application, you can set whether to allow the user to set the run mode of the Web application.

- Yes: When you run a Web application, a run mode page will be displayed to allow you to select the running mode of the Web application, there are two modes: **Run Now** or **Run After Download**. Note: These two modes are not related with that are set in **Default run mode**, even you set the value of **Default run mode**, you can still change it and select the running mode according to your actual need in the run mode page.
- No: When you run a Web application, there will be no run mode page being displayed, the Web application is directly running under the mode selected in **Default run mode**.

5.4.6.6.2 Default run mode

This option provides feasible download modes to the end user if they use slow bandwidth. Depending on the bandwidth, the end user can select from the following run modes when the application starts:

• **Run now**: The application runs immediately and files will be downloaded only when used. This mode is recommended for high speed network.

• **Run after download**: The application runs after all files are downloaded to the client. This is recommended for clients using low bandwidth.

5.4.6.6.3 Exit Mode

You can control the behavior of the Web browser when you exit the Web application.

- **Close browser**: Select this option if you want the Web browser to automatically close when you exit the Web application.
- **Close tab**: Select this option if you want the Web browser to stay opened and only the tab page running the Web application to be closed when you exit the Web application. This option is effective to Internet Explorer 7.0 or above.
- **Redirect to**: Select this option if you want the current browser or tab page which runs the Web application to be redirected to run the specified URL.

5.4.6.7 Client Storage Location

Specify a location to store the Web application files on the client side.

No matter which location is specified, you can call AppeonGetCacheDir function in *Workarounds & API Guide* to get the current directory for the application.

Note: This setting is available for Web applications only.

Figure 5.87:	Client storage	location
--------------	-----------------------	----------

Client Storage Location (Web C	Dnly)
Specifies where to cache the web a	application files. Note: These settings are available for Web applications only.
Oefault User Profile Location	Stores the Web application files in the user profile folder as determined by the Windows OS. The application will remain cached regardless the Browser Cache Folder is cleared, which ensures fastest application startup.
	Stores the Web application files in the Browser Cache Folder, for example, the Temporary Internet Files Folder of Internet Explorer. If the Browser Cache Folder is cleared the Web files must be redownloaded.
Customized Location	Stores the Web application files in the location specified below. The application will remain cached regardless the Browser Cache Folder is cleared, which ensures fastest application startup. Please specify an absolute path (e.g. C:\Appeon\) or utilize one of the following dynamic paths: %system% denotes Windows system path; %ouserLocation% denotes default Windows user profile path (e.g. C:\Documents and Settings\Administrator\Application Data); %alluserLocation% denotes windows configuration directory for all users (e.g. C:\Documents and Settings\All User\Application Data); %systemDrive% denotes the system drive root (e.g. C:).

There are three options. Choose one of them to best fit your environment.

- Default User Profile Location: The Web application files will be stored permanently in the %appdata%\appeon folder allocated by the Windows system, unless you remove them manually. The %appdata%\appeon folder in Windows Vista/7/8 is: %SYSTEMDRIVE% \users\{username}\AppData\Roaming\appeon
- Browser Cache Folder: The Web application files will be stored in the IE cache (no matter the application is run in IE, Edge, Chrome, Firefox, or Opera). If the IE cache is cleared, the files will be downloaded again the next time the application runs. The IE cache directory varies depending on the Windows OS:

 $\label{eq:linear} Windows Vista/7: \SYSTEMDRIVE\Users\{username}\AppData\Local\Microsoft \Windows\Temporary Internet Files\$

 $\label{eq:spinors} Windows \end{tabular} Windows \end{tabular} Windows \end{tabular} Windows \end{tabular} Windows \end{tabular} \end{tabular} windows \end{tabular} \en$

• Customized Location: The Web application files will be stored in the location specified here. You must specify absolute path here (e.g. C:\Appeon\) or use one of the following dynamic paths:

%SYSTEMDRIVE% which stands for system drive root, e.g. C:\.

%SYSTEM% which stands for the Windows system directory. In Windows Vista and later, C:\Windows.

%USERPROFILE% which stands for the Windows user profile folder. In Windows Vista and later, C:\Users\{username}.

%HOMEPATH% which stands for the home folder for the Windows user. In Windows Vista and later, C:\Users\{username}.

%USERLOCATION% which stands for the Windows user profile folder. In Windows Vista and later, C:\Users\{username}\AppData\Roaming.

%ALLUSERLOCATION% which stands for the Windows user profile folder for all users. In Windows Vista and later, C:\ProgramData.

When this option is selected, the following table will display for you to specify the storage location for the Web files of different types. Note that the first path **System Files Storage Path** cannot be empty or null, and it should be specified first, because the value specified here will be used automatically as the root path for the following items by default. You can change the path for each file type according to the actual needs.

Customized Location					
Specifies where to cache the web applica	Specifies where to cache the web application files. Note: These settings are available for Web application only.				
Path Type	Path				
System Files Storage Path					
Application Object Files Storage Path					
OLE Files Storage Path					
Menu Object Files Storage Path					
Image File Storage Path					
OCX/DLL Files Storage Path					
INI Files Storage Path					
DataWindow Meta Files Storage Path					

Figure 5.88: Customized location

5.4.6.8 Client Logs

Save

Select one of the following modes for the logs generated on the client side, and specify the maximum size for the log files.

Figure 5.89: Client Logs

Client Log				
Specifies the log mode and the maximum size of log files on the client side. The log file will record the client system information and the application environment information, for debugging purpose only. If these are confidential information, please remove them before sending the log file. When logging is enabled, all clients where the application is running will automatically write information to the log file, which may affect the application runtime performance. Please be cautious to turn on logging and turn off once not necessary.				
Log Mode Log File				
Off (default)	Log file size: 2 MB (2MB<=File size<=5MB)			
Error mode				
◎ Info mode				
© Debug mode				

See the following table for details on the mode options.

Client Log Mode	Description
OFF	Does not generate any log file.
ERROR	Only generates error log files.
INFO	Generates log files that are informative to users.
DEBUG	Generates detailed log files that are sufficient for routine checking and troubleshooting.

Table 5.6: Client Log Mode

Log File: Enter a number between 2 to 5 here to specify the log size to be generated. If the log generated reaches the specified number, the generated logs will be automatically removed from the client.

Log path:

- For Web applications:
 - If you select **Default User Profile Location** as the client storage location in <u>Client</u> <u>Storage Location</u>, the log is saved in C:\Users\{username}\AppData\Roaming\appeon \%appname%\log\appeonclient.log. {username} is the Windows login name you are using, for example, *administrator*.
 - 2. If you select **Browser Cache Folder** as the client storage location in <u>Client Storage</u> <u>Location</u>, the log is saved in C:\Users\{username}\AppData\Local\Microsoft\Windows \Temporary Internet Files\{systemfolder1}\{subsystemfolder1}\appeonclient.log.

{username} is the Windows login name you are using, for example, *administrator*.

{systemfolder1} is a system-hidden directory (not the general hidden files) that cannot be displayed even by enabling the **Show hidden files, folders, and drivers** option (**Computer** > **Organize** > **Folder and search options** > **View** > **Show hidden files, folders, and drivers**), and the name for the {systemfolder1} is usually *content.IE5* or similar, so you just can open the {systemfolder1} by typing C:\Users \{username}\AppData\Local\Microsoft\Windows\Temporary Internet Files\content.IE5\ into the **Address** bar. The name for {subsystemfolder1} is random.

An automatic way to determine the browser cache directory for the current application is by calling an API Appeon provides. See AppeonGetCacheDir function in *Workarounds & API Guide*.

- If you select Customized Location as the client storage location in <u>Client Storage</u> <u>Location</u>, the log is saved in %System Files Storage Path%\log\appeonclient.log. For example, if you type *e:\App* in the System Files Storage Path text box in Client Storage Location, the log will be saved in e:\App\log\appeonclient.log.
- For mobile applications (that run in Appeon Workspace): The log file is saved in the **Log** folder under the application folder on your mobile device. You cannot view the log file on mobile device as how you view the Web application log on PCs; but you can view the log or send the log via email in Appeon Workspace. For details on how to view the log or send the log via email, refer to Section 5.8, "Configuring logs" in *Appeon Workspace User Guide (Mobile only)*.
- For native mobile applications: You can call the **of_sendmail** function of **eon_mobile_awsex** object to send the log as attachment, and the log file path and name is: AppeonGetCacheDir()+"/Log/EonMob.log".

Refer to the section called "of_sendmail" in Workarounds & API Guide for details.

5.4.6.9 Retina Display

This part is for iOS only.

Configures whether to support retina display or not on retina-supported iOS devices using this **Retina Display** tool. When enabled, the UI including controls, text, and images will not be scaled. As a result, the application will look very crisp at the expense of higher memory.

Figure 5.90: Retina Display Supported

	Retina Display (Mobile Only)					
	Configures whether to support retina display or not on iOS devices. When enabled, the UI including controls, text, and images, will not be scaled. As a result, the application will look very crisp at the expense of higher memory.					
	Save					

5.4.7 Data Transfer

Data Transfer is a set of tools for viewing and modifying Charset and Encoding.

AEM Console		Welcome > Appli	<u>cation</u> > Data Transfer
		Data Transfer Contains charset ar	d transfer encoding.
Transactions Local Database PB Features	Charset Encoding	Charset	Configures the charset (character set) used by the applications. It is unnecessary to perform this configuration if the application database charset is UTF-8, or if the application database charset supports the data that are saved to the database.
Web Browser Client Features Data Transfer Charset Encoding		You are allowed to choose the encoding mode for transferring data in Appeon for PowerBuilder. The network traffic for the same data using different encoding modes varies. If the language of your project is English, it is strongly recommended that you choose the UTF-8 mode. If there are languages other than English in your project, choose the UTF-16LE mode.	

