

Appeon Server Configuration Guide for .NET

Appeon® for PowerBuilder® 2016 (on .NET)
FOR WINDOWS

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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	4
2.2	Configuration stages and tasks	4
2.2.1	Configuration during application deployment	5
2.2.2	Configuration during debugging	5
2.2.3	Configuration during security management	6
2.2.4	Configuration during performance management	6
2.2.5	Configuration during server information management	7
2.2.6	Configuration for emergency control	7
3	Appeon Server Monitor	9
3.1	Overview	9
3.2	Launching Appeon Server Monitor	9
3.3	Configuring Monitors	10
3.3.1	General tab	11
3.3.2	Common Monitors tab	12
3.3.3	Recycle Monitor tab	14
3.3.4	Mail Settings tab	15
3.3.5	Log Settings tab	16
3.4	Understanding the information in monitor window	18
4	Database Connection Setup	20
4.1	Overview	20
4.2	What is Appeon Server data source?	20
4.3	Supported Database Drivers	20
4.4	Setting up Appeon Server data sources	21
4.4.1	Data source settings for ODBC driver	21
4.4.2	Data source settings for SQL Anywhere .NET Data Provider	22
4.4.3	Data source settings for Oracle native driver	24
4.4.4	Data source settings for SQL Server native driver	25
4.4.5	Data source settings for Informix native driver	25
4.4.6	Data source settings for MySQL native driver	30
4.4.7	Data source settings for ASE native driver	31
4.4.8	Data source settings for Teradata native driver	32
4.4.9	Data source settings for IBM DB2 native driver	33
4.4.10	Data source settings for PostgreSQL native driver	34
4.5	Setting up transaction object to data source mapping	35
4.5.1	Dynamic transaction object to data source mapping	36
4.5.2	Static transaction object to data source mapping	37
4.6	Advanced configurations related with database connection	37
4.6.1	Application security	37
4.6.1.1	Database security	38
4.6.1.2	Using INI files for connection security	38

4.6.2	Appeon security	39
4.6.2.1	Incorporate Appeon security in PowerBuilder code	40
4.6.2.2	Database auditing	40
5	AEM User Guide	41
5.1	Introduction	41
5.1.1	Overview	41
5.1.2	AEM Tools	41
5.1.3	Supported Web browsers	41
5.2	Getting started	42
5.2.1	Running Appeon Server	42
5.2.2	Starting AEM	43
5.2.2.1	AEM URL	43
5.2.2.2	Three ways to launch AEM	43
5.2.2.3	AEM user name and password	43
5.2.2.4	Installing Appeon Workspace	43
5.2.2.5	AEM language	44
5.2.3	AEM Help	45
5.3	Server	46
5.3.1	Sessions	46
5.3.1.1	Active Sessions	46
5.3.1.2	Active Transactions	48
5.3.1.3	Deployment Sessions	49
5.3.2	Logging	50
5.3.2.1	Viewing logs	50
5.3.2.2	Log mode	51
5.3.2.3	Replace log files	52
5.3.3	Resources	53
5.3.3.1	Cluster	53
5.3.3.2	Data Source	57
5.3.3.3	Maintenance	62
5.3.4	Product Activation	64
5.3.4.1	Licensing	65
5.3.4.2	Support	74
5.3.5	Server Security	75
5.3.5.1	AEM login	76
5.3.5.2	User Management	77
5.3.5.3	Group Management	81
5.3.5.4	User and Group Management at LDAP server side	86
5.3.5.5	System Security	86
5.3.5.6	Deployment Security	90
5.4	Application	91
5.4.1	Configuration Summary	91
5.4.2	Transactions	92
5.4.2.1	Transaction Objects	92
5.4.2.2	Timeout	94
5.4.3	Local Database	97
5.4.4	PB Features	98
5.4.4.1	Registry Mode	98

5.4.4.2	INI Files	99
5.4.4.3	DLL/OCX Files	102
5.4.4.4	Decimal Precision	104
5.4.4.5	Web service DataWindow	104
5.4.5	Web Browser	106
5.4.5.1	IE Compatibility	106
5.4.5.2	IE Browser Interface	108
5.4.6	Client Features	108
5.4.6.1	Application Title	109
5.4.6.2	Web Application Theme	109
5.4.6.3	Web Application Auto Update	109
5.4.6.4	Run Mode	110
5.4.6.5	Error Message Mode	111
5.4.6.6	Start & Exit	112
5.4.6.7	Client Storage Location	113
5.4.6.8	Client Logs	114
5.4.6.9	Retina Display	116
5.4.7	Data Transfer	116
5.4.7.1	Charset	116
5.4.7.2	Encoding	122
5.4.8	Performance	123
5.4.8.1	Multi-Thread Download	123
5.4.8.2	Application Server Cache	124
5.4.8.3	DataWindow Data Cache	126
5.4.9	Client Security	129
5.4.9.1	User Authentication	129
5.4.9.2	Appeon Workspace	132
5.4.10	Mobile App Distribution	133
5.4.10.1	Upload standalone mobile apps and Appeon Workspace	133
5.4.10.2	QR code generation for mobile application(s)	136
5.5	Mobile UI Resizing	137
5.5.1	Screen Size	137
5.5.1.1	Adding a device	138
5.5.1.2	Editing a device	139
5.5.1.3	Deleting a device	139
5.5.2	Window Size	139
5.5.2.1	Configuring size for all windows	140
5.5.2.2	Configuring size for an individual window	142
Index	145

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 Monitor

Describes how to configure and use Appeon Server 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 through 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 <http://www.appeon.com/support>.

2 Server Configuration Tasks

Server configuration for Web architecture is usually a daunting task that requires a wide range of server knowledge. The same rule applies to Apeon architecture. Apeon 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, Apeon Server is installed to IIS. A number of configuration tasks must be performed before an Apeon 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

Apeon architecture is a typical n-tier architecture that can provide development and runtime environments for both Apeon and non-Apeon applications. This book focuses on the configurations for supporting Apeon 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 therefore, will not be addressed in this guide.

Configurations specific to the functioning and performance of third-party servers in Apeon architecture may still impact the architecture. For example, indexing database tables has nothing to do with Apeon knowledge but can greatly improve the performance of an Apeon 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 Apeon 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.

Table 2.1: Server configuration stages

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.
Performance Management	Improving server performance.
Server Information Management	Managing server-related information.

Configuration During...	For the Purpose of ...
Emergency Control	Restarting Apeon 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 Apeon Enterprise Manager (AEM). AEM is a Web tool designed for managing Apeon 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.

Table 2.2: Configuration tasks during application deployment

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

2.2.2 Configuration during debugging

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

Table 2.3: Configuration tasks during debugging process

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 Apeon 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 Apeon architecture.

Table 2.4: Configuration tasks during security management

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 Apeon Web or Apeon mobile application to the selected groups.	Client Security
(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 Apeon Server.	Deployment Security

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 Apeon architecture, besides the tasks in the table, you must also follow instructions from the documents of all the related third-party servers.

Table 2.5: Configuration tasks during performance management

Task	Description	See section
(In AEM) Active Sessions	Monitor all active sessions in the system. Some sessions can be killed if necessary.	Active Sessions
(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.	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.	Apeon 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.	Multi-Thread Download
(In AEM) Encoding	Choose the proper encoding mode to reduce network traffic.	Encoding

2.2.5 Configuration during server information management

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

Table 2.6: Configuration tasks during server information management

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

2.2.6 Configuration for emergency control

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

Table 2.7: Configuration for emergency control

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

3 Appeon Server Monitor

3.1 Overview

Appeon Server Monitor is a small program installed along with Appeon Server, which contains four monitors: server state monitor, CPU usage monitor, memory usage monitor, and recycle monitor.

- Server state monitor automatically backs up Appeon Server session information, monitors if Appeon Server is in "running" status, and in the event that Appeon Server shuts down it automatically restarts Appeon Server and recovers the runtime information.
- CPU usage monitor and memory usage monitor detect the server resource usage, if the usage reaches the peak, they automatically back up Appeon Server session information, restart Appeon Server, and restore the session information.
- Recycle monitor automatically restarts Appeon Server periodically.

The monitor backs up Appeon Server session information that includes:

- User authentication information
- References to Appeon Server transaction components

The monitor does not back up:

- Information being processed in active transaction

Important note: to ensure the monitor runs successfully:

1. The version of Appeon Server Monitor must be the same as the version of Appeon Server.
2. Appeon Server's license must be Enterprise Edition.

3.2 Launching Appeon Server Monitor

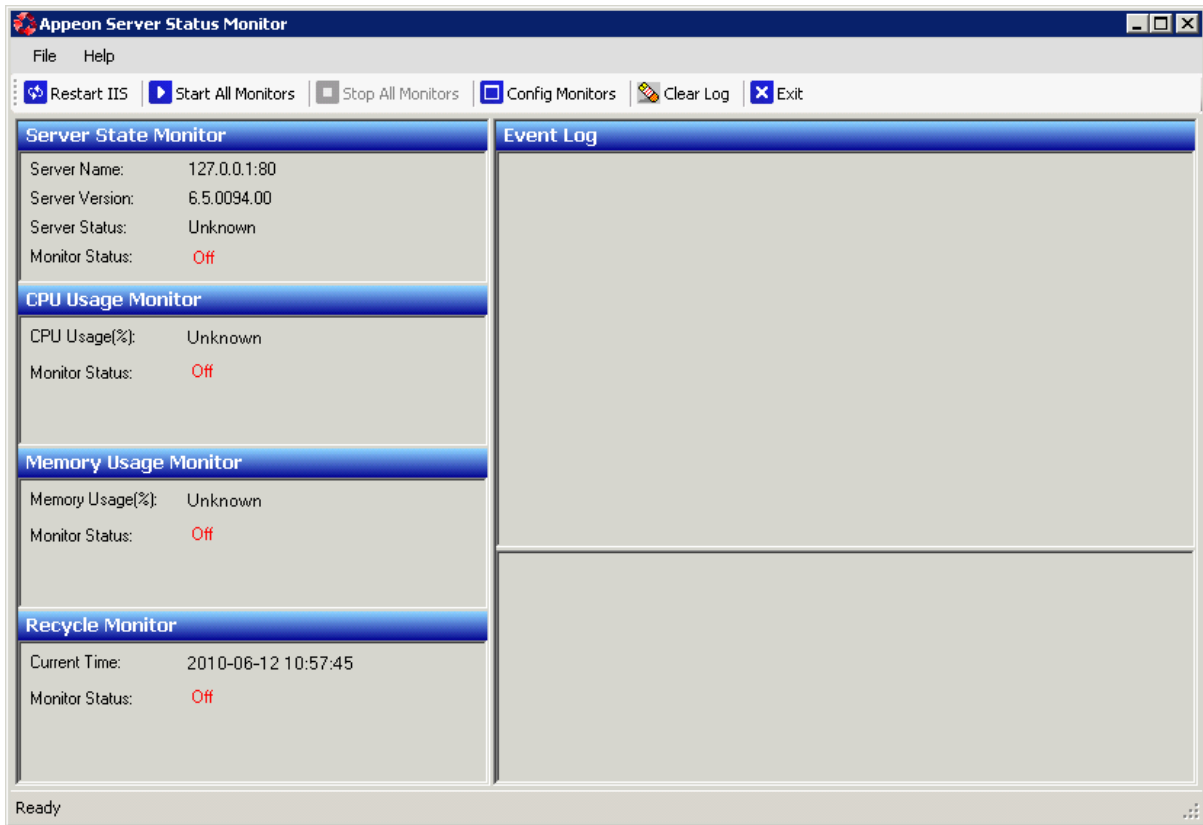
You can launch Appeon Server Monitor using either of the following methods:

Method 1: Launch Appeon Server Monitor from **Windows Start > Programs > Appeon for PowerBuilder 2016 > Appeon Server for .NET > Instances > %websitename% > Status Monitor**.

Method 2: Launch Appeon Server Monitor by running `%appeon%\Toolkit\status monitor \AppeonMonitor.exe`.

The Appeon Server Monitor main window is shown in the figure below. The status information of the four monitors would be displayed on the left, and the event log information would be displayed on the right. But before the information can display correctly, you would need to configure and run the monitors. See the following sections for details.

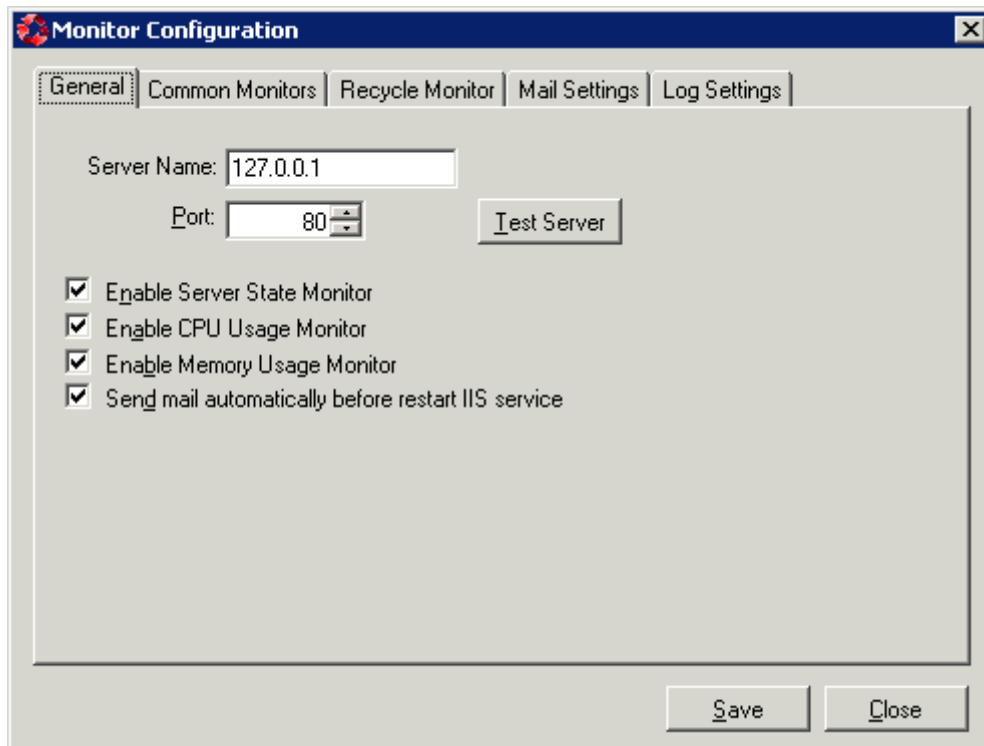
Figure 3.1: Appeon Server Monitor main window



3.3 Configuring Monitors

In the monitor's main window, click the **Config Monitors** button on the toolbar to open the Monitor Configuration window. The Monitor Configuration window provides five tab pages for you to configure the monitor settings.

Figure 3.2: Monitor Configuration window



3.3.1 General tab

In the **General** tab, you can configure the server IP and port, enable the server state monitor, CPU usage monitor, and memory usage monitor, and enable email notification.