5.4.7.1 Charset

The character set conversion can be enabled at the data source level for each application if you specify the input Charset and database Charset for the cache in AEM.

You will find the Charset tool useful when:

- The database uses non-UTF-8 character set, and
- The language display of the application has error code in it

Otherwise, it is unnecessary to use this tool.

Figure 5.92: Charset settings

AEM Console			Welcome > <u>Application</u> > <u>Data 1</u>	<u>Fransfer</u> >	Charset	
	*		Charset Sets the charset at the connection cache level. Appeon Server will convert the data from the input charset to the database charset.			
Local Database			Application Name	Number	Data Source	
Web Browser			acf	0	0	
Client Features			<u>codeexamples</u>	0	0	
<u>Charset</u>	<u>Charset</u>		order	0	0	
Encoding ⊞-Performance			sales	0	0	
Client Security Mobile UI Resizing			sapteched	0	0	
Ermobile of Resizing	~	«	<u>vouhoops</u>	0	٥	

5.4.7.1.1 Configuring database Charset for a data source

Step 1: Click an application in the Application Name column. The Configure Charset window opens.

Figure 5.93: Configure charset settings

1	<u>Welcome > Application > Data Transfer > Charset > [codeexamples]</u>						
⊟	Charset Configuration						
	Actions	Data Source	Charset	Client-Side Charset			

Step 2: Click the Add Charset button. The Add Charset window opens.

Figure 5.94: Add charset settings

	Welcome > Application	on > <u>Data Transfer</u> > <u>Charset</u> > <u>Add Charset</u> > [codeexamples]
⊟	Add Charset	
	Application Name: Data Source: Database Charset: Client-side charset:	codeexamples
	Save and Add	Save

Step 3: Select the data source from the **Data Source** dropdown list.

Step 4: Select the database charset type from the **Database Charset** dropdown list. The Charset should be consistent with the Charset used in the database. This will not change the setting in the database.

Step 5: Select the input charset type from the **Client-side Charset** dropdown list. This setting should match the input Charset type at the client side.

Step 6: Click the **Save** button to confirm the configuration or **Save and Add** to add another one.

5.4.7.1.2 Updating a Charset

On the Charset page, click **Update** under Actions to update a Charset for a data source.

5.4.7.1.3 Deleting a Charset

On the Charset page, click **Delete** under Actions to delete an unwanted Charset for a data source.

5.4.7.1.4 Charset options given in the Charset fields

The following table lists all the Charset options provided in the "Database Charset" field and the "Client-side Charset" field, and provides a brief description of each Charset. If the actual database Charset or the input Charset is not provided as an option, you can use the following method to manually add the type as an option:

Step 1: Open the file constant.config in the directory %appeonserver%\AEM\config\.

Step 2: Add the Charset type as an entry into the file, and save the file.

For example, if the Charset type that you want to add is "gbk", you can add a new line <charset name="gbk" value="gbk"></charset> in the file.

Step 3: Restart Appeon Server and the "gbk" Charset will be added to the Charset lists.

The following table lists the character sets and code pages. The asterisk (*) at the last column indicates that Microsoft .NET Framework supports the code page, regardless of the platform.

Page	Charset	Description	Asterisk
37	IBM037	IBM EBCDIC (US - Canada)	
437	IBM437	OEM US	
500	IBM500	IBM EBCDIC (International)	
708	ASMO-708	Arabic (ASMO 708)	
720	DOS-720	Arabic (DOS)	
737	ibm737	Greek (DOS)	
775	ibm775	Baltic (DOS)	
850	ibm850	Western European (DOS)	
852	ibm852	Central European (DOS)	
855	IBM855	OEM Cyrillic	
857	ibm857	Turkish (DOS)	

 Table 5.7: Charset and code pages

Page	Charset	Description	Asterisk
858	IBM00858	OEM Multi-Language Latin I	
860	IBM860	Portuguese (DOS)	
861	ibm861	Iceland (DOS)	
862	DOS-862	Hebrew (DOS)	
863	IBM863	Canadian French (DOS)	
864	IBM864	Arabic (864)	
865	IBM865	Northern European (DOS)	
866	cp866	Cyrillic (DOS)	
869	ibm869	Modern Greek (DOS)	
870	IBM870	IBM EBCDIC (Multi-Language Latin 2)	
874	windows-874	Thai (Windows)	
875	cp875	IBM EBCDIC (Modern Greek)	
932	shift_jis	Japanese (Shift-JIS)	
936	gb2312	Simplified Chinese (GB2312)	*
949	ks_c_5601-1987	Korean	
950	big5	Traditional Chinese (Big5)	
1026	IBM1026	IBM EBCDIC (TurkishLatin 5)	
1047	IBM01047	IBM Latin 1	
1140	IBM01140	IBM EBCDIC (US - Canada - Europe)	
1141	IBM01141	IBM EBCDIC (German - Europe)	
1142	IBM01142	IBM EBCDIC (Denmark - Norway - Europe)	
1143	IBM01143	IBM EBCDIC (Finland - Sweden - Europe)	
1144	IBM01144	IBM EBCDIC (Italy - Europe)	
1145	IBM01145	IBM EBCDIC (Spain- Europe)	
1146	IBM01146	IBM EBCDIC (U.K Europe)	
1147	IBM01147	IBM EBCDIC (France - Europe)	
1148	IBM01148	IBM EBCDIC (International - Europe)	
1149	IBM01149	IBM EBCDIC (Iceland - Europe)	
1200	utf-16	Unicode	*
1201	UnicodeFFFE	Unicode (Big-Endian)	*
1250	windows-1250	Central Europe (Windows)	
1251	windows-1251	Cyrillic (Windows)	

Page	Charset	Description	Asterisk
1252	Windows-1252	Central Europe (Windows)	*
1253	windows-1253	Greek (Windows)	
1254	windows-1254	Turkish (Windows)	
1255	windows-1255	Hebrew (Windows)	
1256	windows-1256	Arabic (Windows)	
1257	windows-1257	Baltic (Windows)	
1258	windows-1258	Vietnamese (Windows)	
1361	Johab	Korean (Johab)	
10000	macintosh	Central Europe (Mac)	
10001	x-mac-japanese	Japanese (Mac)	
10002	x-mac-chinesetrad	Traditional Chinese (Mac)	
10003	x-mac-korean	Korean (Mac)	*
10004	x-mac-arabic	Arabic (Mac)	
10005	x-mac-hebrew	Hebrew (Mac)	
10006	x-mac-greek	Greek (Mac)	
10007	x-mac-cyrillic	Cyrillic (Mac)	
10008	x-mac-chinesesimp	Simplified Chinese (Mac)	*
10010	x-mac-romanian	Romanian (Mac)	
10017	x-mac-ukrainian	Ukrainian (Mac)	
10021	x-mac-thai	Thai (Mac)	
10029	x-mac-ce	Central Europe (Mac)	
10079	x-mac-icelandic	Iceland (Mac)	
10081	x-mac-turkish	Turkish (Mac)	
10082	x-mac-croatian	Croatian (Mac)	
20000	x-Chinese-CNS	Traditional Chinese (CNS)	
20001	x-cp20001	TCA Taiwan	
20002	x-Chinese-Eten	Traditional Chinese (Eten)	
20003	x-cp20003	IBM5550 Taiwan	
20004	x-cp20004	TeleText Taiwan	
20005	x-cp20005	Wang Taiwan	
20105	x-IA5	Central Europe (IA5)	
20106	x-IA5-German	Germany (IA5)	
20107	x-IA5-Swedish	Swedish (IA5)	
20108	x-IA5-Norwegian	Norwegian (IA5)	
20127	us-ascii	US-ASCII	*

Page	Charset	Description	Asterisk
20261	x-cp20261	T.61	
20269	x-cp20269	ISO-6937	
20273	IBM273	IBM EBCDIC (Germany)	
20277	IBM277	IBM EBCDIC (Denmark - Norwegian)	
20278	IBM278	IBM EBCDIC (Finland- Swedish)	
20280	IBM280	IBM EBCDIC (Italy)	
20284	IBM284	IBM EBCDIC (Spanish)	
20285	IBM285	IBM EBCDIC (U.K.)	
20290	IBM290	IBM EBCDIC (Japanese Katakana)	
20297	IBM297	IBM EBCDIC (France)	
20420	IBM420	IBM EBCDIC (Arabic)	
20423	IBM423	IBM EBCDIC (Greek)	
20424	IBM424	IBM EBCDIC (Hebrew)	
20833	x-EBCDIC- KoreanExtended	IBM EBCDIC (Korean Extension)	
20838	IBM-Thai	IBM EBCDIC (Thai)	
20866	koi8-r	Cyrillic (KOI8-R)	
20871	IBM871	IBM EBCDIC (Iceland)	
20880	IBM880	IBM EBCDIC (Cyrillic Russian)	
20905	IBM905	IBM EBCDIC (Turkish)	
20924	IBM00924	IBM Latin 1	
20932	EUC-JP	Japanese (JIS 0208-1990 and 0212-1990)	
20936	x-cp20936	Simplified Chinese (GB2312-80)	*
20949	x-cp20949	Korean Wansung	*
21025	cp1025	IBM EBCDIC (Cyrillic Serbian - Bulgarian)	
21866	koi8-u	Cyrillic (KOI8-U)	
28591	iso-8859-1	Central Europe (ISO)	*
28592	iso-8859-2	Central Europe (ISO)	
28593	iso-8859-3	Latin 3 (ISO)	
28594	iso-8859-4	Baltic (ISO)	
28595	iso-8859-5	Cyrillic (ISO)	
28596	iso-8859-6	Arabic (ISO)	
28597	iso-8859-7	Greek (ISO)	

Page	Charset	Description	Asterisk
28598	iso-8859-8	Hebrew (ISO-Visual)	*
28599	iso-8859-9	Turkish (ISO)	
28603	iso-8859-13	Estonian (ISO)	
28605	iso-8859-15	Latin 9 (ISO)	
29001	x-Europa	Europa	
38598	iso-8859-8-i	Hebrew (ISO-Logical)	*
50220	iso-2022-jp	Japanese (JIS)	*
50221	csISO2022JP	Japanese (JIS- 1 byte Kana)	*
50222	iso-2022-jp	Japanese (JIS- 1 byte Kana - SO/ SI)	*
50225	iso-2022-kr	Korean (ISO)	*
50227	x-cp50227	Simplified Chinese (ISO-2022)	*
51932	euc-jp	Japanese (EUC)	*
51936	EUC-CN	Simplified Chinese (EUC)	*
51949	euc-kr	Korean (EUC)	*
52936	hz-gb-2312	Simplified Chinese (HZ)	*
54936	GB18030	Simplified Chinese (GB18030)	*
57002	x-iscii-de	ISCII Sanskrit	*
57003	x-iscii-be	ISCII Bengalese	*
57004	x-iscii-ta	ISCII Tamil	*
57005	x-iscii-te	ISCII Telugu	*
57006	x-iscii-as	ISCII Assamese	*
57007	x-iscii-or	ISCII Oriya	*
57008	x-iscii-ka	ISCII Kannada	*
57009	x-iscii-ma	ISCII Malayalam	*
57010	x-iscii-gu	ISCII Gujarat	*
57011	x-iscii-pa	ISCII Punjab	*
65000	utf-7	Unicode (UTF-7)	*
65001	utf-8	Unicode (UTF-8)	*
65005	utf-32	Unicode (UTF-32)	*
65006	utf-32BE	Unicode (UTF-32 Big-Endian)	*

5.4.7.2 Encoding

Encoding specifies the encoding format for data transferred between the clients and the server. The transfer speed varies when the encoding format changes.

AEM Console		Welcome > Applicat	tion > Data Transfer > Encodi	ng		
₩elcome Server	*	Transfer Encoding				
		using different encodin	You are allowed to choose the encoding mode for transferring data in Appeon for PowerBuilder. The network traffic for the same data using different encoding modes varies. If the language of your project is English, it is strongly recommended that you choose the UTF- 8 mode. If there are languages other than English in your project, choose the UTF-16LE mode.			
PB Features		Application Name	Transfer Encoding			
Web Browser Client Features		acf	UTF-8			
Data Transfer Charset		codeexamples	UTF-8			
Encoding		order	UTF-8			
		sales	UTF-8			
-Mobile UI Resizing		sapteched	UTF-8			
		vouhoops	UTF-8			

Figure 5.95: Encoding

If the language of the application is pure English, select UTF-8; otherwise, select UTF-16LE.

Figure 5.96: Encoding settings

	<u>Welcome > Application > Data Transfer > Encoding</u> > [codeexamples]									
	Encoding									
	You are allowed to choose the encoding mode for transferring data in the Appeon application. The network traffic for the same data using different encoding modes varies: if the language of your project is English, it is strongly recommended that you choose the UTF-8 mode; if there are languages other than English in your project, choose the UTF-16LE mode.									
	Encoding: O UTF-8 O UTF-16LE									

5.4.8 Performance

Performance is a set of tools for viewing and modifying Multi-thread Download, application Server Cache and DataWindow Data Cache.

AEM Console	<u>Welcome</u> > <u>Application</u>	on > Performance			
Welcome Application Application	Performance Contains multi-thread download, application server cache and DataWindow data cache.				
←Configuration Summary	Multi-Thread Download	Download static resources with multi-threads to boost performance. The static resources refer to resources that existon the Web server as files, such as the JS files, image files, and H TML files. Note: This setting is available for Web application only.			
Web Browser Client Features Totata Transfer	Application Server Cache	Configures the amount of memory allocated to each application for caching DataWindow syntax and SQL statements on Appeon Server.			
Performance Multi-Thread Download Multi-Thread Download Multi-Thread Download Mathematical Cache	DataWindow Data Cache	Configures caching on the Web server and in the Web browser of data retrieved into DataWindows.			

5.4.8.1 Multi-Thread Download

The Multi-Thread Download setting specifies how many threads a client will take for simultaneously downloading application Web files (such as JavaScript files, image files, and HTML files) from the Web server. This option makes full use of the network bandwidth between clients and Web server, and shortens the time that clients must wait during the Web files download process. **Note:** This option is available for Web applications only.

AEM Console		<u>Welcome</u> > <u>Applicat</u>	ion > Performance > Multi-Th	nread Download
Welcome Server -Application -Configuration Summary H-Transactions	*		ces with multi-threads to boost perfo	rmance. The static resources refer to resources that exist on the Web iles. Note: This setting is available for Web application only.
Local Database		Application Name	Maximum Threads	
Web Browser		acf	2	2
		<u>codeexamples</u>	2	2
Performance		order	2	2
<u>Multi-Thread Download</u> Application Server Cache		sales	2	2
□ DataWindow Data Cache ⊡ Client Security		sapteched	2	2
		youhoops	2	2

Figure 5.98: Multi-thread Download

Click the application name in the **Multi-thread Download** table, and then enter a number in the **Maximum Threads** text box, and then click **Save**.

Figure 5.99: Maximum Threads

	<u>AEM Console</u> > <u>Application</u> > <u>Data Transfer</u> > <u>Multi-Thread Download</u> > [sales_application_demo]									
	Maximum Threads Specify the maximum number of download threads for the application. The valid number must be within the range from 1 to 6; the default value is 2.									
Specify the maximum number of download threads for the application. The valid number must be within the range from 1 to 6; the default value is 2. Maximum Threads:										
									Save	

Before setting the thread number, you should take full consideration of the network condition where the application will be running, and the capability of the Web server that supports the application -- whether the network and the Web server can support a large number of threads at the same time without jeopardizing the overall performance.

It is your choice to set the thread number from 1 to 6 based on the available network condition.

5.4.8.2 Application Server Cache

Note: This tool is available for Web applications only.

Every time a Web application starts, Appeon Server loads the DataWindow syntax and embedded SQLs of the application to its memory. If Appeon Server is supporting multiple applications and loads all the syntax and SQLs of the applications into the memory, too much server memory is consumed, which results in a performance reduction of all applications.

AEM provides the Application Server Cache tool for you to leverage Appeon Server resources and make sure it has enough resources for supporting important applications.

5.4.8.2.1 What is Application Server cache?

An Application Server cache is a portion of Appeon Server memory that is allocated for temporarily storing DataWindow syntax and embedded SQLs of an application.

Depending on the cache size specified for an application, Appeon Server loads part or all of the application DataWindow syntax and embedded SQLs when the application starts. If Appeon Server only loads part of the DataWindow syntax and embedded SQLs of an application to the cache, the application runtime performance is affected because Appeon Server needs to read certain DataWindow syntax and embedded SQLs from the database instead of reading from the memory.

Make sure that the cache size is large enough for essential applications and those frequently accessed by users. If the Appeon Server memory is tight, you can consider decreasing the cache size for minor applications.

5.4.8.2.2 Modifying the Appeon Server cache settings for an application

In the **Application Server Cache** table, the **Cache** column shows the Appeon Server cache size allocated for the corresponding application, while the **Cache Usage** column shows how much cache the application currently occupies in the Appeon Server memory.

Figure 5.100: Application Server Cache

AEM Console		<u>Welcome</u> > <u>Application</u> > <u>Pe</u>	erformance > A	pplication Server	rCache	
r Welcome ⊕-Server ⊖Application ↓Configuration Summary	*	Application Server Cache Specifies the size of Appeon Ser	rver cache, which s	tores DataWindow sy	ntax and SQL statements.	
Transactions Local Database		Application Name	Cache (MB)	Cache Usage (KB)		
⊕ PB Features		acf	3	0.000		
Web Browser Client Features			<u>codeexamples</u>	3	0.000	
⊕ Data Transfer ⊡ Performance			order	3	0.000	
Multi-Thread Download			sales	3	0.000	
<u>Application Server Cache</u> DataWindow Data Cache		sapteched	3	0.000		
E-Client Security		<u>vouhoops</u>	3	0.000		

Take the following steps if you want to change the cache size for an application:

Step 1: Click an application listed in the **Application Server Cache** table. A new page opens and displays the current cache setting for the application.

Figure 5.101: Modify Cache Setting

1	<u>Welcome > Application > Performance > Application Server Cache > [codeexamples]</u>									
	Cache Size Modification									
	Please specify the cache size for storing the DataWindow syntax and SQL statements of the application. The default size is 3 MB. Setting the size to "0" means that no cache is available for the application. Setting the size to less than "0" means that the cache size has no limit.									
	Cache size: 3 MB									
	Save									

Step 2: Modify the cache size. You can:

• Set the size to a figure bigger than "0". By default, the cache size is 3MB. This is suitable for a common application.