Figure 3.3: General tab

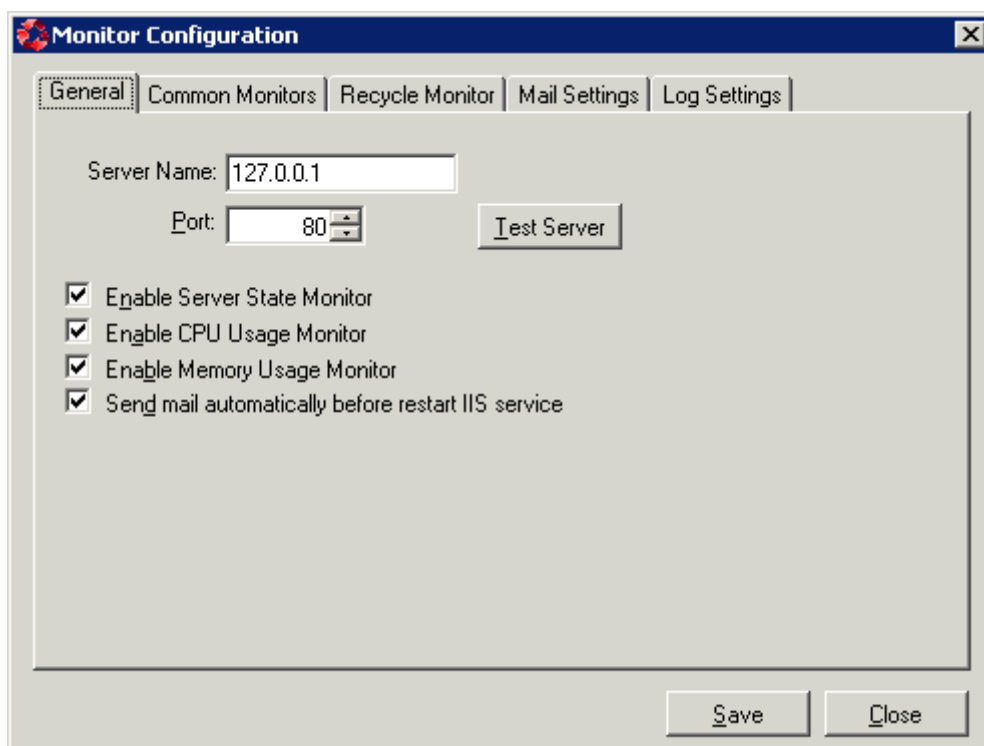


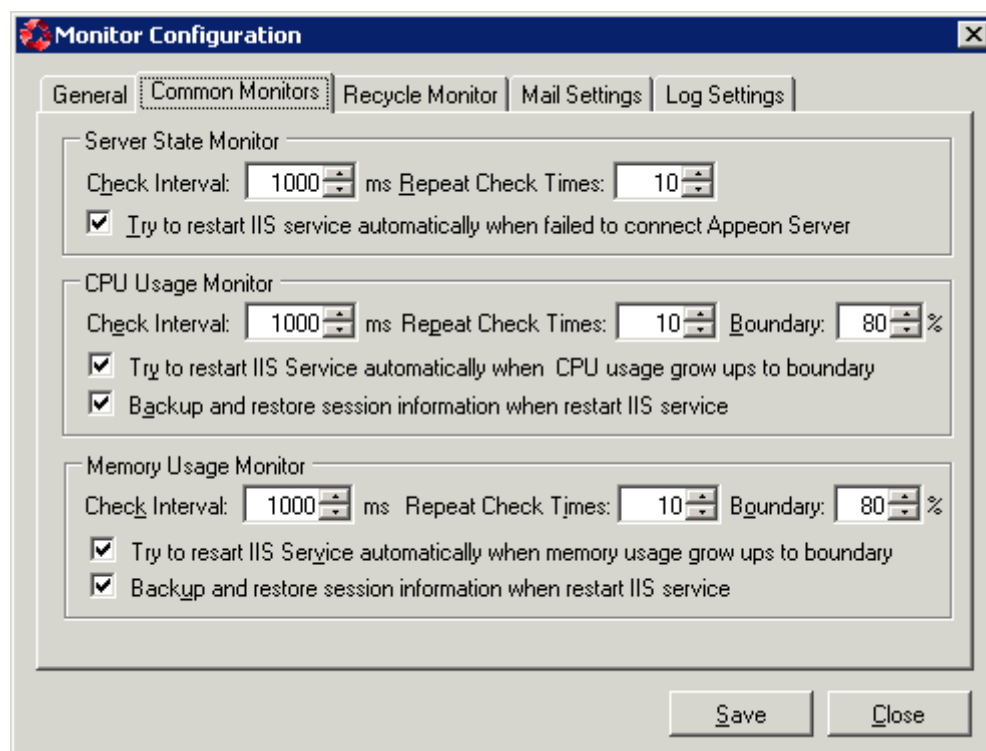
Table 3.1: Instructions

To...	Do this...
To specify the IP address and port of Appeon Server...	<p>Specify the IP address in the Server Name group box, and the port of IIS Web site where Appeon Server is installed, then click the Test Server button to test whether Appeon Server can be connected successfully.</p> <p>Appeon Server Monitor and Appeon Server must be installed to the same machine.</p>
To enable the server state monitor, CPU usage monitor, and memory usage monitor...	<p>Select the corresponding option:</p> <ul style="list-style-type: none"> • Enable Appeon Server Status Monitor • Enable CPU Usage monitor • Enable Memory Usage Monitor <p>If the option is enabled, you can configure the monitor in the Common Monitors tab (see Common Monitors tab for details); and you can then run the monitor from menu File > Monitor > Start ..., or by clicking the Start All Monitors button on the toolbar to run all of the monitors that have been enabled and configured properly.</p> <p>Recycle monitor is enabled and configured in the Recycle Monitor tab (see Recycle Monitor tab for detailed instructions).</p>
To send email notifying users that the IIS service is to be restarted...	<p>Select the Send mail automatically before restart IIS service option.</p> <p>If this option is enabled, and if email settings are configured properly in the Mail Settings tab (see Mail Settings tab for detailed instructions), notification emails will be sent to receivers automatically each time before IIS service is restarted.</p>

3.3.2 Common Monitors tab

The **Common Monitors** tab allows you to configure the server state monitor, CPU usage monitor and memory usage monitor, as shown in the following figure.

Only when the monitor is enabled in the **General** tab, you will be able to configure the settings in the **Common Monitors** tab, otherwise, the settings will be grayed out (not configurable).

Figure 3.4: Common Monitors tab

To configure the server state monitor:

Step 1: Specify the time interval that the monitor checks the server.

- **Check Interval:** The value represents the time interval the monitor detects the server. By default, the check time interval is 1000 milliseconds. The smaller the value is, the more precise the result is, but the more impact it has to the system performance.

Step 2: Specify the times that the monitor should successively detect that the condition to restart IIS service is met before it restarts the IIS service.

- **Repeat Check Times:** The value represents the times that the monitor successively detects that the condition to restart IIS service is met. When the value is reached, the IIS service will be restarted. For example, if the server state monitor detects for 10 times (default value) in succession that Apeon Server cannot be connected, it will restart IIS service.

This setting is to avoid the incorrect detection result due to accidental events.

Step 3: Select whether to restart IIS Service automatically when Apeon Server cannot be connected for the specified times in succession.

- **Try to restart IIS Service automatically when failed to connect Apeon Server:** If this option is enabled, IIS Service will be restarted automatically if server state monitor detects that Apeon Server cannot be connected for the specified times in succession.

To configure the CPU usage monitor and memory usage monitor, the steps are similar:

Step 1: Specify the time interval that the monitor checks the server.

- **Check Interval:** The value represents the time interval the monitor detects the server. By default, the check time interval is 1000 milliseconds. The smaller the value is, the more precise the result is, but the more impact it has to the system performance.

Step 2: Specify the times that the monitor should successively detect that the condition to restart IIS service is met before it restarts the IIS service.

- **Repeat Check Times:** The value represents the times that the monitor successively detects that the condition to restart IIS service is met. For example, if CPU usage monitor detects for 10 times (default value) in succession that the CPU usage has reached the boundary that is set, it will restart IIS service.

This setting is to avoid the incorrect detection result due to accidental events.

Step 3: Specify the maximum percentage of CPU usage or memory usage.

- **Boundary:** The value represents the maximum percentage of CPU usage or memory usage. By default, the boundary is 80%.

Step 4: Select whether to restart IIS Service automatically when CPU usage or memory usage grows up to the boundary that is specified.

- **Try to restart IIS Service automatically when CPU usage grows up to boundary:** If this option is enabled, IIS Service will be restarted automatically when the CPU usage monitor detects that the CPU usage has reached the boundary for the specified times in succession.
- **Try to restart IIS Service automatically when Memory usage grows up to boundary:** If this option is enabled, IIS Service will be restarted automatically when the memory usage monitor detects that the memory usage has reached the boundary for the specified times in succession.

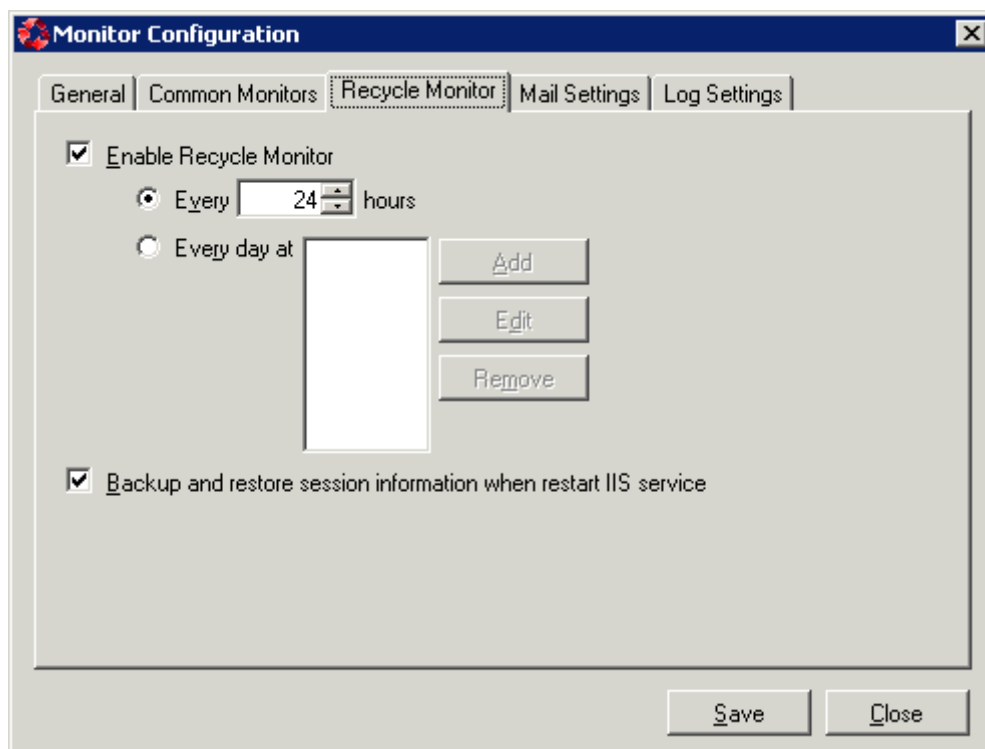
Step 5: Select to back up and restore session information when restarting IIS service.

- **Backup and restore session information when restart IIS service:** If this option is enabled, the monitor will back up the session information before restarting IIS service, and then restore the information after Apeon Server is successfully restarted.

3.3.3 Recycle Monitor tab

The **Recycle Monitor** tab allows you to configure how Recycle Monitor should work, as shown in the following figure.

Figure 3.5: Recycle Monitor tab



Step 1: Decide whether to enable recycle monitor.

- Enable recycle monitor: If this option is selected, the recycle monitor is enabled. You can then configure the cycle to restart IIS service automatically.

Step 2: Configure the time setting to restart IIS service automatically: by every _ hours, or every day at a fixed time.

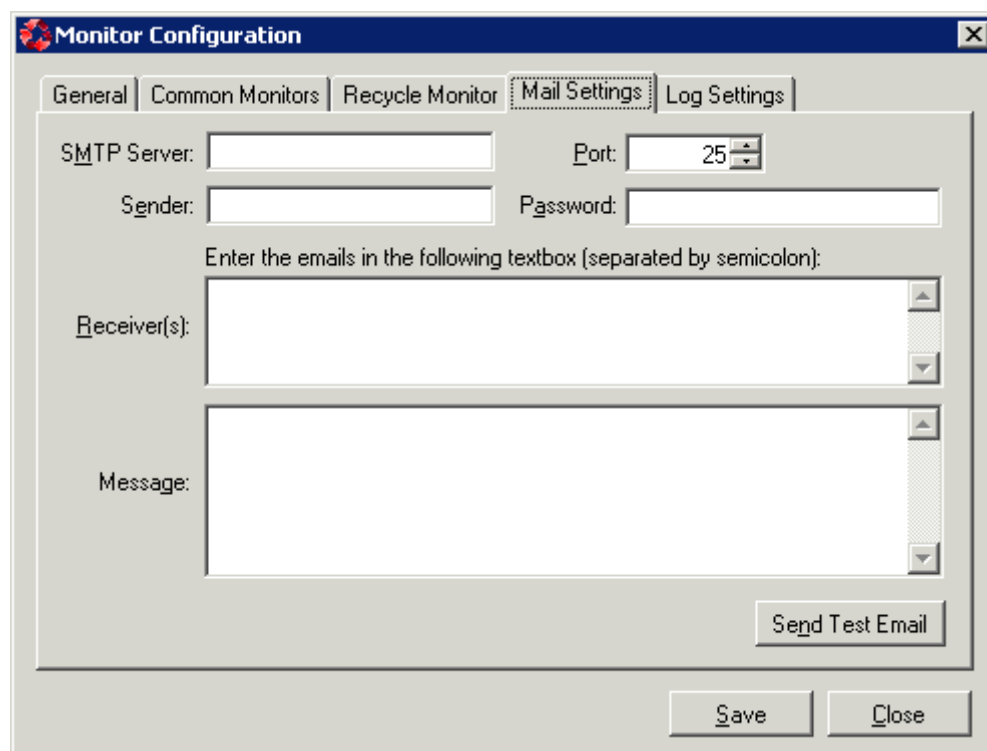
Step 3: Select to back up and restore session information when restarting IIS service.

- Backup and restore session information when restart IIS service: If this option is enabled, the monitor will back up the session information before restarting IIS service, and then restore the information after Appeon Server is successfully restarted.

3.3.4 Mail Settings tab

The **Mail Settings** tab allows you to configure the mail settings of sender and receiver(s) if you want the monitor to automatically send notification emails to users each time before the IIS service is restarted.

Figure 3.6: Mail Settings tab



Step 1: Make sure email notification is enabled, that is, make sure the **Send mail automatically before restart IIS service** option is selected in the **General** tab.

Step 2: Configure the email settings in the **Mail Settings** tab.

The following table describes how to configure the settings.

Table 3.2: Mail settings

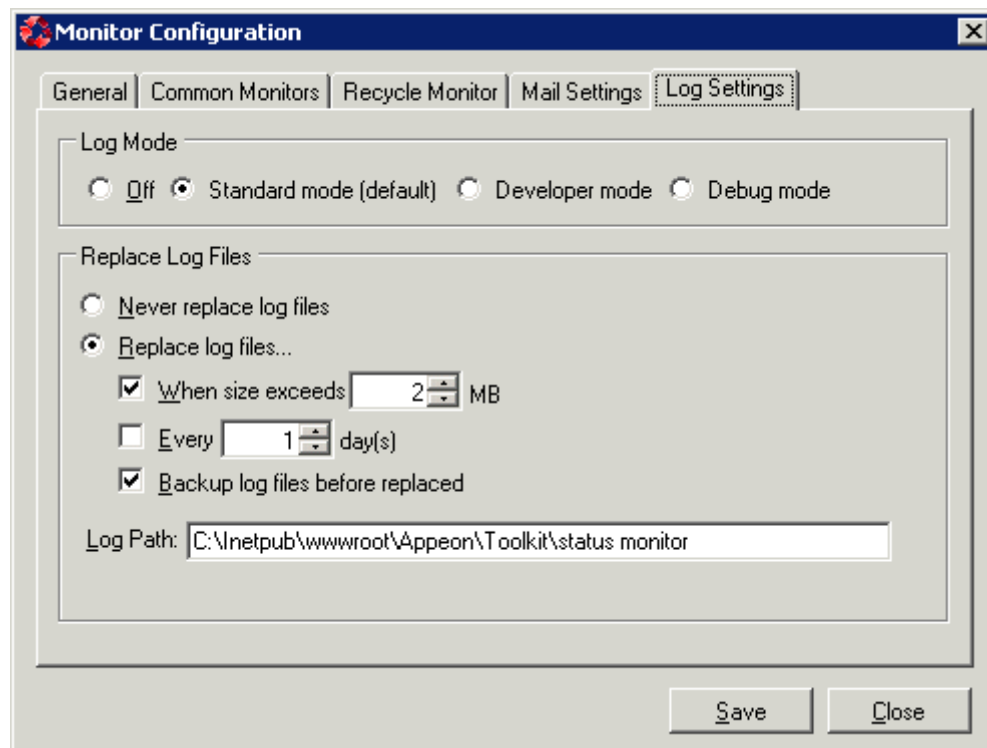
Setting	Description
SMTP Server	Type the IP address of the mail server.
Port	Type the port of the mail server.
Sender	Type the mail address of the sender.
Password	Type the password used to log in to the sender's mailbox. If no password has been set, leave this field blank.
Receiver(s)	Type the mail address of the receiver. If there are more than one address, split them by semicolon.
Message	Type contents of the mail. This field can be left blank.

Step 3: Click the **Send Test Email** button to send a test email using the specified settings.

3.3.5 Log Settings tab

The **Log Settings** tab allows you to configure how the monitor should generate the log information.

Figure 3.7: Log Settings tab



Log mode

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

- Off: Off mode does not generate any log files.
- Standard mode: Standard mode is the default mode. It generates standard log files that are sufficient for providing basic information. This mode may be inadequate for detailed troubleshooting.
- Developer mode: Developer mode generates detailed log files that are sufficient for troubleshooting.
- Debug mode: Debug mode generates log files that record every 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.

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.

To configure log file settings:

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

- Never replace log files: If you select this option, the log files will never be replaced.
- Replace log files...: If you select this option, the log files will be replaced according to conditions configured in Step 2. 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.

- Replace log files when size exceeds ___ MB: The system automatically replaces the log files when the file size exceeds the value set here.
- Replace log files every ___ day (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.

- Backup log files before replacing: This setting allows the monitor 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.

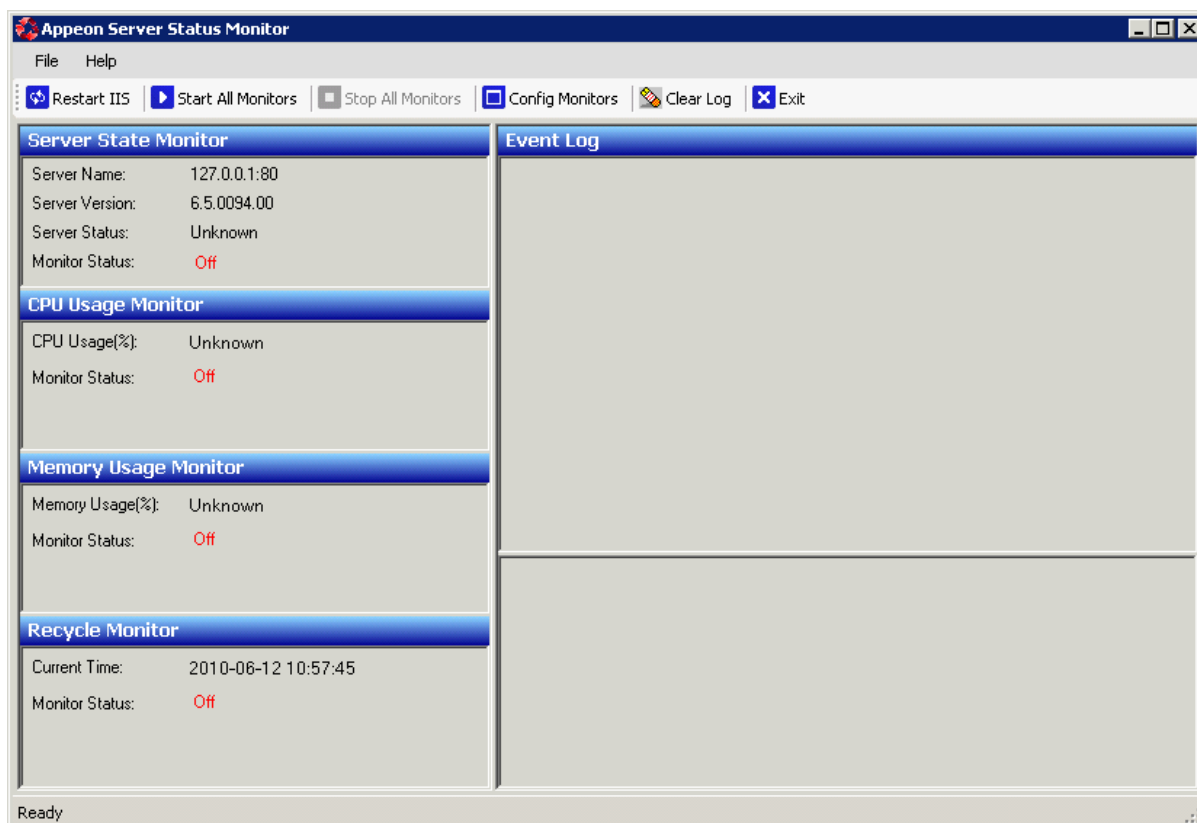
Step 4: Type the log path.

It can help you find log files easily when you need.

3.4 Understanding the information in monitor window

After enabling and configuring the monitor, click the menu **File > Monitor > Start ...** to run the monitor, or by clicking the **Start All Monitors** button on the toolbar to run all monitors.

Figure 3.8: Appeon Server Monitor main window



The monitor status information is displayed on the left of the main window, the log information is displayed on the right.

Server Status

Server Status in Server State Monitor window can be "unknown", "running" or null value.

- **Running:** If server state monitor detects that Appeon Server is running, the value is Running.
- **Unknown:** If server state monitor detects that IIS service or Appeon Server fails to run, the value is Unknown.
- **Null value:** If server state monitor is not started, it is null value.

Monitor Status

Monitor Status is "On" or "Off", which represents whether the monitor is started or not.

Event Log

Event Log is on the right of the Appeon Server Monitor window. It reports the following types of information depending on the log mode:

1. Actions that the user has taken on the monitor, for example, stopping and running the monitor.
2. Actions that the monitor has taken, such as restarting IIS service, backing up session information etc.
3. Email notifications that the monitor has sent.
4. Warnings that the monitor has failed to execute a task.

4 Database Connection Setup

4.1 Overview

The steps for configuring the database for an Apeon-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 Apeon-deployed application accesses the database server via Apeon 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 Apeon Server. This refers to setting up Apeon Server data sources.
- Setting up communication between the deployed application and Apeon Server. This refers to setting up the mapping between the application transaction objects and Apeon 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 Apeon environment.

4.2 What is Apeon Server data source?

Apeon Server data source is the same terminology as data source in Microsoft .NET Framework or other application servers.

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. Apeon Web or Apeon mobile applications rely on Apeon Server data sources to interact with the database servers.

4.3 Supported Database Drivers

Apeon .NET version supports the following database drivers for different database types and versions:

Table 4.1: Supported Drivers

Supported Driver	Supported Database Type and Version
ODBC driver	SAP ASA/SQL Anywhere 8.0.2/9.0/10.0.1 SAP ASE 12.5.x/15.x SAP HANA 1.00.36
SQL Anywhere native driver	SAP SQL Anywhere 11.0/12.0/16.0
Oracle native driver	Oracle 8i/9i/10g/11g/12c
SQL Server native driver	Microsoft SQL Server 2000/2005/2008/2012

Supported Driver	Supported Database Type and Version
Informix native driver	Informix 7.x/8.x/9.x/10.x/11.x
MySQL native driver	MySQL 5.5.x/5.6.x
ASE native driver	SAP ASE 12.5.x/15.x
Teradata native driver	Teradata 13.1.0.0
PostgreSQL native driver	PostgreSQL 9.2
IBM DB2 native driver	IBM DB2 UDB 9.7

4.4 Setting up Apeon Server data sources

The following sections give a general description of the data source settings. For step-by-step instructions on how to set up Apeon Server data sources, refer to [Data Source](#).

4.4.1 Data source settings for ODBC driver

Apeon supports using ODBC driver to connect with SAP ASA/SQL Anywhere (8.x/9.x/10.0.1 only), ASE, or SAP HANA databases. Before you start creating a data source with ODBC driver, you must install the corresponding ODBC driver and create the ODBC data source by following the instructions in the documents provided by the database vendor.

Figure 4.1: Settings for ODBC driver

The screenshot shows the 'Add Data Source' dialog box with the following settings:

- Data Source Name: ApeonSample
- Data Source Type: ODBC Driver
- ODBC Data Source: ApeonSample
- User Name: admin
- Password: [masked]
- Maximum Connection Pool Size: 100
- Minimum Connection Pool Size: 10
- Connection Timeout (seconds): 120
- Command Timeout (seconds): 30
- Connection Lifetime (seconds): 0
- Other Options: [empty text area]
- Dynamic Database Connection: On
- Pooling: On

Table 4.2: Settings for ODBC driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "ODBC" to connect with SAP ASA/SQL Anywhere, SAP ASE, or SAP HANA databases.
ODBC Data Source	Select a system DSN that was created in the ODBC administrator.

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 database is an ASA/SQL Anywhere database, be aware of the following:

- If the ASA/SQL Anywhere database resides in an NTFS folder, make sure the Windows "Network Service" or "Everyone" user has full controls over that folder, otherwise, testing of the data source may fail.

4.4.2 Data source settings for SQL Anywhere .NET Data Provider

Apeon supports using SQL Anywhere .NET Data Provider driver to connect with ASA/SQL Anywhere (11.0/12.0/Web only) databases. Before you start creating a data source with SQL Anywhere .NET Data Provider driver, you must install the corresponding SQL Anywhere .NET Data Provider driver and create the ODBC data source by following the instructions in the documents provided by the database vendor.

Figure 4.2: Settings for SQL Anywhere .NET Data Provider driver

The screenshot shows the 'Add Data Source' dialog box with the following settings:

- Data Source Name: ApeonSample
- Data Source Type: SQL Anywhere Native Dr
- ODBC Data Source: SQL Anywhere 11 Demo
- User Name: admin
- Password: ...
- Maximum Connection Pool Size: 100
- Minimum Connection Pool Size: 10
- Connection Timeout (seconds): 120
- Command Timeout (seconds): 30
- Connection Lifetime (seconds): 0
- Dynamic Database Connection: On
- Pooling: On

Buttons at the bottom: Save and Add, Save, Test Connection.

Table 4.3: Settings for SQL Anywhere .NET Data Provider driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "SQL Anywhere Native Driver" to connect with SAP ASA/SQL Anywhere database.
ODBC Data Source	Select a system DSN that was created in the ODBC administrator.
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.
----------	---

When using the ASA/SQL Anywhere database, be aware of the following points:

- If the ASA/SQL Anywhere database resides in an NTFS folder, make sure the Windows "Network Service" or "Everyone" user has full controls over that folder, otherwise, testing of the data source may fail.
- If you want to switch between the SQL Anywhere 11 and 12 drivers, you would need to go to the %apeonserver%\AEM\ServerDll folder and copy the files (Server.dll, code.key, and iAnywhere.Data.SQLAnywhere.dll) from the sub-folder named after the ASA version (such as **ASA11**, **ASA12**, or **ASA16**), and then paste them to the %apeonserver%\AEM\bin folder.
- Enable the connection pooling setting in ODBC driver, otherwise, the data source pools settings in AEM will not take effect, and the runtime performance of the deployed applications may dramatically slow down. Detailed steps are as below:

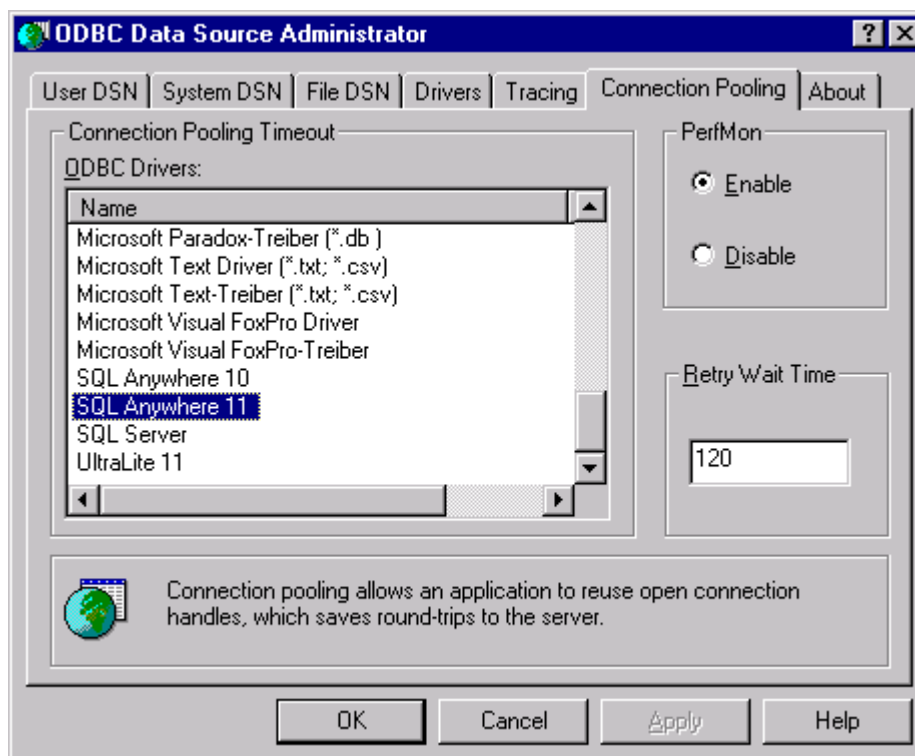
(1) Open ODBC Administrator.