For example, suppose there are two applications, appA (which is less important) and appB (which is important). You can set the memory limit for appA as 3MB, and set the memory limit for appB as 10MB. If the client runs appA, Appeon Server loads a maximum of 3MB syntax and SQL into its memory; if the client runs appB, Appeon Server loads a maximum of 10MB syntax and SQL into its memory. If the actual size of appA syntax and SQL is very large (more than 10MB), the running of appA will not affect the running of appB.

• Set the size to "0", which means that no cache is available for loading DataWindow syntax or Embedded SQLs. Appeon Server always reads the DataWindow syntax and embedded SQLs from the database.

• Set the size to less than "0" (-3, for example), which means that the cache has no limit. Appeon Server will load all the DataWindow syntax, DataWindow SQLs, and Embedded SQLs of the application into the cache.

Setting the size to "0" is not recommended because it will result in slow performance. If the server has enough memory and the number of the deployed applications is less than 10, it is recommended that you set the size for all applications to less than "0". If the server does not have enough memory, but it contains many deployed applications, it is recommended that you set all important applications, as well as applications using many DataWindows and Embedded SQL, to less than "0" or much higher than 3M. Keep all other applications at the default setting.

Step 3: Click the **Save** button to save changes.

5.4.8.3 DataWindow Data Cache

You can configure the **Dynamic-DW SQL Cache** settings and the **DataWindow Object Cache** settings for a particular application under this the **DataWindow Data Cache** tool.

Figure 5.102: DataWindow Data Cache

AEM Console	Ŋ	Welcome > <u>Application</u> > <u>Perfor</u>	<u>mance</u> > Data	Window Data (Cache	
Welcome Server Application Configuration Summary		DataWindow Data Cache Settings Data retrieved into DataWindow objects can be cached at the Web server or the client to improve performance and scalability.				
Transactions Incal Database		Application Name	Server Cache	Browser Cache	Dynamic-DW SQL Cache	
PB Features		acf	No	No	Yes	
Web Browser Client Features		<u>codeexamples</u>	No	No	Yes	
⊞-Data Transfer ⊟-Performance		order	No	No	Yes	
Multi-Thread Download		sales	No	No	Yes	
Application Server Cache DataWindow Data Cache		sapteched	No	No	Yes	
Client Security		vouhoops	No	No	Yes	

5.4.8.3.1 Dynamic-DW SQL Cache

Dynamic-DW SQL Cache tool specifies whether to cache the "select *" syntax or and syntax of this type for dynamic DataWindow objects. If the "select *" syntax is cached, it will boost performance, but it will not be refreshed when the table structure changes dynamically.

Step 1: Click on the application you intend to configure on the **DataWindow Data Cache** page.

Step 2: In the **Dynamic-DW SQL Cache** table, configure whether to cache the "select*" syntax or syntax of this type or not, as shown in the following figure.

Figure 5.103: Dynamic-DW SQL Cache

```
Dynamic-DW SQL Cache

Specifies whether to cache the "select *" syntax or syntax of this type for dynamic DataWindow objects. When selecting "YES", "select *" syntax is cached; it will boost

performance, but it will not be refreshed when the table structure changes dynamically. When selecting "NO", the syntax of this type will not be cached. Note: Normal

cache functionalities of other types of sql syntax (not including "select *" syntax) will not be influenced by these configurations.

© Yes © No
```

5.4.8.3.2 DataWindow Object Cache Settings

You can apply the DataWindow Data Cache tool to cache DataWindow data that are frequently used on the Appeon Server and/or the client.

- DataWindow Data Cache at the Appeon Server stores the data in the memory. The cached data will be available unless the server memory is cleared (for example, by restarting the server)
- DataWindow Data Cache at the client stores and encrypts data in the Temporary Files folder of the Internet Explorer. The cached data will be available unless the Temporary Files folder is emptied.

Therefore, this tool can significantly reduce server load and network traffic, boosting performance and scalability.

Important:

1) DataWindow Data Cache is unsupported for Informix and Oracle 8i (though supported for Oracle 9i, 10g, and 11g) databases.

2) Disable DataWindow Data Cache in AEM if the application is set to the Test Mode in the Run Mode setting.

3) Do not cache DataWindows whose SQL statements contain non-table related expressions and the result of the expressions is dynamically generated. If these DataWindows are cached, the display result on the Web or on the mobile may be different from that in PowerBuilder.

4) DataWindows created dynamically cannot cache data on the Appeon Server. Even though the Cache tool is enabled for such DataWindows, data will still be retrieved from the database.

5) DataWindow Data Cache at the Appeon Server or at the client will not be effective until you fulfill all the configuration requirements described in the following sections:

- Configuration required for database servers
- Configuration required for Web servers (for Web server cache only)
- Configuration for DataWindow Data Cache in AEM

6) There is a restriction on the database table where a cache-enabled DataWindow retrieves data: the first twenty characters in the table name must be different from those in the other tables in the database. If the first twenty characters in two tables are the same, the Cache tool cannot correctly identify the table that the DataWindow uses.

7) The DataWindow Data Cache tool works with Web servers running on Windows (such as the Apache Web server running on Windows), and does not work with Web servers running on Unix\Linux (such as the Apache Web server running on Solaris).

Configuration required for database servers

Appeon specially provides SQL files for the supported database servers (except Informix). You need to **execute** the SQL file of a database server for the server to support the DataWindow data-caching feature.

Note: DataWindow data-caching feature is unsupported for Informix, MySQL, Teradata, HANA, and PostgreSQL.

The following table lists the SQL file that should be executed for the supported database server. The SQL files reside in the %appeonserver%\sql\cache\ folder, where %appeonserver

% indicates the Appeon Server installation directory, for example, C:\Inetpub\wwwroot \appeon.

Database Type	SQL File
Oracle	To enable this feature, execute install_appeon_cache_ORACLE.sql.
	To disable this feature, execute uninstall_appeon_cache_ORACLE.sql.
Microsoft SQL Server	To enable this feature, execute install_appeon_cache_MSSQL.sql.
	To disable this feature, execute uninstall_appeon_cache_MSSQL.sql.
ASE	To enable this feature, execute install_appeon_cache_ASE.sql.
	To disable this feature, execute uninstall_appeon_cache_ASE.sql.
ASA/SQL Anywhere	To enable this feature, execute install_appeon_cache_ASA.sql.
	To disable this feature, execute uninstall_appeon_cache_ASA.sql.
SAP IQ	To enable this feature, execute install_appeon_cache_IQ.sql.
	To disable this feature, execute uninstall_appeon_cache_IQ.sql.
DB2	To enable this feature, execute install_appeon_cache_DB2.sql.
	To disable this feature, execute uninstall_appeon_cache_DB2.sql.

Table 5.8: SQL files for each database server

Important notes:

- 1. The SQL file for Oracle database does not work with 8i databases, though it works with 9i, 10g, and 11g databases.
- 2. Executing the SQL files provided by Appeon is the same as executing any other SQL files, but you need to be aware of the following notes:
 - If a database server has multiple users, executing the SQL file under the login of one user will be effective for that user only. To make sure all users can use the DataWindow data-caching feature, you should use different logins to execute the SQL file.
 - When you execute the SQL for a database server, the current login user of the server must have the right to execute stored procedures and create functions.
 - There are two ways to execute SQLs in a database server from the database server console or from the command line. Sometimes one way will fail while the other works. For example, executing the SQL for Microsoft SQL Server from the command line may result in "parameter -D" error, while executing the SQL from the server console is successful, if the server computer has both Microsoft SQL Server and SAP ASE server installed.

Configuration required for Web servers

The configuration of Web server is required for Web server cache only.

If the application server is also used as the Web server, you do not need to do any special configuration, and the DataWindow data-caching feature is automatically enabled for the Web server.

If you use a third-party Web server as the Web server, you need to configure Web server for the DataWindow data-caching feature. For detailed instructions, refer to the Web Server Configuration Guide in Appeon Help.

Configuration required for AEM

This section takes the sales_application_demo as an example to show configuration in AEM that will enable the DataWindow Data Cache at the Appeon Server and/or the client.

Step 1: Select **Application** > **Performance** > **DataWindow Data Cache** on the left pane of the AEM Console. The DataWindow Data Cache page displays on the right pane of the Console.

Step 2: Click "sales_application_demo" listed in the "Application Name" column of the table. The sales_application_demo page displays.

Figure 5.104: DataWindow Data Cache for sale_application_demo

	<u>AEM Console</u> > <u>Application</u> > <u>Cache</u> > <u>DataWindow Data Cache</u> > [sales_application_demo]					
Ξ						
_	Dynamic-DW SQL Cache					
	Specifies whether to cache the "select *" syntax or syntax of this type for dynamic Dat performance, but it will not be refreshed when the table structure changes dynamicall cache functionalities of other types of sql syntax (not including "select *" syntax) will no	ally. When selecting "NO", the syntax of this type will not be cached.Note: Normal				
	◎ Yes ⑧ No					
Ξ						
	Application Cache					
	Data retrieved into DataWindow objects can be cached at the Web server or the clien performance and scalability.	Data retrieved into DataWindow objects can be cached at the Web server or the client. Caching can significantly reduce server load and network traffic, boosting performance and scalability.				
	Enable Cache 🔲 Server Side 🔲 Client Side (Browser)					
-	DataWindow Object Cache					
	DataWindow Object Cache DataWindow Object Cache					
	Save					

Step 3: In the **Application Cache** table, select the **Server Side** option or **Client Side** (**Browser**) option to enable the cache setting for the application DataWindows.