(2) Switch to the **Connection Pooling** tab, as shown in the following figure.

(3) Select the **Enable** option in the **PerfMon** group box, as shown in the following figure.

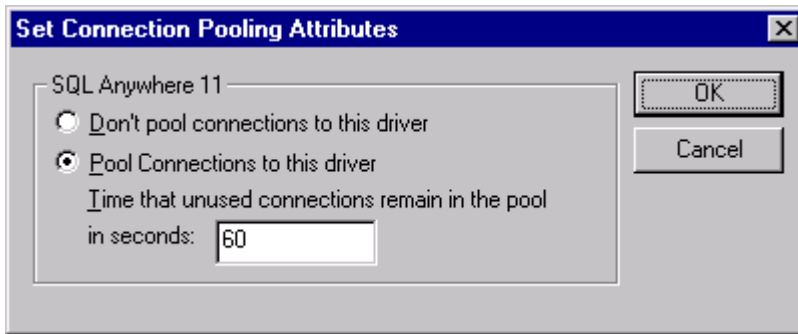
(4) Select **SQL Anywhere 11** from the **ODBC Drivers** list box, or any other driver you want, and double click it.

Figure 4.3: Select SQL Anywhere from the ODBC Drivers list box



(5) Select the second option **Pool Connections to this Driver**, as shown in the following figure.

Figure 4.4: Select Connection Pooling Attributes



4.4.3 Data source settings for Oracle native driver

Appeon supports using Oracle native driver to connect with Oracle databases. Before you start creating a data source with Oracle native driver, you must install Oracle full client. Note Appeon does not support Oracle instant client. If you have Oracle instant client installed, you will need to uninstall it first and then install Oracle full client. For installation instructions, refer to the Oracle documents.

Figure 4.5: Settings for Oracle native driver

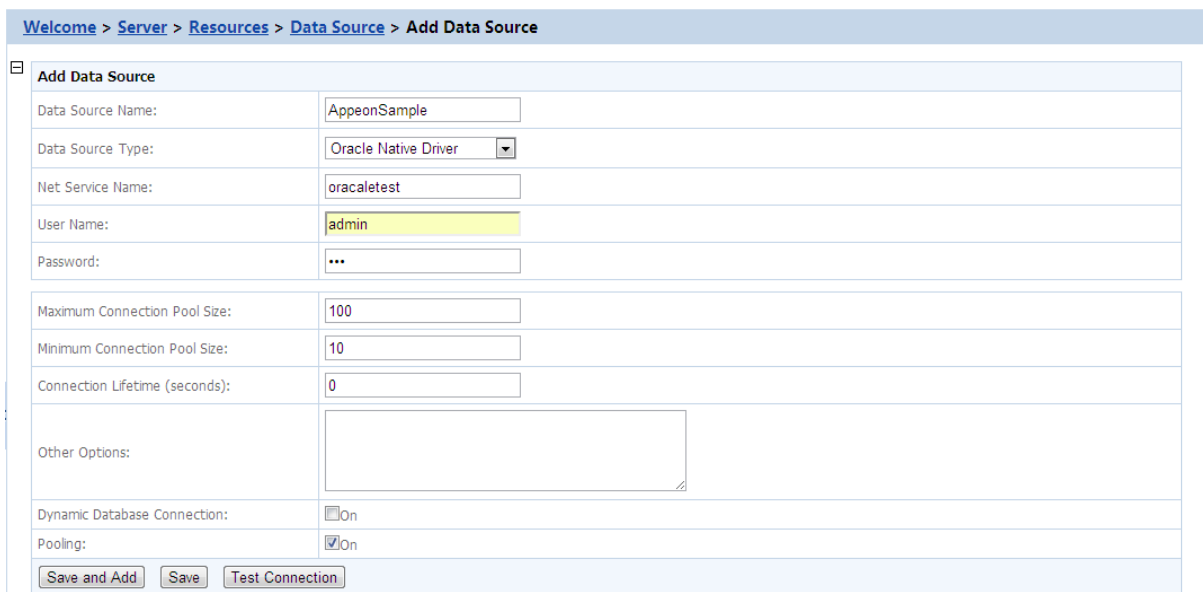


Table 4.4: Settings for Oracle native driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "Oracle Native" to connect with Oracle databases.
NET Service Name	Select a service name.
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.

Note: if the database is an Oracle database and it resides in an NTFS folder, make sure the Windows "Network Service" or Everyone" user has full controls over that folder, otherwise, testing of the data source may fail.

4.4.4 Data source settings for SQL Server native driver

Appeon supports using SQL server native driver to connect with SQL server databases.

Figure 4.6: Settings for SQL Server native driver

Welcome > Server > Resources > Data Source > Add Data Source

Add Data Source

Data Source Name:	<input type="text" value="AppeonSample"/>
Data Source Type:	MS SQL Server Native D ▾
Database Host:	<input type="text" value="MSSqltest"/>
Database Port:	<input type="text" value="1433"/>
Database Name:	<input type="text" value="AppeonSample"/>
User Name:	<input type="text" value="admin"/>
Password:	<input type="password" value="..."/>
Maximum Connection Pool Size:	<input type="text" value="100"/>
Minimum Connection Pool Size:	<input type="text" value="10"/>
Command Timeout (seconds):	<input type="text" value="30"/>
Connection Lifetime (seconds):	<input type="text" value="0"/>
Other Options:	<div style="border: 1px solid #ccc; height: 30px; width: 100%;"></div>
Dynamic Database Connection:	<input type="checkbox"/> On
Pooling:	<input checked="" type="checkbox"/> On

Table 4.5: Settings for SQL Server native driver

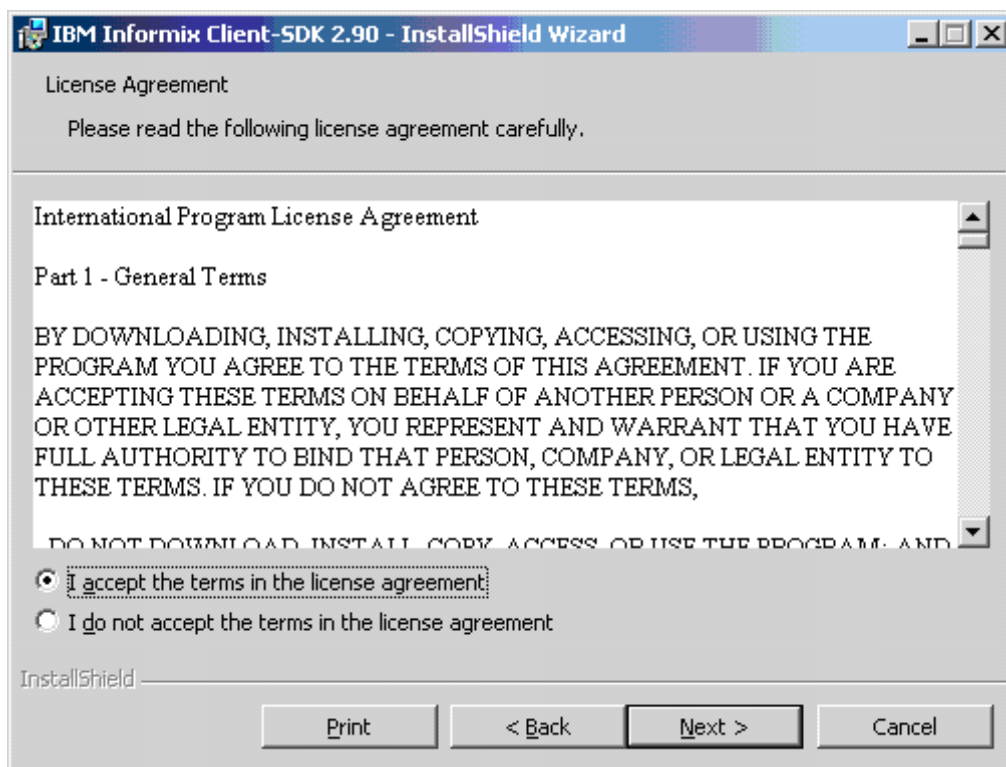
Data Source Name	Type the name of the data source.
Data Source Type	Select "SQL Server Native" to connect with Microsoft SQL Server databases.
Database Host	Specify the machine name or IP address of the database server.
Database Port	Specify the port number of the database server.
Database Name	Specify the database name.
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.

4.4.5 Data source settings for Informix native driver

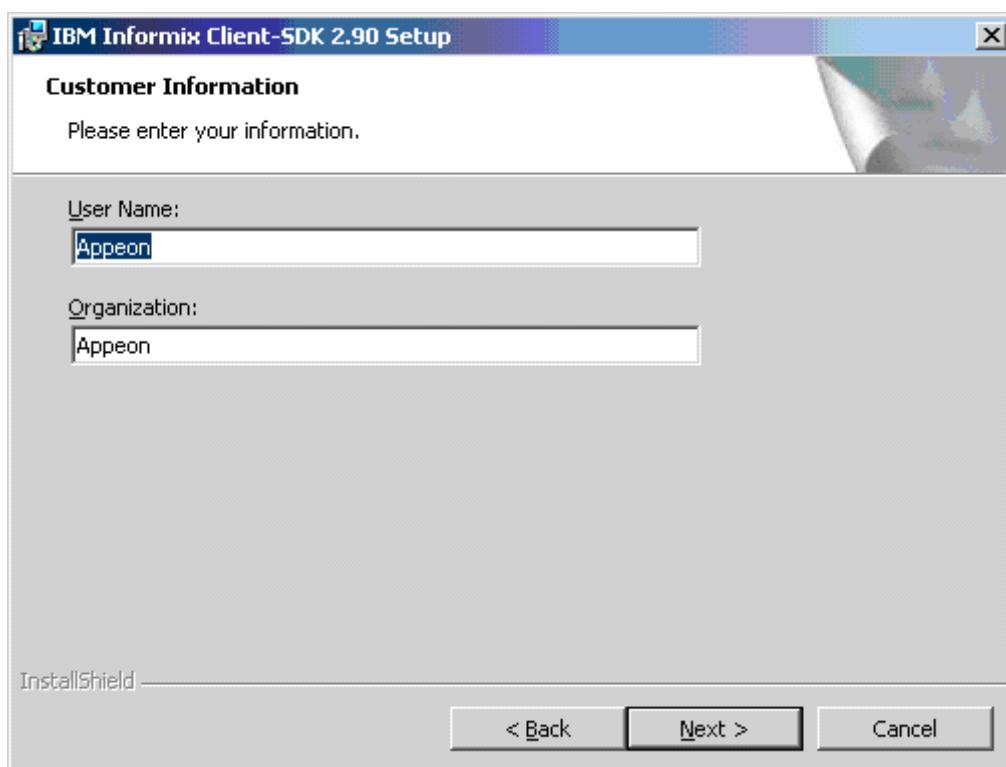
Appeon supports using IBM Informix .NET Provider driver to connect with Informix databases. Before you start creating a data source with Informix .NET Provider driver, you must install Informix Client (SDK 2.90 or above) and then use the installed client to configure Informix Server. For detailed instructions, refer to the Informix documents.

Following are important installation steps that are worth mentioning here:

- 1) Accept the license agreement and click **Next**.

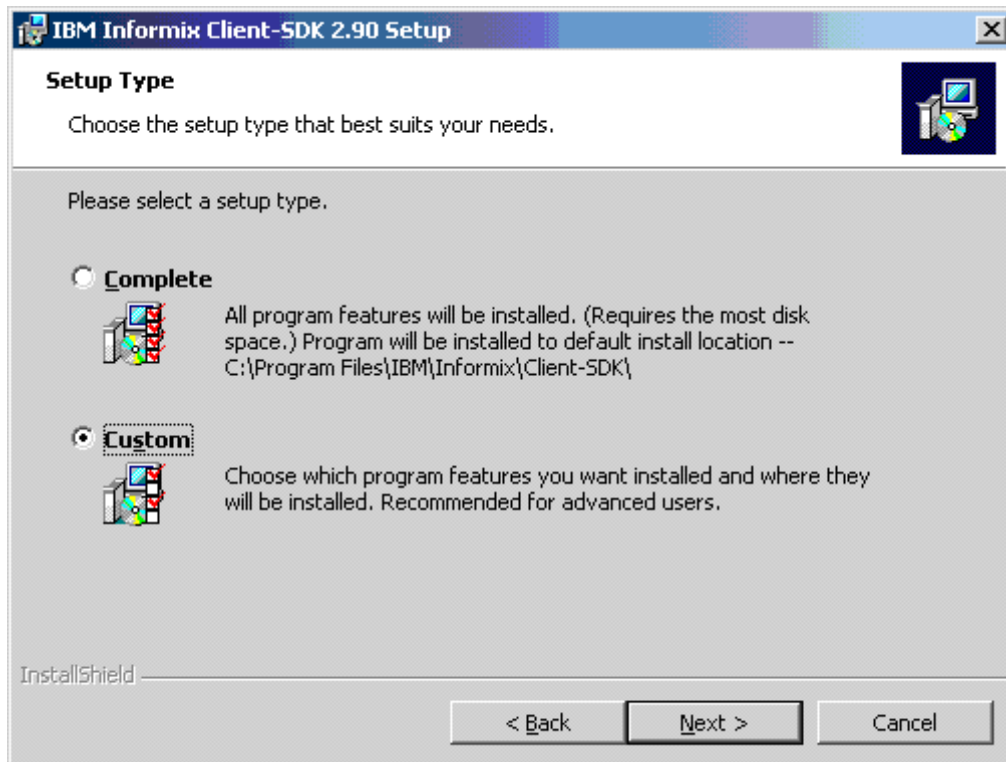
Figure 4.7: Accept the license agreement

- 2) Input user name and organization name and click **Next**.

Figure 4.8: Enter customer information

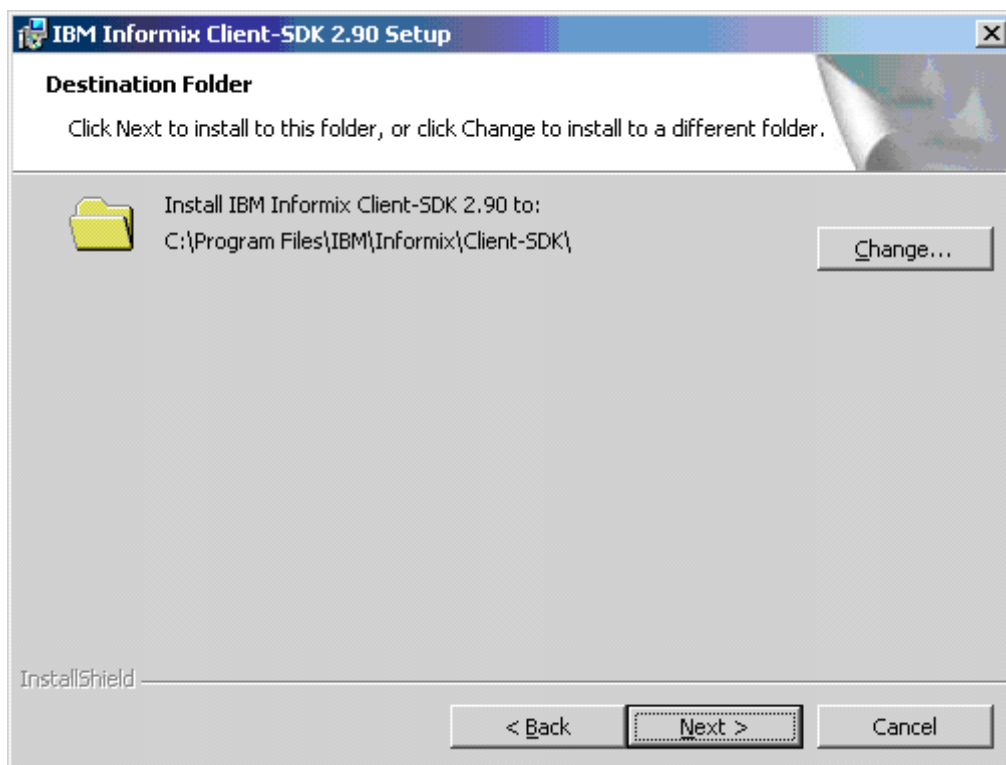
3) Select the **Custom** installation type and click **Next**.

Figure 4.9: Select Custom installation type



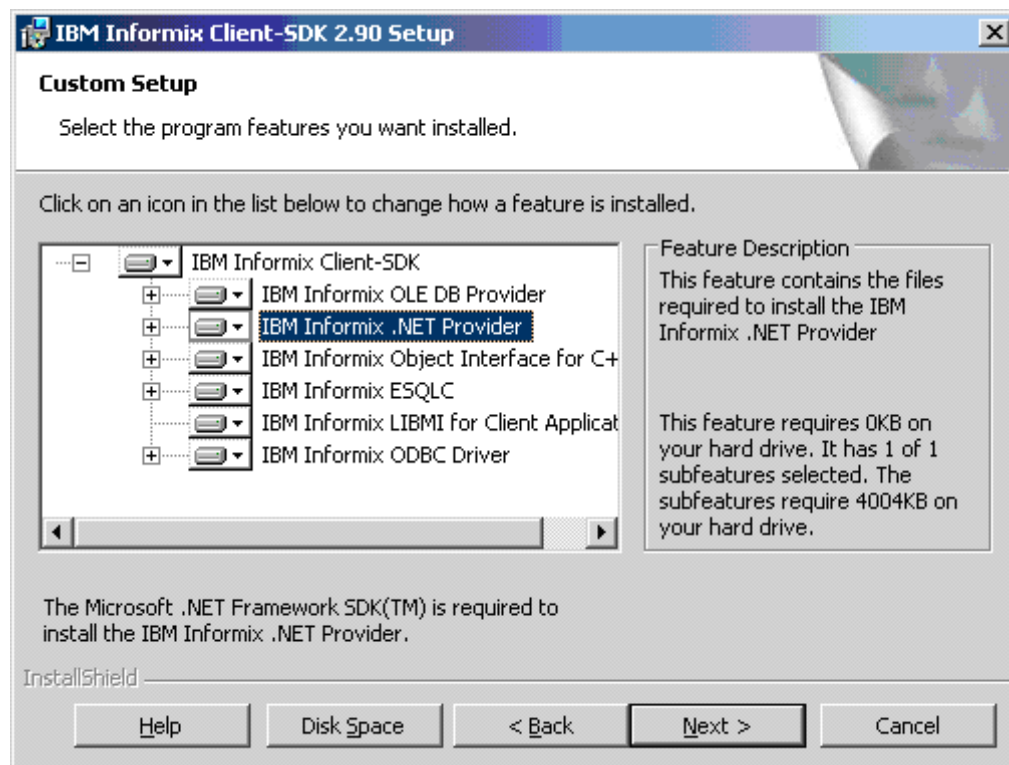
4) Select the installation directory for the driver and click **Next**.

Figure 4.10: Select the installation directory for the driver



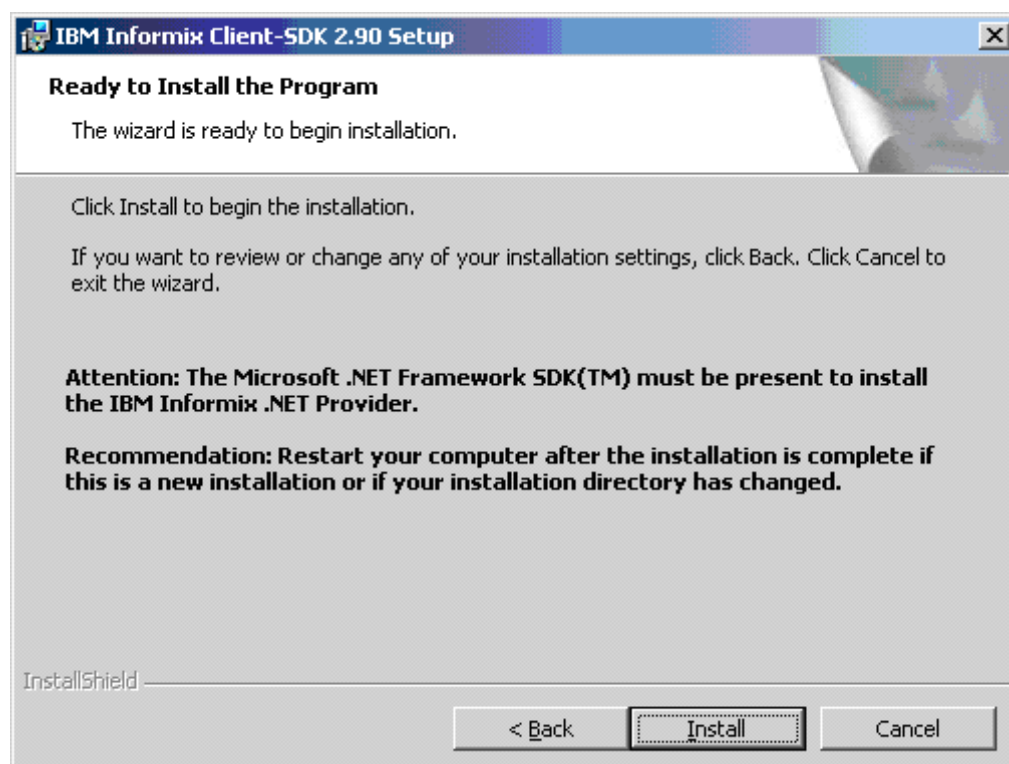
5) (**VERY IMPORTANT**) Make sure that **IBM Informix .NET Provider** is selected to install and click **Next**.

Figure 4.11: Select "IBM Informix .NET Provider"



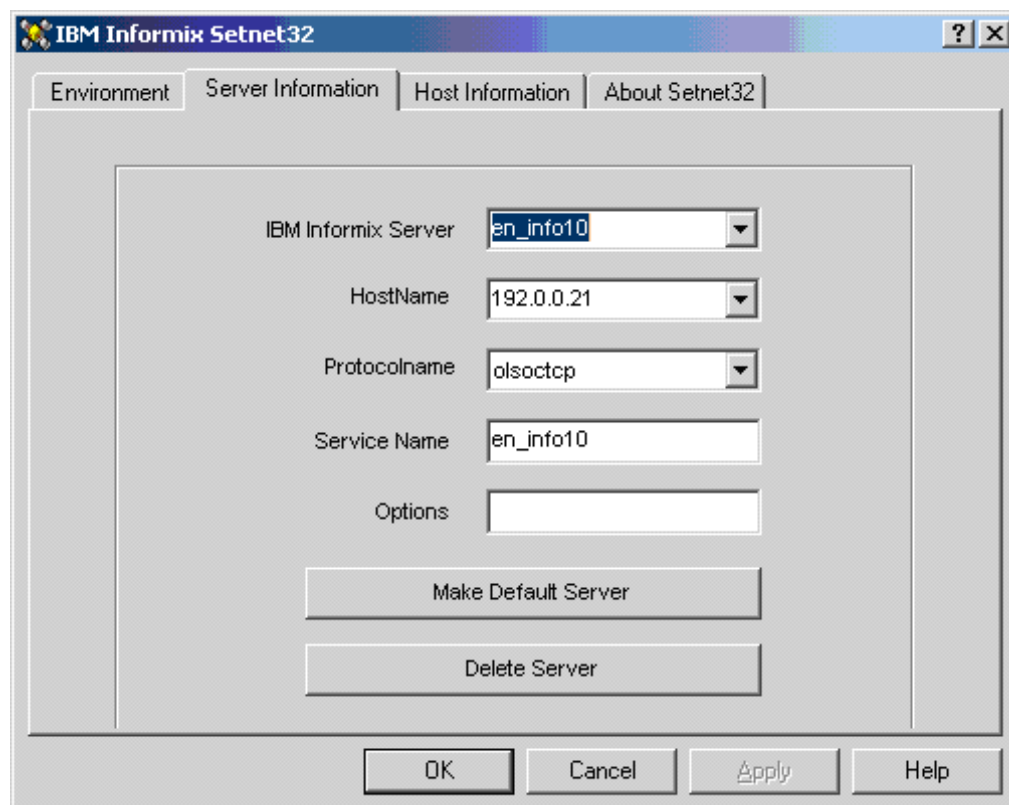
6) Click **Install** to start the installation.

Figure 4.12: Ready to install the program



Following are important configuration steps that we think are worth mentioning:

- 1) Select **Start > Programs > IBM Informix Client-SDK 2.90 > Setnet32**.
- 2) Configure the Informix server information, as shown in the following figure. Remember that the "IBM Informix Server" name will be used in AEM.

Figure 4.13: Configure the Informix server information**Note:**

It is recommended that you test the connection with the specified server name in other programs such as PowerBuilder. You may need to manually add the following text to the %system32%/drivers/etc/Service file:

```
en_info10 1526/tcp #en_info10
```

en_info10 should be the name of IBM Informix Server you specified above; 1526 is the port number of Informix server; #en_info10 is the comment text.

Following are configurations in AEM:

Figure 4.14: Data source settings in AEM

Figure 4.14 shows the 'Add Data Source' dialog box in AEM. The dialog is titled 'Add Data Source' and is part of the 'Data Source' configuration. It contains the following fields and values:

- Data Source Name: AppeonSample
- Data Source Type: IBM Informix Native Drive
- IBM Informix Server: informixtest
- Database Name: AppeonSample
- User Name: admin
- Password: ...
- Maximum Connection Pool Size: 100
- Minimum Connection Pool Size: 10
- Command Timeout (seconds): 30
- Connection Lifetime (seconds): 0
- Other Options: (Empty text area)
- Dynamic Database Connection: On
- Pooling: On

Buttons at the bottom include 'Save and Add', 'Save', and 'Test Connection'.

Table 4.6: Data source settings in AEM

Data Source Name	Type the name of the data source.
Data Source Type	Select "IBM Informix Native Driver".
IBM Informix Server	Specify the Informix Server name. This must be the same name that is used to configure the Informix Server above.
Database Name	Specify the database name.
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.

4.4.6 Data source settings for MySQL native driver

Apeon supports using MySQL native driver to connect with MySQL Server databases.

Figure 4.15: Settings for MySQL native driver

Welcome > Server > Resources > Data Source > Add Data Source

Add Data Source

Data Source Name: ApeonSample

Data Source Type: MySQL Native Driver

Database Host: MySQLtest

Database Port: 3306

Database Name: ApeonSample

User Name: admin

Password: ...

Maximum Connection Pool Size: 100

Minimum Connection Pool Size: 10

Command Timeout (seconds): 30

Connection Lifetime (seconds): 0

Other Options:

Dynamic Database Connection: On

Pooling: On

Save and Add Save Test Connection

Table 4.7: Settings for MySQL native driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "MySQL Native Driver" to connect with MySQL Server databases.
Database Host	Specify the machine name or IP address of the database server.
Database Port	Specify the port number of the database server.
Database Name	Specify the database name.
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.

4.4.7 Data source settings for ASE native driver

Apeon supports using ASE native driver to connect with SAP ASE (15.x only) databases.

Figure 4.16: Settings for ASE native driver

The screenshot shows the 'Add Data Source' dialog box with the following settings:

- Data Source Name: AppeonTest
- Data Source Type: ASE Native Driver
- Database Host: 192.0.2.204
- Database Port: 5000
- Database Name: AppeonSample
- User Name: admin
- Password: ...
- Maximum Connection Pool Size: 100
- Minimum Connection Pool Size: 10
- Connection Timeout (seconds): 120
- Command Timeout (seconds): 30
- Connection Lifetime (seconds): 0
- Other Options: (Empty text area)
- Dynamic Database Connection: On
- Pooling: On

Buttons at the bottom: Save and Add, Save, Test Connection

Table 4.8: Settings for ASE native driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "ASE Native Driver" to connect with SAP ASE 15.x databases.
Database Host	Specify the machine name or IP address of the database server.
Database Port	Specify the port number of the database server.
Database Name	Specify the database name.
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.

4.4.8 Data source settings for Teradata native driver

Appeon supports using Teradata native driver to connect with Teradata databases. Before you start creating a data source with Teradata native driver, you must install Teradata .NET Data Provider 13.1 or later. For detailed instructions, refer to the Teradata documents.

Figure 4.17: Settings for Teradata driver

Welcome > Server > Resources > Data Source > Add Data Source

Add Data Source

Data Source Name:	AppeonSample
Data Source Type:	Teradata Native Driver
Database Host:	Teradatatest
Database Port:	1025
Database Name:	AppeonSample
User Name:	admin
Password:	...
Character Set:	ASCII
Session Mode:	DEFAULT
Maximum Connection Pool Size:	100
Minimum Connection Pool Size:	10
Command Timeout (seconds):	30
Connection Lifetime (seconds):	0
Other Options:	
Dynamic Database Connection:	<input type="checkbox"/> On
Pooling:	<input checked="" type="checkbox"/> On

Save and Add Save Test Connection

Table 4.9: Settings for Teradata driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "Teradata Native Driver" to connect with Teradata databases.
Data Source	Type the name of the Teradata server, or equivalently the DBC Name or TDPID.
Database Port	Specify the TCP/IP port number that the .NET Data Provider for Teradata uses for connection to the Teradata Gateway. Default port number is 1025.
Database Name	Specify the database name.
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.
Character Set	Select the character set according to mapping characters bidirectionally from the client application and teradata databases.
Session Mode	Select the session mode according to the duration of the session. The session mode is used on a Teradata Database V2R2.0 or later system.

4.4.9 Data source settings for IBM DB2 native driver

Apeon supports using IBM DB2 native driver to connect with IBM DB2 databases. Before you start creating a data source with IBM DB2 native driver, you must install IBM DB2 client (32-bit or 64-bit). For detailed instructions, refer to the IBM DB2 documents.