Step 4: In the **DataWindow Object Cache** table check the DataWindow object(s) on which you want to have the data-caching feature.

You cannot select different DataWindow objects for server cache and client cache, for example, you cannot select DataWindow object A for server cache only while object B for client cache only, instead, you should select object A and/or B for both.

Notes: 1) If a DataWindow object has a Child DataWindow object, its Child DataWindow will also be listed in the table. Checking either of them will enable the data caching for them both. 2) It is recommended that you check the DataWindow objects that do not have frequent data updates, and leave unchecked the DataWindow objects that have frequent data updates.

Step 5: Click the **Save** button to save changes.

5.4.9 Client Security

The Client Security tool in AEM is used to configure the User Authentication and Appeon Workspace securities. This tool is only effective when the <u>Security Toggle</u> is on in System Security.

Figure 5.105: Client Security

AEM Console		<u>Welcome</u> > <u>Application</u> > Client Security				
──Welcome	*	Client Security Contains the security se	attings for the deployed application and the Appeon Workspace client.			
Transactions Local Database		User Authentication	Enables or disables security on a per-application basis and assigns access privileges to various security groups defined in LDAP or the Group Management of AEM.			
PB Features Web Browser Client Features		Appeon Workspace	Enables or disables security on a per-application basis and assigns access privileges to various security groups defined in Appeon Workspace Group.			
Data Transfer Performance Client Security User Authentication Appeon Workspace						

5.4.9.1 User Authentication

User Authentication is a tool to configure the security of the Appeon deployed applications. All the deployed applications are listed in the tool and are configured individually.

Figure 5.106: Application Security

AEM Console	7	<u>Welcome > Application > Client Security</u> > User Authentication			
I Welcome III-Server III-Application	E	Application Security	e innored and the use	r will not be required to l	log in if the Security Toggle in System Security is
←Configuration Summary		set to Off. Application Name	·	User Authentication	log in it the decurity roggie in oyaich decurity is
Web Browser		sales	0	Security Off	
		acf	0	Security Off	
Performance		<u>codeexamples</u>	0	Security Off	
Client Security User Authentication		order	0	Security Off	
Appeon Workspace		sapteched	0	Security Off	
		<u>youhoops</u>	0	Security Off	

5.4.9.1.1 Viewing the current settings

1) View the current application security settings for all applications available in the User Authentication page.

- Application Name -- Lists the names of all the deployed applications. The names are automatically registered with AEM when an application is deployed by Appeon Developer to the Appeon Server.
- Configured Groups -- The number of groups with access rights to the Appeon Web or Appeon mobile application.

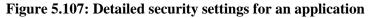
To view the names of the groups, click the link at the application name. To view details of the groups, go to the <u>Group Management</u> page.

• User Authentication -- Shows the security mode for the user authentication. This is only effective when the <u>Security Toggle</u> is on in System Security.

"Security on" explicates that the user will be prompted to enter the user name and password when accessing the selected application, while "Security off" requires no user name and password for the application access. You can click the link of an application

name listed in the User Authentication table and switch the security mode in the page that displays subsequently.

2) View the details of the current application security settings for a single application, by clicking an application. The detailed security settings for the selected application are displayed.



<u>Welcome > Application > Client Security> User Authenticati</u>	ion > [codeexamples]
User Authentication	
User Authentication: $\ensuremath{\overline{ oldsymbol{ O}}}$ Security Off $\ensuremath{\overline{ oldsymbol{ O}}}$ Security On	
Security Permissions	
If the Security Type is set to LDAP Security, all user groups configured in L Security, all user groups configured in Group Management will be listed b	
Unassigned Groups	Assigned Groups
Domain Admins	A
Enterprise Admins Group Policy Creator Owners	
HelpServicesGroup	
IIS_WPG Schema Admins	
sg T	-
30	

As the following table shows, different application security settings determine different security behaviors in an Appeon application.

User Authentication	A Given Group	Security behaviors in an Appeon application
Off	Assigned	All users can access to an Appeon application without
	Unassigned	being prompted for a user name or password.
On	Assigned	Users of an assigned group have access rights to a Appeon application and they are prompted for user names and passwords when loading an Appeon application.
		For offline applications, you are only prompted for user names and passwords when connecting to the database.
	Unassigned	Users of an unassigned group do not have access rights to the Appeon application.

Table 5.9: Application security settings and security behaviors in an Appeon application

5.4.9.1.2 Modifying the security settings of an application

The user can enter the security-setting page of the application by clicking an application name link on the User Authentication page.

With the LDAP security type selected, the security-setting page automatically loads the latest user and group information from the specified LDAP server. If changes are made to users and

groups at the LDAP server, you can use the *Refresh* button (on the Web browser toolbar) to include the latest update to the page.

With the Appeon security type selected, the security-setting page loads user and group information from AEM Group Management and User Management.

In this page, you are able to:

1. Skip the system login window when loading the application

Set the user authentication to **Security Off** in the Application Security group box. By default, the "Security Off" option is selected. This assumes that all users can access an application without user authentication.

2. Display the system login window before loading the application

Set the user authentication to Security On by selecting the Security On radio button.

3. Display a custom login window before loading the application

Set the user authentication to **Security Off** in the Application Security group box; keep the System Security setting as On and set the Security Type setting to LDAP Security in the System Settings tool; write codes in the PowerBuilder program to call "appeonldaplogon" function to display a custom login window for LDAP security login. For details, refer to Section 2.3.2.15, "AppeonLDAPLogon function" in *Workarounds & API Guide*.

4. Assign a group to the application

Select a group from the Unassigned Groups list. Click the forward button (>>>) to shift the group to the Assigned Groups list.

By default, all the groups are listed in the Unassigned Groups list. The groups are read from the Appeon Server (if the security type is Appeon security) or the LDAP server (if the security type is LDAP security) in use.

5. Unassign a group from the application

Select a group from the Assigned Groups list. Click the back button ("<<<") to shift the group to the Unassigned Groups list.

Click the **Save** button to apply changes.

5.4.9.2 Appeon Workspace

Figure 5.108: Appeon Workspace application security	Figure 5.108:	Appeon	Workspace	application security
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			-		
AEM Console		<u>Welcome > Application > Client Security</u> > Appeon Workspace			
Welcome Server Configuration Summary Transactions	*		, d below. Appeon Worksp		each application are configured individually. The security Mode in System Settings of AEM is set to
		Application Name	Configured Groups	User Authentication	
Client Features		sales	0	Security Off	
Data Transfer Performance Client Security User Authentication Appeon Workspace		acf	0	Security Off	
		codeexamples	0	Security Off	
		order	0	Security Off	
Hobile UI Resizing		sapteched	0	Security Off	
	«	<u>vouhoops</u>	0	Security Off	

5.4.9.2.1 Introduction to Appeon Workspace

Appeon Workspace is a free native mobile application which is publicly available on the online app store. As its name suggests, it is a workspace provided by Appeon to simplify distributing, running and managing the Appeon native mobile applications. In Appeon Workspace, you can download and run the Appeon native mobile applications conveniently, and can configure a number of settings for the application, such as log, title bar, etc. For detailed information on Appeon Workspace, please refer to the Appeon Workspace User Guide (Mobile only).

Since Appeon Workspace can install the native mobile application from Appeon Server, you may want different applications on the same Appeon Server to be installed by different mobile devices, for example, you may probably want application A to be installed by the mobile device from company A only, and application B by the device from company B only, etc. In such cases, you can take advantage of the Appeon Workspace security tools in AEM to control each application's access rights. You can follow these procedures to configure the tools:

- 1. Adding an Appeon Workspace client: see Adding an Appeon Workspace client for details.
- 2. Adding an Appeon Workspace group and assigning the client to the group: see <u>Adding an</u> <u>Appeon Workspace group</u> for details.
- 3. Enabling the Appeon Workspace security and assigning the app accessibility rights to the group: see <u>Setting Appeon Workspace security</u> and <u>Assigning access permissions</u> for details.

5.4.9.2.2 Setting Appeon Workspace Security

Appeon Workspace security settings for each application are configured individually.

Step 1: Click on an application name, and the Appeon Workspace page appears.

Figure 5.109: Configuring Appeon Workspace

<u>Velcome > Application > Client Security> Appeon Works</u>	<u>pace</u> > [codeexamples]
Appeon Workspace	
Appeon Workspace Security Settings: Security Off Security Settings: 	τίτγ On
Appeon Workspace Permissions	
All groups configured in Appeon Workspace Group are listed below.	
Unassigned Groups	Assigned Groups
AppeonTest	>>> \
<	<<
	Appeon Workspace Appeon Workspace Security Settings: Security Off Secur Appeon Workspace Permissions All groups configured in Appeon Workspace Group are listed below. Unassigned Groups AppeonTest

Step 2: Select the **Security Off** radio button to set the security off, or select the **Security On** radio button to set the security on. This is only effective when the <u>Security Toggle</u> is on in System Security.

If the security is set to On, only assigned users have rights to access the application.

5.4.9.2.3 Assigning access permissions

To assign access right of an application to a specific user group, click on the application. In the **Appeon Workspace Permissions** table, move the group you intend to assign access right to in the **Unassigned Group** list box to the **Assigned Group** list box.

If you want to deprive access right from a specific group, just move it from the **Assigned Group** list box to the **Unassigned Group** list box.

Note: For offline applications that start up offline (the startup mode is Offline), if the <u>Apppeon Workspace Security Settings</u> option is set to **Security On**, and if the application runs on an unassigned device, all operations that need to access the Appeon Server are forbidden.

5.4.10 Mobile App Distribution

5.4.10.1 Upload standalone mobile apps and Appeon Workspace

After you package a standalone mobile app or Appeon Workspace, you can upload the file to the Appeon Server and then send the download URL to your users. If you have uploaded an updated file to overwrite the existing file, your users will get automatically updated, as Appeon Workspace and the standalone mobile app will check for the updates and compare the version/build number once it connects with Appeon Server.

For how to package a standalone mobile app or Appeon Workspace, refer to Section 11.3, "Packaging a stand-alone mobile project" in *Appeon Developer User Guide* and Section 11.4, "Customizing and packaging Appeon Workspace" in *Appeon Developer User Guide*.

For how to make the auto-upgrade feature of Appeon Workspace and standalone mobile app to work, refer to Section 3.2.1, "Enabling auto-upgrade of Appeon Workspace" in *Appeon Workspace User Guide (Mobile only)*.

To upload the standalone mobile app and Appeon Workspace to the server:

Step 1: Select the installer type for the standalone mobile app or Appeon Workspace: APK (.apk) for the Android device, or IPA (.ipa) for the iOS device.

Step 2: Click **Browse** to select the installer file.

Figure 5.110: Upload the installer

Uploads stand-alon	e mobile projects or customized Appeon Workspace to Appeon Server, and manages their download URLs and QR codes.					
or APK installer to A	After you package a stand-alone mobile project or Appeon Workspace with the Appeon Developer Package tool, please deploy the generated IPA or APK installer to Appeon Server for distribution.When you upgrade Appeon Server, you shall re-package the project or Appeon Workspace, and Jeploy the new installer to Appeon Server to override the existing one. This way the version at mobile clients can be automatically upgraded.					
Installer Type	APK (for Android devices)					
Installer	Browse					
Upload						

Step 3: Click **Upload** to upload the selected file to the Appeon Server.

During this process, the file will be uploaded to the Appeon Server Web server, and will be deployed as a WAR file if Appeon Server is installed on top of JBoss, WebLogic, and WebSphere. The deployment process is automatic for JBoss, WebLogic (development mode), and JEUS, but **not** automatic for WebLogic (production mode) and WebSphere, in this case you will need to manually deploy it just as how you deploy the other applications.

If the "HTTP Error 404.13 - Not Found" error occurs during the upload process, resolve the error by following instructions in Section 4.4.6.1, "Blob data cannot be correctly manipulated if it is over 4MB" in *Troubleshooting*.

Once the installer file is uploaded successfully, the download URL and QR code of the installer will be available from the table below.

A built-in Appeon Workspace for the Android device (App Name: Built-in AWS) is provided by Appeon by default. You can view and change the download URL of this built-in Appeon Workspace but cannot remove it.

Figure 5.111: View and edit the installer information

Star	tand-alone Mobile Projects/Appeon Workspace Installers					
	Table below shows the latest versions of stand-alone mobile project or Appeon Workspace installers that exist in Appeon Server. You can distribute the download URL or QR Code to users.					
	App Name	For iOS/Android	Effective Build No.	APP ID	Deploy Date	Download URL/QR Code
	Built-in AWS	Android	8.0.1075.00		2016-08-30 11:24:33	<u>View/Edit</u>
	My Workspace	Android	8.0.1075.00	com.appeon.myworkspace	2016-08-30 11:24:46	<u>View/Edit</u>
R	Remove Checked Applications					

To get the download URL and the QR code of the installer:

Step 1: Click the **View/Edit** link of the installer in the table. You will be directed to the **Download URL or QR Code** page.

Figure 5.112: Download URL of the installer

Download URL	Download URL		
There is a default URL for the selected installer. If the default URL is not accessible by your users, you can update the server URL in it, and click Save. If you want to reset the URL to its default value, click Reset.			
App Name	My Workspace		
For iOS/Android	Android		
Effective Build No.	8.0.1075.00		
APP ID	com.appeon.myworkspace		
Deploy Date	2016-08-30 11:24:46		
Download URL	http://localhost:80/aws/packages/My_Workspace-com_appeon_my		
Reset Save			

Step 2: Make sure the download URL is accessible to your users. By default the IP address/ domain name and port number of Appeon Server will be used in the download URL of the installer.

You can change the download URL if the server IP or port number cannot be accessed by your users; or if you have set up another Web site to host the installer, you will need to manually copy the installer over and change the download URL to point to the correct location. Once you change the URL, click **Save** to save the change and refresh the QR code. For the Android installer, you should set the download URL of the APK file.

For the iOS installers, you should set the download URLs pointing to different files for different client types: for the installer to be downloaded and installed on the mobile device, you should set the download URL of the **PLIST** file in the **For Download on Mobile Devices** field; while for the installer to be downloaded to the Windows PC or Mac (and later synchronized to the mobile device via iTunes), you should set the download URL of the **IPA** file in the **For Download to iTunes on Desktops** field.

For the built-in Appeon Workspace, the download URL is bound to the Appeon Workspace download center by default; you can de-select the **Bind the above URL to Download Center** box to unbind them.

Figure 5.113: Download URL of the installer

	For Download on Mobile Devices:	http://localhost:80/aws/8.0.1062.00.plist	
Download URL	For Download to		
	iTunes on	http://localhost:80/aws/8.0.1062.00.ipa	
	Desktops:		

Step 3: Click the **Download** button to download the image file of the QR code in JPG/EPS/ SVG format and send the image file to your users, or click the **Copy QR Code to Clipboard** button to copy and embed the image of QR code in your download web page.

The end user can use a scanning tool to scan the QR code to directly download and install Appeon Workspace on their mobile devices.

Figure 5.114: QR code of the installer

Download or Copy QR Code		
Here is the QR code created for your se	election (Appeon Workspace or applications). Your users can scan the code using their Android or iOS devices.	
	Use the following HTML code to embed the QR code on your website.	
	<img <br="" height="200" id="ImageQrcode" src="GenerateImage.aspx?
c=http://localhost:80/aws/8.0.1026.00.plist&type=aws" width="200"/> align='middle' />	*
LELI PLESSYG	Copy QR Code to Clipboard	
Download		

5.4.10.2 QR code generation for mobile application(s)

You can also generate the QR code for those mobile apps that you deployed to Appeon Server using the Appeon Deployment Wizard. For how to deploy the mobile app using the Appeon Deployment Wizard, refer to Chapter 6, *Deploying PowerBuilder Applications* in *Appeon Developer User Guide*.

To generate the QR code for mobile application(s):

Step 1: In the **Web Server URL** field, input the IP address or domain name of the Web server where mobile apps are deployed.

Step 2: From the application list, select one or more mobile apps to be included in the QR code.

Step 3: Click the **Get QR Code** button to download or copy the QR code generated for the selected app(s).

Figure 5.115: QR code generation for apps (mobile only)

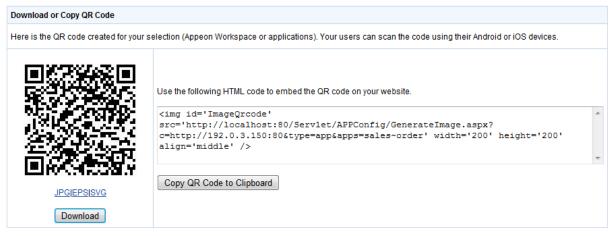
QR C	QR Code Generation for Applications (Mobile Only)					
	You can create QR codes for deployed applications, and distribute the codes to your mobile application users. The QR code created for application(s) carries one or more application URLs.					
Web	Server URL (IP or domain): http://192.0.3.150:80					
	Application Name					
V	sales					
	acf					
	codeexamples					
V	order					
	sapteched					
Ge	t QR Code					

To download or copy the QR code:

You can click the **Download** button to download the image file of the generated QR code in JPG/EPS/SVG format and send the image file to end users, or click the **Copy QR Code to Clipboard** button to copy and embed the image of QR code in your download web page.

The end user can open Appeon Workspace and use the scan tool in Appeon Workspace to directly download and install mobile application(s). For more about the scan tool in Appeon Workspace, refer to Section 4.1, "Adding applications" in *Appeon Workspace User Guide* (*Mobile only*).

Figure 5.116: Download or copy QR code of the installer



5.5 Mobile UI Resizing

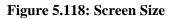
Mobile UI Resizing is a set of tools for configuring mobile devices and resizing application windows. There are two sets of tools: Screen Size and Window Size.

8				
AEM Console		Welcome > Mobile UI Resizing		
Welcome Server Application Mobile UI Resizing Screen Size Window Size	*	Mobile UI Resizing Configures the disp	play size and the resizing rules of the mobile screen and the application window.	
		Screen Size	Configures the screen size (measured in points) of the devices. Once a device is added successfully, you will not be able to change the screen details except for the Applicable Type field. The devices that Appeon have claimed to support cannot be deleted.	
		Window Size	Lists all the deployed applications and configures the resizing rules for each individual window in the application.	

Figure 5.117: Mobile UI Resizing

5.5.1 Screen Size

Screen Size is a tool for managing the Appeon-supported mobile devices. It allows adding, editing and removing devices. But those devices which Appeon Mobile claims to support cannot be modified or deleted. All the supported device screen size (measured in points) added are listed below.