Figure 4.18: Settings for IBM DB2 native driver

[Welcome](#) > [Server](#) > [Resources](#) > [Data Source](#) > **Add Data Source**

Add Data Source

Data Source Name:	<input type="text" value="appeon_db2"/>
Data Source Type:	<input type="text" value="IBM DB2 Driver"/>
Database Host:	<input type="text" value="192.0.3.124"/>
Database Port:	<input type="text" value="50000"/>
Database Name:	<input type="text" value="db2_test"/>
User Name:	<input type="text" value="db2_test"/>
Password:	<input type="password" value="••••••••"/>
Maximum Connection Pool Size:	<input type="text" value="100"/>
Minimum Connection Pool Size:	<input type="text" value="10"/>
Connection Timeout (seconds):	<input type="text" value="120"/>
Command Timeout (seconds):	<input type="text" value="30"/>
Connection Lifetime (seconds):	<input type="text" value="0"/>
Other Options:	<input type="text"/>
Dynamic Database Connection:	<input type="checkbox"/> On
Pooling:	<input checked="" type="checkbox"/> On
Extended Options:	<input type="text"/>

Table 4.10: Settings for IBM DB2 native driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "IBM DB2 Driver" to connect with IBM DB2 databases.
Database Host	Specify the machine name or IP address of the database server.
Database Port	Specify the port number of the database server.
Database Name	Specify the database name.
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.

4.4.10 Data source settings for PostgreSQL native driver

Appeon supports using PostgreSQL native driver to connect with PostgreSQL databases.

Figure 4.19: Settings for PostgreSQL native driver

[Welcome](#) > [Server](#) > [Resources](#) > [Data Source](#) > **Add Data Source**

Add Data Source

Data Source Name:	<input type="text" value="postgresql1"/>
Data Source Type:	PostgreSQL Native Driver ▾
Database Host:	<input type="text" value="192.0.3.124"/>
Database Port:	<input type="text" value="5432"/>
Database Name:	<input type="text" value="en_postgre"/>
User Name:	<input type="text" value="en_postgre"/>
Password:	<input type="password" value="••••••••"/>
Maximum Connection Pool Size:	<input type="text" value="100"/>
Minimum Connection Pool Size:	<input type="text" value="10"/>
Connection Timeout (seconds):	<input type="text" value="120"/>
Command Timeout (seconds):	<input type="text" value="30"/>
Connection Lifetime (seconds):	<input type="text" value="0"/>
Other Options:	<input type="text"/>
Dynamic Database Connection:	<input type="checkbox"/> On
Pooling:	<input checked="" type="checkbox"/> On
Extended Options:	<input type="text"/>

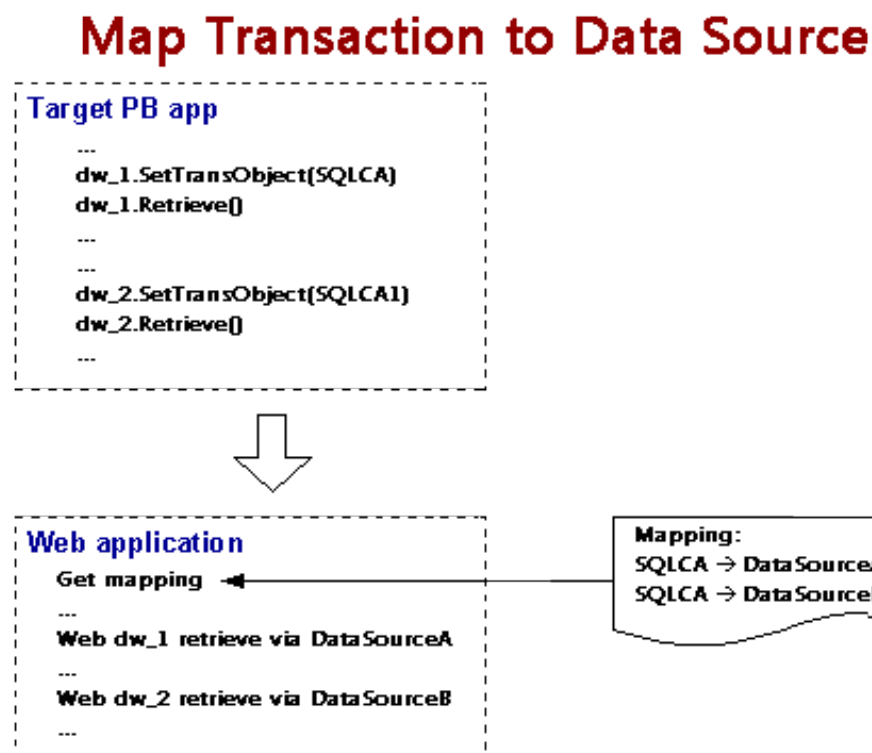
Table 4.11: Settings for PostgreSQL native driver

Data Source Name	Type the name of the data source.
Data Source Type	Select "PostgreSQL Native Driver" to connect with PostgreSQL databases.
Database Host	Specify the machine name or IP address of the database server.
Database Port	Specify the port number of the database server.
Database Name	Specify the database name.
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.

4.5 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 Apeon Web or mobile application as the replacement of the transaction object in the PowerBuilder application.

Figure 4.20: Map transaction to data source



Once Apeon 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.

4.5.1 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='ASADDataSource1' "
```

"ASADDataSource1" 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-ASA"
```

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

Table 4.12: Setting the DBMS property based on the database type

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 ASA/SQL Anywhere	ODB-ASA	JDB-ASA	OLE-ASA	-
SAP HANA	ODB-HAN	JDB-HAN	-	-
IBM DB2 UDB	ODB-DB2	JDB-DB2	OLE-DB2	DB2
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

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 SAP 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.

4.5.2 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 [Transaction Objects](#).

4.6 Advanced configurations related with database connection

4.6.1 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. Apeon 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 Apeon user/group management system to restrict access to the Apeon applications.

In addition, a way to incorporate the Apeon user/group management for use with the coded security in PowerBuilder applications is discussed in [Incorporate Apeon security in PowerBuilder code](#). You can also implement your own security using other technologies.

4.6.1.1 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.

Apeon Web applications and Apeon 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.

4.6.1.1.1 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.