AEM Console		Welcome > Mobile	UI Resizing > Scree	n Size			
"Welcome # Server # Application Hobile UI Resizing Screen Size	*	Screen Size Configures the screen size (measured in points) of the devices. Once a device is added successfully, you will not be able to change the screen details except for the Applicable Type field. The devices that Appeen have claimed to support cannot be deleted.					
Window Size						1/1	Previous Next 1 Go
		Actions	Screen Size (Points)	Status Bar Height (Points)	Applicable Type		
		📴 Edit 🛚 🖹 Delete	480*320	20	iPhone 4/4S & iPod Touch 4		
		🕑 Edit 🖹 Delete	568*320	20	iPhone 5 & iPod Touch 5 & iPhone 5s		
		🕑 Edit 🔹 Delete	640*360	20	samsung Galaxy		
		🕑 Edit 🖄 Delete	1024*768	20	iPad & iPad mini		
		🕑 Edit 🖄 Delete	1334*750	20	iPhone 6		
	~	📴 Edit 🖄 Delete	1920*1080	20	iPhone6 plus		
	Ľ	Add Device					

Click the **Edit** button to view the details of the device screen size.

Figure 5.119: Screen details

<u>Welcome > Mobile UI Resizing > Screen Size > View Device</u>
□ View Device
The details of the device screen are listed below.
Display Size : 1024 * 768 Points
Status Bar Height: 20.0 Points
Full Screen: 1024 * 748 Points (Landscape)
768 * 1004 Points (Portrait)
Applicable Type: iPad
Back

5.5.1.1 Adding a device

On the **Screen Size** page, the supported devices (measured in points) are configured by default, such as iPad 2/3/4/Mini/Air, iPhone 4/4S/5/5C/5S/6/6 Plus, iPod touch 4/5 etc. You can view the settings by clicking the associated **Edit** button, but cannot edit or delete these default devices.

You can also add a device which is not listed by default.

To add a new device, follow the following steps:

Step 1: Click Add Device, and the Add Device page appears.

Figure 5.120: Add a device

Add Device			
Specifies the device information.			
Display Size:	0	× 0	Points
Status Bar Height:	0.0	Points	
Full Screen:	0.0	× 0.0	Points (Landscape)
	0.0	× 0.0	Points (Portrait)
Applicable Type:			
Save and Add Save			

Step 2: On the Add Device page	, enter the following values:
--------------------------------	-------------------------------

Settings	Descriptions
Display Size	The size of the device screen.
	You should be able to get this information from the device specification provided by the manufacturers.
	Or you can use the device to access a deployed application and use the screen size that is automatically loaded.
	Refer to <u>Automatically adding a device to an application</u> for details.
Status Bar Height	Height of the system status bar.
	a. iOS devices : The status bar is 20 points high.
	b. Android devices : The status bar height is subject to the devices. Developers may need to write scripts to get the height first.
	The height of the system status bar will be automatically deducted when calculating the available screen space for the application window.
Full Screen	The full screen size will be calculated automatically once you input the above values.
Applicable Type	Enter the device types that the specified size support.

Step 3: Click the **Save** button to add the device or click **Save and Add** to save the device and begin to add another one.

5.5.1.2 Editing a device

You can always edit the applicable type of devices of an added device on the Edit Device page in AEM.

To edit an added device:

Step 1: click Edit, and make the changes you intend to on the Edit Device page.

Figure 5.121: Edit a device

7	<u> Velcome</u> > <u>Mobile UI Resizin</u>	ng > <u>Screen Size</u> > Screen Details
Ξ	Edit Device	
	The details of the device screen ar	e listed below.
	Display Size:	1920 × 1080 Points
	Status Bar Height:	0 Points
	Full Screen:	1920 × 1080 Points (Landscape)
		1080 × 1920 Points (Portrait)
	Applicable Type:	Galaxy Note 3
	Save	

Step 2: Click **Save** to save the changes.

5.5.1.3 Deleting a device

To delete a device, click **Delete**, and then click **OK** to confirm the deletion in the popup dialog box.

5.5.2 Window Size

When you are developing an application for mobile device, you probably want to make it universal and run on various mobile devices, such as iPad, Android tablets etc. There are basically two ways to achieve this:

- Method 1: Resize the windows and controls at runtime to fit with the various screen sizes. You will be required to remember all these screen sizes, and write code to resize the windows and controls.
- Method 2: Use this Window Resizing tool to automatically scale the windows and its UI controls (except for controls in DataWindow objects) to fit with a wide range of mobile devices. This tool works especially well if the mobile devices have similar screen sizes, such as iPad and the Android tablets, or iPhone and the Android smart phones. See this section for details.

AEM Console		Welcome > Mobile UI Re	esizing > Window Size				
I [—] Welcome III-Server III-Application III-Mobile UI Resizing	*	Usts all the deployed applic	Window Size Lists all the deployed applications and provides the configuration for each individual window in an Appeon mobile application.				
Screen Size Window Size		Application Name	Number of Windows	Number of Configured Devices			
		acf	0	0			
		codeexamples	0	0			
		order	0	0			
		sales	50	3			
		sapteched	0	0			
		<u>youhoops</u>	0	0			

Figure 5.122: Window size

5.5.2.1 Configuring size for all windows

Click on the application name you want to configure, and the Screen Size table appears.

Figure 5.123: Screen size list

Screen	Size			
Configu	ires to automatically adjust the size (of all windows of the current application)n.	
			1/1 Previou	s Next 1 Go
	Screen Size (Points)	Status Bar Height (Points)	AutoFit	Applicable Type
	480*320	20	PB Design Values 💌	iPhone 4/4S & iPod Touch 4
	1024*768	20	PB Design Values	iPad

In the Screen Size table, you can:

1. **Add a device**: Click the Add button and select a device from the dropdown list box that appears.

The devices that Appeon claims to support and that you specified in <u>Screen Size</u> are listed for choices.

Automatically adding a device for an application

When a mobile device accesses the deployed application, the device will be automatically registered and the device screen size will be saved into the **Screen Size** table for the application if it is not registered. If the application UI is not properly displayed on a particular device, you can configure the window size for this particular device.

- 2. **Delete devices**: Check the checkboxes associated to the device(s) you want to delete and click **Delete**.
- 3. **Configure size for all windows**: You can specify one of the autofit modes which will automatically adjust all windows of the application from the AutoFit dropdown list box associated with the device, as shown in the following figure.

Figure 5.124: Autofit mode

AutoFit					
PB Design Values	•				
AutoFit to Full Width	┱				
AutoFit to Full Height					
AutoFit to Full Screen					
PB Design Values					

The modes and the corresponding descriptions are listed in the following table.

Mode	Descriptions
PB Design	Windows will be displayed in the original size on the target device.
Values	This means windows will not be scaled, if the window is wider and/or longer than the screen, you would need to scroll to view the remaining part.
AutoFit to Full	Windows will be displayed in full screen in the X direction only.
Width (X axis)	This means, windows will be scaled up or down in both the X and Y direction, until they reach the same width as the device screen, but probably not the same height, therefore, if the window is higher than the screen, you will need to scroll vertically to view the remaining part of the window.
AutoFit to	Windows will be displayed in full screen in the Y direction only.
Full Height (Y axis)	This means windows will be scaled up or down in both the X and Y direction, until they reach the same height as the device screen, but probably not the same width, therefore, if the window is wider than the screen, you will need to scroll horizontally to view the remaining part of the window.
AutoFit to Full	Windows will be displayed in full screen in both the X and Y directions.
Screen (X & Y axis)	This means windows will be scaled up or down to have the same height and the same width as the device screen, therefore, you can view the entire window and all of its controls in the device screen without needing to scroll.

Table 5.10: Autofit mode

Select one mode from the AutoFit options, and then click Save.

Once you have clicked **Save**, all windows of the application will be adjusted automatically by the selected mode.

Note: if new windows are added to the application, you will need to click **Save** again to manually apply the selected autofit mode to the new windows, otherwise, the new windows will be displayed in the original size (the PB design values), not in the selected autofit mode.

5.5.2.2 Configuring size for an individual window

After you set the autofit mode for the application, all windows of the application will be adjusted by the selected mode, if any window needs to be adjusted differently, you can proceed to configure the size of each individual window in the **Windows List** table.

In the **Windows List** table (**AEM** > **Mobile UI Resizing** > **Window Size** > *Application Name*), all windows of the application is listed by default, including its original size in PB and the size in the selected device(s).

licks the window name to configure the size of each individual window. All the windows of the current applications are listed below.					
Show All Windows	v All Windows v Window Name Filter Previous 1/20 Next 1 Go				
Window Name	PB (PBU)	iPad (Points)	iPhone 4/4S & iPod Touch 4 (Points)	iPhone 5 & iPod Touch 5 (Points)	
<u>w 9k</u>	2350.0*1680.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w about	1659.0*804.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w ancestor one dw	2505.0*1456.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w blobtype	2181.0*1696.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w button report	2606.0*1728.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w by copyreference	2441.0*1744.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
<u>w call track</u>	2606.0*1580.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w callcom	2862.0*1780.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
<u>w calldl n tier</u>	2857.0*1768.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	
w calldotnet	2862.0*1780.0	Same Size as in PB	Same Size as in PB	Same Size as in PB	

Figure 5.125: Windows List

The size in the selected device(s) is determined by the selected autofit mode by default. When the autofit mode is changed, the size in the selected device(s) changes accordingly. For example, if you set the autofit mode to "Design value in PB" for iPad in the Device List table, then "Same size as in PB" will be displayed in the iPad column in the Window List table. If you configure the size of the individual window, then the new size for that window will be displayed.

View windows: You can select a search criteria from search field dropdown list box to narrow down your search area or/and input a keyword in the **Window Name** text box, and then click **Filter** to view windows that meet your request. You can also use page navigator on the top right of the Window List table to view the windows.

Restore defaults: You can revert all the windows to default by clicking the **Restore Defaults** button at the bottom.

To configure an individual window of the application, do the following:

Step 1: In the Window List table, click on the window you intend to configure.

In the **Window Size Configuration** table that displays, you will see a device screen simulator in which you can preview how the window will be displayed and adjust its size. Now you are ready to resize the window in the screen emulator:

Figure 5.126: Screen emulator

1	<u>Welcome > Mobile UI Resizing > Window Size > [codeexamples] > w_about</u>						
Ξ	Window Size Configuration Manually adjusts the window size in the screen Emulator or clicks the full screen button (second from right) to automatically set the window size.						
	1024*768	Applicable Type					
	480*320	iPad	14 0 ↔ \$ ☆ ⊡ 🖽				
	568*320	Screen Information Screen Size: 1024*768 (Points) Status Bar Height: 20 (Points) Window Information Width: 711 (Points) Height: 393 (Points) Scale proportionally Save as Default Window Configuration (The aspect ratio of the current window which haven't been configured.)					

Step 2: Select a device name from the left column. The device(s) added to the Screen Size table are displayed. You need to configure the window size for each device separately.

Step 3: Select a displaying orientation (in landscape or in portrait) by clicking the orientation

icon (**1**). You need to configure the window size for each orientation separately.

Step 4: (Optional) enable the proportional scale by either clicking the proportional icon

() or check the **Scale proportionally** checkbox. We kindly recommend that you keep this enabled to avoid window deformations.

Step 5: Use one of the following to resize the window:

- Drag the corner of the window in the screen emulator; or
 - Click the full width icon (), the full height icon (), the original screen icon

), or the full screen icon () above the screen simulator; or

• Input the desired numbers in the **Width** and the **Height** text box under **Window Information** respectively.

The new size and the window coordinates (X & Y axis) will be displayed simultaneously.

Step 6: (Optional) if you want to apply the new size to the remaining windows, check the **Save as default window configuration** check box.

Step 7: Either click the save icon () above the screen simulator or the **Save** button at the bottom to save all the settings.

You will not be able to save the window size, if AEM prompted "Current aspect ratio will lead to window deformation!". AEM performed detection immediately after the window is resized, to help prevent the window and control being stretched or shrunk unreasonably.

Notes:

1. Dragging the screen emulator to change a window coordinates does not work on windows that are opened using OpenSheet().

2. Windows that are configured using the Window Size tool may look differently on a device (such as an iPad) and in Appeon Workspace Emulator in UI.

- On devices: The window, controls in the window, and texts will be scaled accordingly; other elements, such as pictures, will not be scaled.
- In Appeon Workspace Emulator: The window and controls in it will be scaled accordingly; all elements, such as text, in the controls will not be scaled.

Index

A

About This Book, 1 active sessions, <u>99</u> active transaction, 101 Adding a new group, 130 Adding a new user, 126 Adding a transaction object mapping, 141 Adding an Appeon Server, 107 additional configuration for status monitor in cluster, 17 AEM Help, 98 AEM language, 97 AEM login, <u>124</u> AEM Tools, 95 AEM URL, 96 AEM User Guide, 95 AEM user name and password, 97 Allow user to select run mode, 159 Appeon Server status monitor, 9 Appeon Workspace, 179 Appeon Workspace Client, 127 Appeon Workspace Group, 132 Application, 138 Application Security, 90 application security, Application Server Cache, <u>171</u> Application Title, 156 Audience, 1

С

Charset, 164 Charset options given in the Charset fields, 165 Checking status of Appeon Server, 109 Client Features, 156 Client Logs, 161 client security, 177 Client Storage Location, 160 Cluster, 106 Cluster Server List, 107 Configuration Backup, 112 Configuration during application deployment, 5 Configuration during debugging, 6 Configuration during performance management, 6

Configuration during security management, 6 Configuration during server information management, 7 Configuration for emergency control, 7Configuration required for AEM, <u>176</u> Configuration required for database servers, 174 Configuration stages and tasks, 4Configuration summary, 138 configurations related with database connection, 90 configure appeonmonitor.bat, 9 configure appeonserver.bat, <u>12</u> configure monitor.props, 14 Configure status monitor, 9 Configuring database Charset for a data source, 164 Configuring transaction object mappings, 140 conflict resolution mode, 151

D

data source parameters for ASE, 83 data source parameters for IBM DB2, 85 data source parameters for Informix, 86 data source parameters for Microsoft SQL Server, 84 data source parameters for MySQL, 86 data source parameters for Oracle, 85 data source parameters for PostgreSQL, 87 data source parameters for SAP ASA/SQL Anywhere, 81 data source parameters for SAP HANA, 84 data source parameters for SAP IQ, 83 data source parameters for Teradata, 87 Data Transfer, 163 Database Connection Setup, 20 database security, 90 DataWindow Data Cache, 173 DataWindow Object Cache Settings, 173 Decimal Precision, 151 Default run mode, 159 Deleting a group, <u>131</u> Deleting a user, 127 Deleting an existing transaction object mapping, 142 Deployment Security, 137 Deployment Sessions, 102

distributed application technique, <u>91</u> DLL/OCX Files, <u>149</u> Download timeout, <u>144</u> Dynamic transaction object to data source mapping, <u>89</u> Dynamic-DW SQL Cache, <u>173</u>

Е

Editing an existing group, <u>131</u> Editing an existing user, <u>126</u> Encoding, <u>169</u> Error Message Mode, <u>158</u> Exit mode, <u>160</u>

F

Failover Settings, 109

G

Group Management, <u>129</u> Group management, <u>130</u>

H

Heartbeat backup, $\underline{110}$ How to use this book, 1

I

IE browser interface, <u>155</u> IE Compatibility, <u>153</u> If you need help, <u>3</u> incorporate Appeon security in PowerBuilder code, <u>93</u> information backed up by status monitor, <u>17</u> INI file Mode, <u>147</u> INI files, <u>146</u> INI files, <u>148</u> install mode, <u>150</u> Installing Appeon Workspace, <u>97</u>

J

JDBC driver preparation, <u>21</u> JDBC requirement for transaction object mappings, <u>140</u>

K kill sessions and devices, <u>101</u>

L

LDAP Interface Settings, <u>135</u> LDAP Interface Settings in AEM, <u>136</u> Licensing, <u>113</u> Limitations, <u>135</u> Load Balancing Settings, <u>109</u> Local Database, <u>144</u> Log mode, <u>104</u> Logging, <u>103</u>

Μ

Maintenance, <u>111</u> mobile app distribution, <u>181</u> Mobile UI resizing, <u>184</u> Modifying an existing transaction object mapping, <u>142</u> Modifying the Appeon Server cache setting for an application, <u>172</u> Modifying the security settings of an application, <u>178</u> Multi-Thread Download, <u>170</u>

Р

Passing user ID/password to database from EAServer data source, <u>93</u> PB Features, <u>145</u> performance, <u>170</u> predefined data sources, <u>90</u> Product Activation, <u>113, 114</u>

R

Re-activation, <u>118</u> Re-configuring database auditing functionality, <u>94</u> Registry Mode, <u>145</u> Related documents, <u>1</u> Removing an Appeon Server, <u>108</u> Renew Support, <u>122</u> Replace log files, <u>105</u> Request timeout, <u>144</u> Resources, <u>106</u> Retina Display, <u>163</u> roll back active transaction, <u>102</u> Run Mode, <u>157</u> Running Appeon Server, <u>96</u>

S

scope of configurations, <u>4</u> Screen Size, <u>185</u> Security Toggle and Security Type, <u>135</u> Server, <u>99</u> server configuration task, <u>4</u> Server Security, <u>123</u> Session backup, 109 Session timeout, 143 Sessions, 99 set up connection cache, 26set up data source, 26set up data source for EAServer 6.x, 74 set up data source for JBoss, 55 set up data source for JEUS, 70 set up data source for NetWeaver, 67 set up data source for WebLogic, 26, 26, 34 set up data source for WebSphere, 40 set up data source for WebSphere 6.1, 40 set up data source for WebSphere 8.0, 44 set up data source for WildFly and JBoss EAP, 55 Start & Exit, 159 start status monitor, 18 Starting AEM, 96 Static transaction object to data source mapping, 90 Support, 122 Synchronizing AEM settings to servers in a cluster, 110 System Security, 134

Т

Three ways to launch AEM, <u>96</u> Timeout , <u>142</u> Transaction Objects, <u>140</u> Transaction timeout, <u>143</u> Transactions, <u>139</u>

U

understand information in status monitor window, <u>18</u> Upgrade license, <u>120</u> use INI files for connection security, <u>92</u> use status monitor server, <u>18</u> User and Group Management at LDAP server side, <u>134</u> User Authentication, <u>177</u> User Management, <u>125</u>, <u>125</u>

V

view active sessions, <u>100</u> view active transaction, <u>102</u> Viewing groups, <u>130</u> viewing logs, <u>103</u> Viewing the current settings, <u>177</u>

W

Web Application Auto Update, <u>157</u> Web Application Theme, <u>156</u> Web Browser, <u>153</u> Web service DataWindow, <u>152</u> What is Application Server cache, <u>171</u> what is connection cache, <u>20</u> what is data source, <u>20</u> window size, <u>187</u>