4.6.1.2 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 Apeon 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: Apeon Developer deploys the INI files as XML to Apeon 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 Apeon 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 [Database Security](#) 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 = "apeon_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", "")
...
```

4.6.2 Apeon security

Apeon security features are set in Apeon Enterprise Manager (AEM), the Web application that manages the Apeon system and deployed Web or mobile applications. Apeon security is at the application level and is "either or": the user either has or does not have access to the application. By default, Apeon 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 [Server Security](#) section.

4.6.2.1 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*.

4.6.2.2 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.

4.6.2.2.1 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

Apeon Enterprise Manager (AEM) is a Web-based application that is automatically installed with Apeon Server to manage the Apeon Server and the Apeon 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 Apeon security management system or LDAP security (recommended) to control the access rights at the application level.

All the settings configured in AEM are saved as XML files in the %apeonserver%\AEM\config folder, where %apeonserver% stands for the Apeon Server installation directory, for example, C:\Inetpub\wwwroot\apeon\AEM\config.

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.

Figure 5.1: AEM Console

Frequently-Used Tools	
Licensing	Displays license information and allows you to process the Apeon license.
Active Sessions	Lists the active sessions for all Apeon Servers.
Active Transactions	Lists the active transactions for all Apeon Servers.
Logging	Configures the log file settings, including Apeon Server log list, log operation mode, and log replacement.
Data Source	Specifies the settings used to connect to the database at runtime.
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 objectconnection cache has changed.
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.

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.

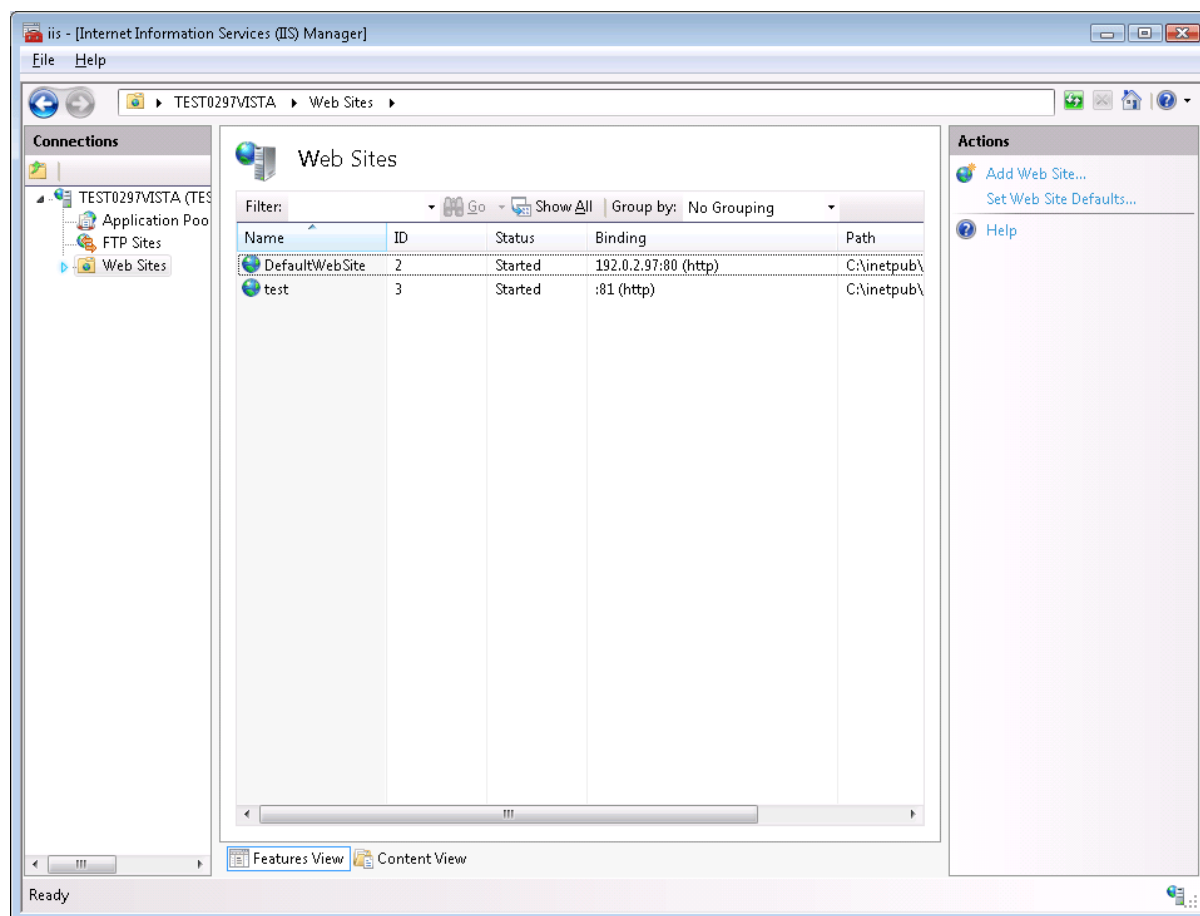
5.2 Getting started

5.2.1 Running Apeon Server

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

Since Apeon Server is installed to the IIS server, starting IIS server will automatically start Apeon Server. Open IIS Manager and verify that the Web site hosting Apeon Server is running.

Figure 5.2: IIS Web site hosting Apeon Server



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.

During installation, you can specify the name and port for Appeon Server. If you want to start AEM from the computer that hosts the Appeon Server, you can use the specified server name and port to access AEM, for example, `http://localhost:80/AEM`. However, you should not use a "localhost" listener in a production environment.

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 () 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 [AEM Login](#) 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.

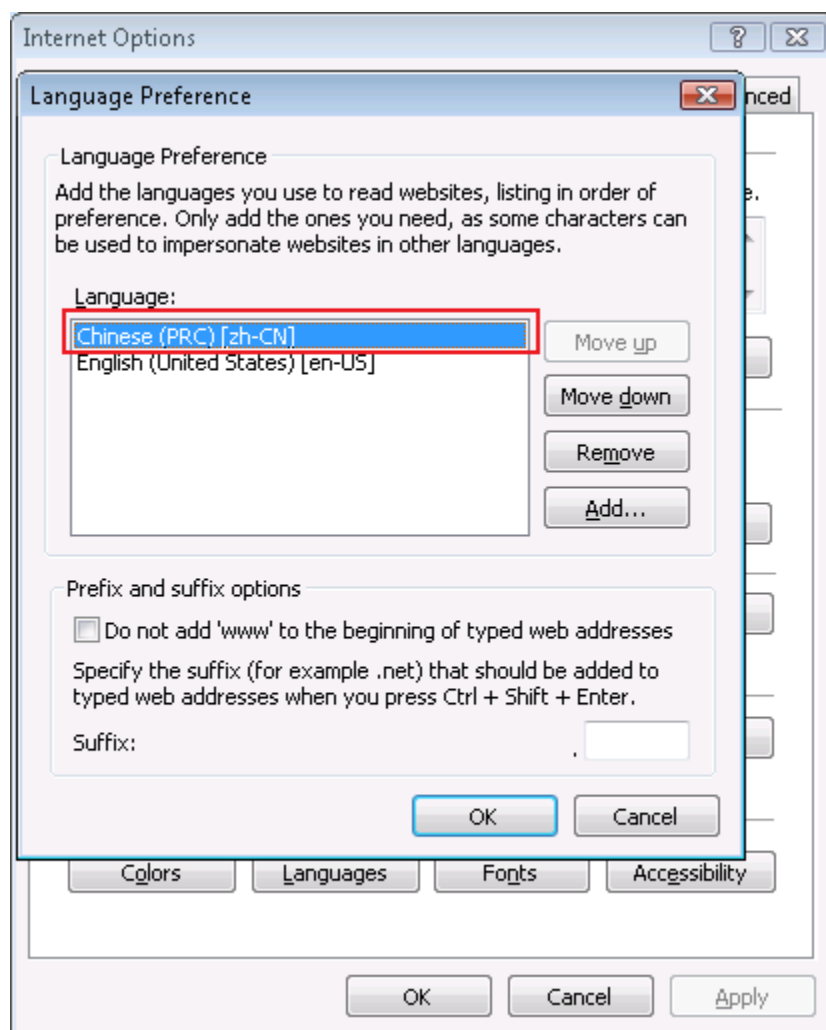
If you are a server administrator, it is highly recommended that you read through Chapter 3, *Installing Appeon Workspace* in *Appeon Workspace User Guide (Mobile only)* carefully, as it talks about how to prepare and deploy Appeon Workspace to the Web server in great details.

Figure 5.3: AEM loginhere to download Appeon Workspace for the iOS and Android devices.'" data-bbox="117 105 568 279"/>

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.

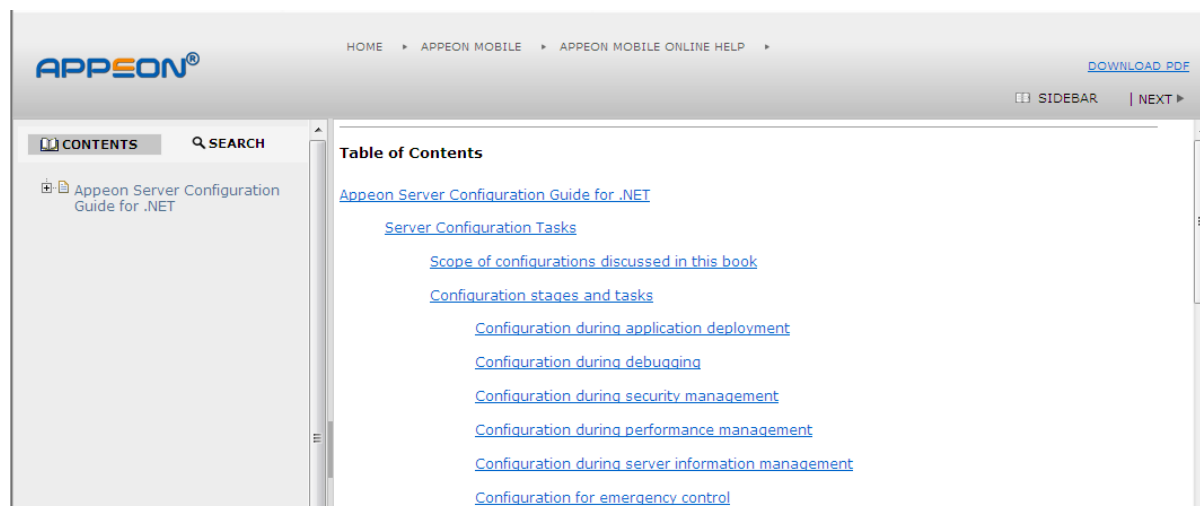
Figure 5.4: Language settings

5.2.3 AEM Help

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

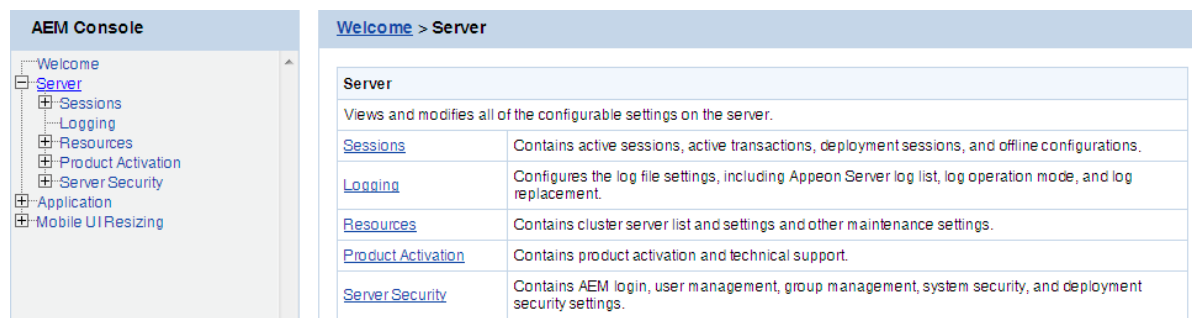
Figure 5.5: Help button

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

Figure 5.6: Apeon Help

5.3 Server

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

Figure 5.7: Server

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 5.8: Sessions

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 5.9: Active Sessions

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 [Cluster](#) 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 [Cluster](#) 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 [Cluster](#) 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.

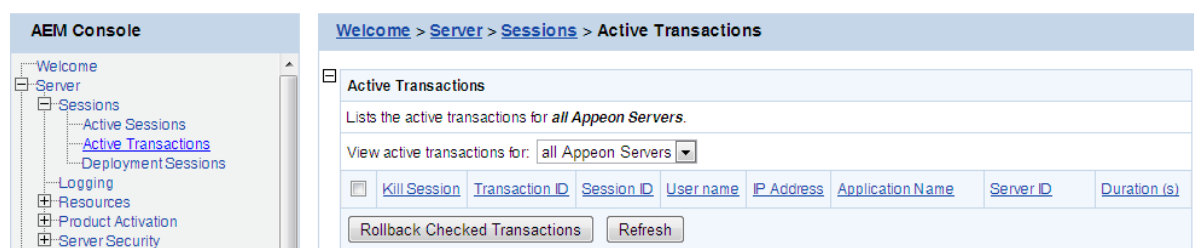
If you kill a device, the session(s) that belong to the device will be killed correspondingly.

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.

Figure 5.10: Active Transactions

5.3.1.2.1 Viewing active transactions

By default, the Active Transactions table lists the current active transactions on all Apeon Servers. If you want to view active transactions on a particular Apeon Server, select the Apeon Server from the "**View active transactions for**" dropdown list, and click the **Refresh** button. The dropdown list displays all the servers configured in the [Cluster](#) 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 Apeon Server resources or in case of a database deadlock.

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

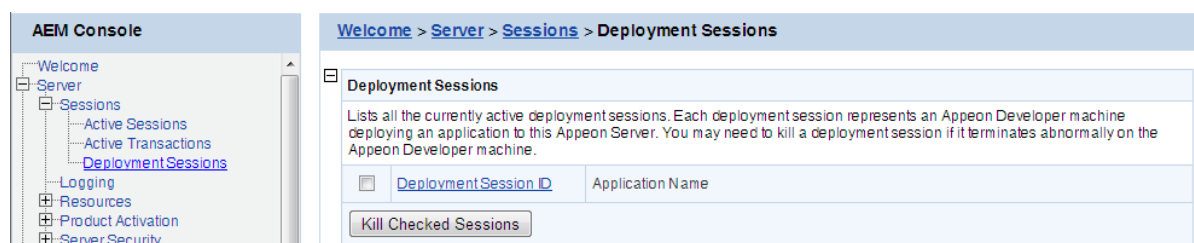
Proceed with caution when checking transactions you want to roll back.

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 5.11: Deployment Sessions

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

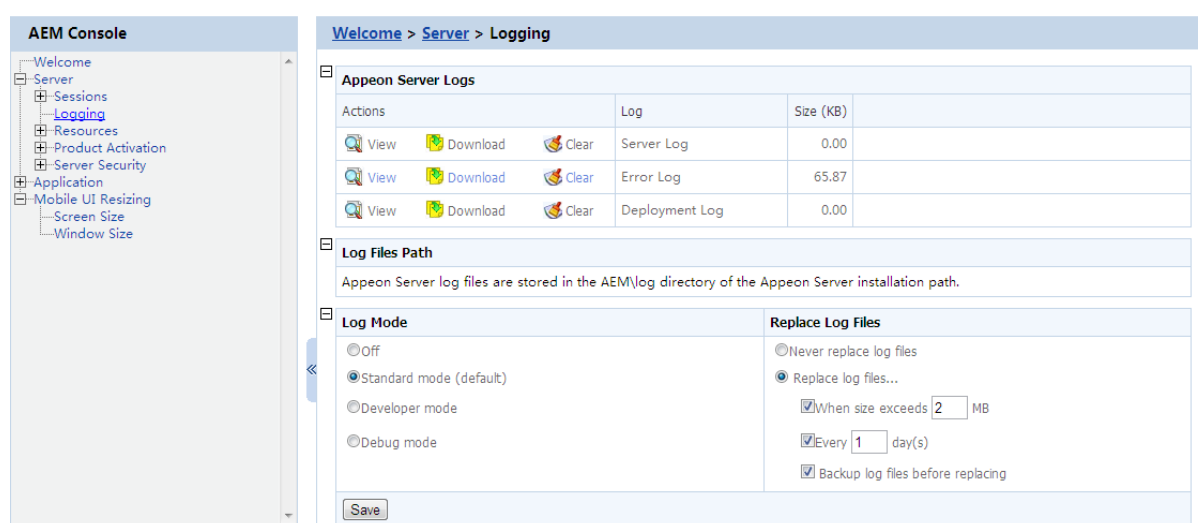
There is one special scenario in which you need to manually kill a deployment session in AEM. If the Deployment Wizard of Aepeon Developer abnormally exits during the above-mentioned upload process, the deployment session stays in active status in Aepeon Server, and Aepeon Developer cannot resume the upload process. Only after you kill the deployment session (by checking the session and clicking the **Kill Checked Sessions** button) or restart Aepeon 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 5.12: Logging



5.3.2.1 Viewing logs

Aepeon Server creates three different log files for troubleshooting usage. The viewer provides the direct access to all the three log files. You could also find the log files in the directory %aepeserver%\AEM\Log.

Aepeon Server logs include the following log files:

- **Server Log:** Records messages logged from services and the core Aepeon Server runtime.
- **Error Log:** Records errors occurred on Aepeon Server.
- **Deployment Log:** Records interactions between Aepeon Server and Aepeon Developer during application deployments.

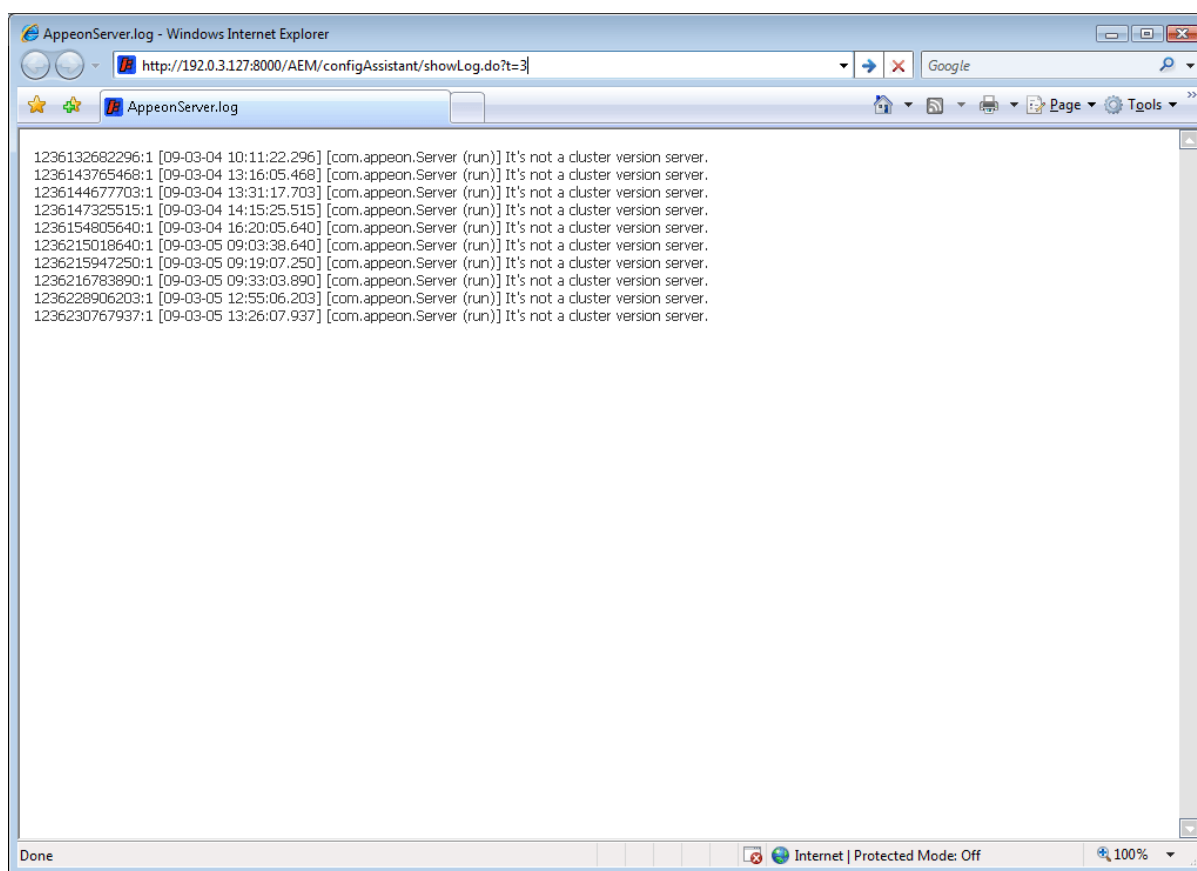
The Aepeon Server Logs tool provides the following manipulations:

- 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 5.13: Deployment Log



- To download a log file
Click **Download** and then click **Save** in the dialog box that appears.
- To clear a log file
Click **Clear** to remove the contents in the Appeon Server log files.

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 ___ day (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.

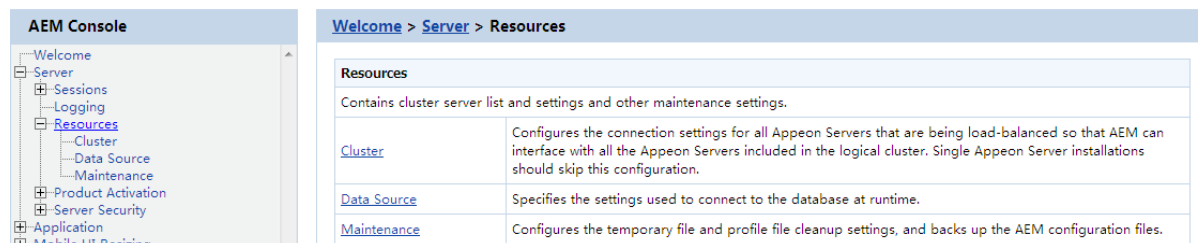
- This setting allows Appeon Server to back up the log files before replacing them. If this option is checked, all log files are backed up before they are replaced so an archive of the log files is maintained. Maintaining this archive does not compromise system performance, but there must be adequate 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 server cluster, data sources, temporary files and configuration backups. There are three tools: Cluster, Data Source, and Maintenance.

Figure 5.14: Resources



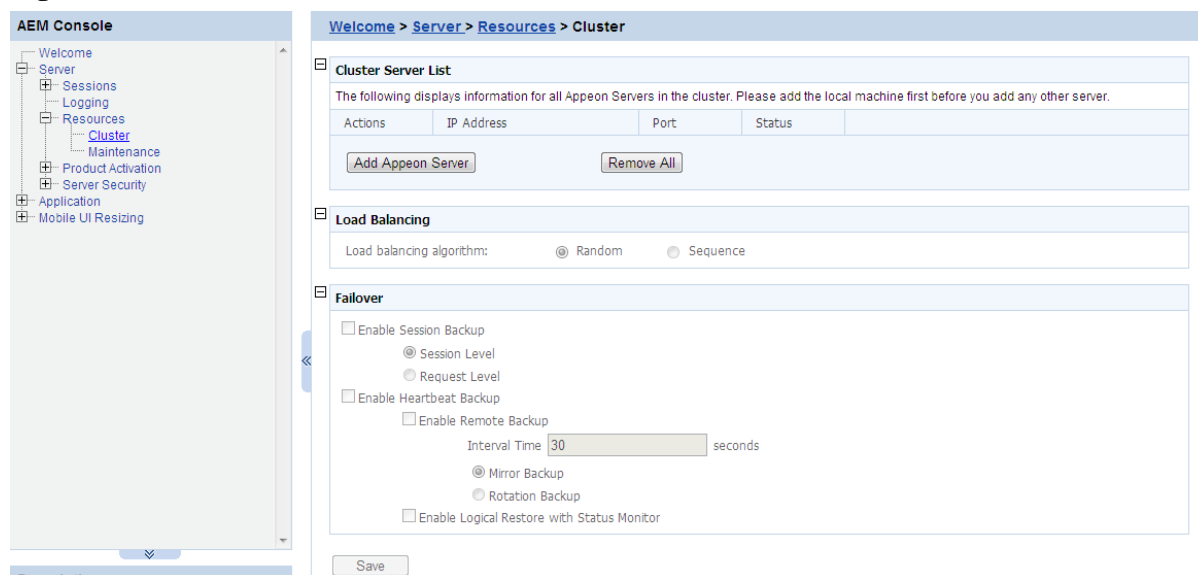
5.3.3.1 Cluster

Once you installed Apeon Server to several application servers, you can use the AEM Cluster tool to create an Apeon 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 Apeon. You will need to configure this Apeon plug-in after creating the Apeon Server cluster in AEM. For detailed instructions, refer to Chapter 6, *Tutorial 5: Configure Apeon Server Cluster in Apeon 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 5.15: Cluster



5.3.3.1.1 Cluster Server List

Use the **Cluster Server List** to create an Apeon Server cluster. The Apeon 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 Apeon 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 Apeon Server when adding an Apeon 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 Apeon Developer Deployment Wizard to perform the application deployment. For detailed instructions, refer to the Chapter 6, *Deploying PowerBuilder Applications in Apeon Developer User Guide*.
- To ensure the most efficiency and stability of the Apeon Server cluster, verify that the environment of all Apeon Servers is identical. For example, the application server (type and version) and Apeon Server (version and license) must be the same.
- If you need to reinstall the operating system of an Apeon Server in the cluster, be sure to remove the Apeon Server from the cluster first.

Adding an Apeon Server

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

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

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

Figure 5.16: Add Apeon Server

Welcome > Server > Resources > Cluster > Add Apeon Server

Add New Apeon Server

Verify that all servers in the cluster contain the same deployed applications. When creating a cluster, add the server that the current AEM runs on as the first member of the cluster. It is recommended to install the same Apeon Server version in a cluster.

Connect type: HTTP

IP Address: 161.0.0.1

Port: 80

AEM User Name: admin

AEM Password: ●●●●●

Save and Add Save

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 intervals 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.

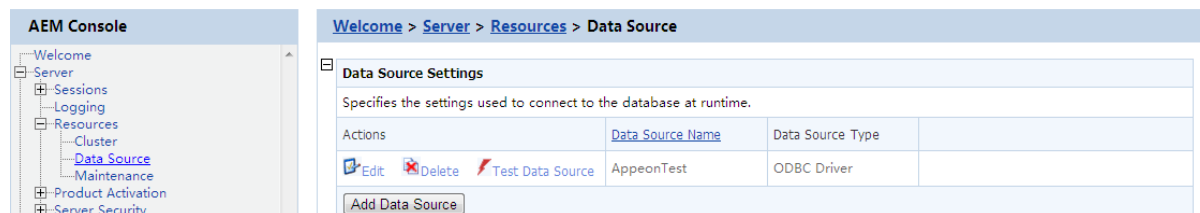
The following action will not be synchronized:

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

5.3.3.2 Data Source

Each data source specifies the settings used to connect to a database at runtime. You can add a new data source, edit, delete or test an existing data source.

Figure 5.17: Data source



5.3.3.2.1 Adding a data source

Click **Add Data Source** below the data source list and specify the data source settings according to the following table.

Figure 5.18: Add data source

Add Data Source	
Data Source Name:	<input type="text" value="appeonsample"/>
Data Source Type:	<input type="text" value="SQL Anywhere Native Dri"/>
ODBC Data Source:	<input type="text" value="AppeonSample"/> <small>If the database type is ASA and the database file resides in an NTFS folder, please grant the "NETWORK SERVICE" or "Everyone" user with full controls over that folder.</small>
User Name:	<input type="text" value="dba"/>
Password:	<input type="password" value="..."/>
Maximum Connection Pool Size:	<input type="text" value="100"/>
Minimum Connection Pool Size:	<input type="text" value="10"/>
Command Timeout (seconds):	<input type="text" value="30"/>
Connection Lifetime (seconds):	<input type="text" value="0"/>
Other Options:	<input type="text"/>
Dynamic Database Connection:	<input type="checkbox"/> On
Pooling:	<input checked="" type="checkbox"/> On
Extended Options:	<input type="text"/>
<input type="button" value="Save and Add"/> <input type="button" value="Save"/> <input type="button" value="Test Connection"/>	

Data source properties vary with different database types. For detailed description for each database type, refer to the [Setting up Apppeon Server data sources](#).

Table 5.1: Data Source Properties

Data Source Name	Type the name of the data source.
Data Source Type	<p>Select the data source type. The data source options will change according to the selected data source type.</p> <ul style="list-style-type: none"> • Use "ODBC Driver" to connect with SAP HANA, SAP ASA/SQL Anywhere (8.x/9.x/10.0.1 only) and SAP ASE databases; • Use "Oracle Native Driver" to connect with Oracle databases; • Use "MS SQL Server Native Driver" to connect with Microsoft SQL Server databases; • Use "IBM Informix Native Driver" to connect with IBM Informix databases;

	<ul style="list-style-type: none"> • Use "SQL Anywhere Native Driver" to connect with SAP ASA/SQL Anywhere (11.0/12.0/Web only) databases; • Use "Teradata Native Driver" to connect with Teradata databases; • Use "MySQL Native Driver" to connect with MySQL databases; • Use "ASE Native Driver" to connect with SAP ASE (15.x only) databases; • Use "PostgreSQL Native Driver" to connect with PostgreSQL databases; • Use "IBM DB2 Driver" to connect with IBM DB2 databases.
ODBC Data Source	<p>Select a system DSN.</p> <p>Apeon supports system DSN only, so only system DSN will be listed here.</p> <p>This option becomes visible when you select ODBC Driver or SQL Anywhere Native Driver from the Data Source Type drop-down list.</p>
NET Service Name	<p>Select a service name.</p> <p>This option becomes visible when you select Oracle Native Driver from the Data Source Type drop-down list.</p>
IBM Informix Server	<p>Specify the machine name or IP address of the Informix database server.</p> <p>This option becomes visible when you select IBM Informix Native Driver from the Data Source Type drop-down list.</p>
Database Host	<p>Specify the machine name or IP address of the database server.</p> <p>This option becomes visible when you select MS SQL Server Native Driver, Teradata Native Driver, MySQL Native Driver, ASE Native Driver, PostgreSQL Native Driver, or IBM DB2 Driver from the Data Source Type drop-down list.</p>
Database Port	<p>Specify the port number of the database server.</p> <p>This option becomes visible when you select MS SQL Server Native Driver, Teradata Native Driver, MySQL Native Driver, ASE Native Driver, PostgreSQL Native Driver, or IBM DB2 Driver from the Data Source Type drop-down list.</p>
Database Name	<p>Specify the database name.</p> <p>This option becomes visible when you select MS SQL Server Native Driver, IBM Informix Native Driver, Teradata Native Driver, MySQL Native Driver, ASE Native Driver, PostgreSQL Native Driver, or IBM DB2 Driver from the Data Source Type drop-down list.</p>
User Name	<p>Type the database login username. The username is set on the database server.</p>

Password	Type the database login password. The password is set on the database server.
Character Set	Select the character set according to mapping characters bidirectionally from the client application and Teradata databases. This option becomes visible when you select Teradata Native Driver from the Data Source Type drop-down list.
Session Mode	Select the session mode according to the duration of the session. The session mode is used on a Teradata Database V2R2.0 or later system. This option becomes visible when you select Teradata Native Driver from the Data Source Type drop-down list.
Maximum Connection Pool Size	Specify the maximum number of connections Appeon Server opens and pools on startup.
Minimum Connection Pool Size	Specify the minimum number of connections Appeon Server opens and pools on startup.
Connection Timeout	Specify the timeout period (in seconds) for the connection.
Command Timeout	Specify the timeout period (in seconds) for the commands.
Connection Lifetime	Specify the lifetime period (in seconds) for the pooled connection. To be specific, you can specify the timeout period from the time a connection is created to the time when the connection returns to the pool. If the actual lifetime of a connection exceeds that specified in Connection Lifetime, the connection will be terminated. It is recommended to be used in cluster configuration when forcing the load balancing between a running server and a server just brought online. If the value is set to 0, the pooled connection allows the maximum connection timeout.
Other Options	Currently, this setting is effective to ASA/SQL Anywhere databases only. Specify the connection_authentication property for ASA/SQL Anywhere databases. The value should be in this format: "authentic_code=####" where "authentic_code" is the key word, text after "=" should be the authorization code. Appeon Server will automatically set the connection_authentication property when connecting with the ASA/SQL Anywhere database.
Dynamic Database Connection	Select whether to enable dynamic database connection. When it is on, the LogID and LogPass of the Transaction object will be used to connect to the database; when it is off, the user name and password specified in the data source will be used to connect to the database.

Pooling	<p>Select whether to use the connection pool. This option must be turned on, if Dynamic Database Connection is on.</p> <p>When setting to "true", the connection with database does not release; when setting to "false", the connection with database fully releases.</p> <p>This setting is supported in all the driving types except for ODBC driver.</p>
Extended Options	<p>Specify the connection parameters that are not listed above. The value should be in this format: "parameter_name=####" where "parameter_name" is the name of the connection parameter, for example, TextSize=64000, this sets the maximum size of text or binary data sent or received from ASE to 64 KB. If there are more than one parameter, separate them by semicolon (";").</p> <p>Apeon provides the ability to specify more connection parameters than those listed above, however, different database types require different connection parameters, and the use of parameters may also depend on the environment, therefore, Apeon cannot guarantee every single parameter specified here would work as expected and thus would highly recommend you test them out thoroughly before adding any parameter into the production use.</p>

5.3.3.2.2 Editing a data source

Click **Edit** and change the settings on the **Edit Data Source** page. The settings are specified the same way as on the **Add Data Source** page.

Figure 5.19: Edit data source

Welcome > Server > Resources > Data Source > [ApeonTest]

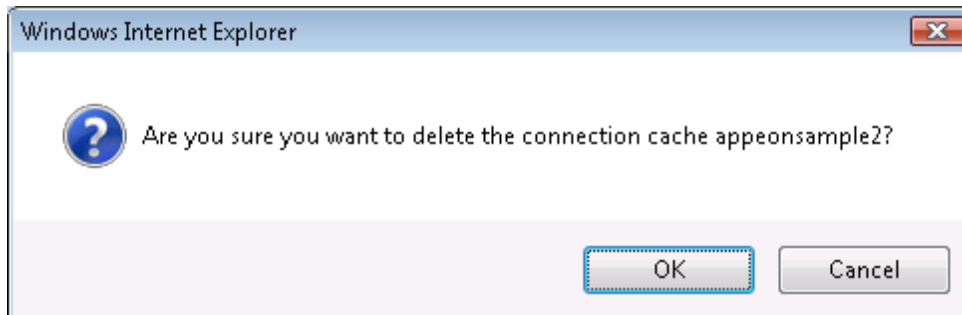
Edit Data Source

Data Source Name:	ApeonTest	
Data Source Type:	ODBC Driver	
ODBC Data Source:	ApeonSample	If the database type is ASA and the database file resides in an NTFS folder, please grant the "NETWORK SERVICE" or "Everyone" user with full controls over that folder.
User Name:	admin	
Password:	
Maximum Connection Pool Size:	100	
Minimum Connection Pool Size:	10	
Connection Timeout (seconds):	120	
Command Timeout (seconds):	30	
Connection Lifetime (seconds):	0	
Other Options:	<div style="border: 1px solid #ccc; height: 40px;"></div>	
Dynamic Database Connection:	<input type="checkbox"/> On	
Pooling:	<input checked="" type="checkbox"/> On	

5.3.3.2.3 Deleting a data source

Click **Delete** and you will be prompted whether to delete the specified data source. Click **OK** to proceed.

Figure 5.20: Delete data source



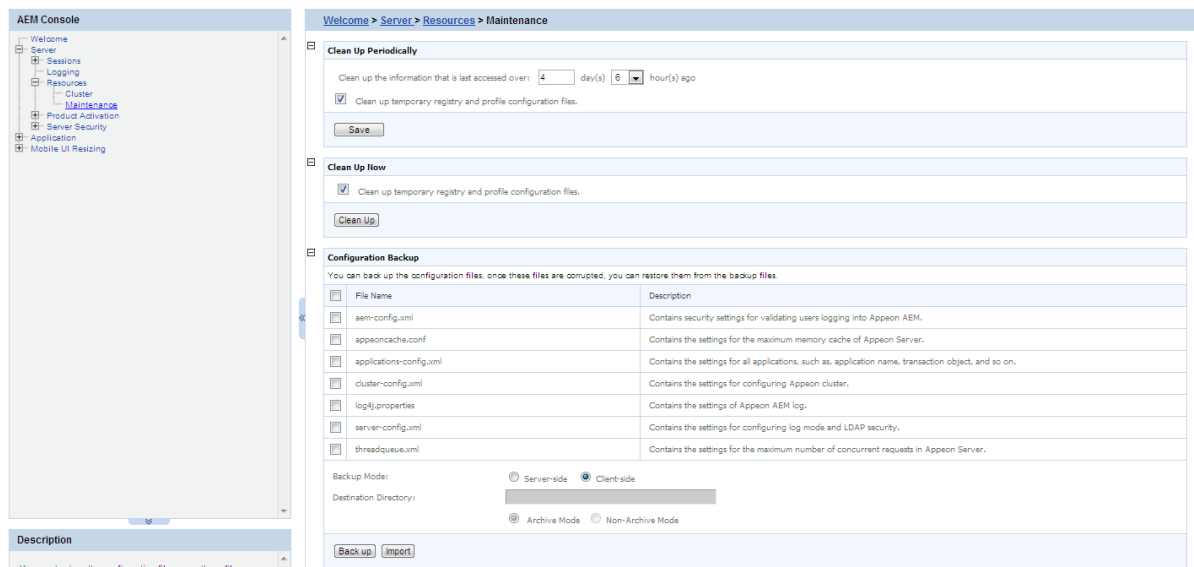
5.3.3.2.4 Testing a data source

Click **Test Connection** to test if the specified data source is successful. If the data source fails, click **Edit** to modify the settings until it succeeds.

5.3.3.3 Maintenance

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

Figure 5.21: Maintenance



5.3.3.3.1 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 Apeon 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 EA Server.

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 2 days ago at 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: ____ days ____ 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: 2 days 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.

5.3.3.3.2 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 EA Server.

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 [Cluster](#) tool.

5.3.3.3.3 Configuration Backup

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

Figure 5.22: Configuration Backup

Configuration Backup		
You can back up the configuration files, once these files are corrupted, you can restore them from the backup files.		
<input type="checkbox"/>	File Name	Description
<input type="checkbox"/>	aem-config.xml	Contains security settings for validating users logging into Apeon AEM.
<input type="checkbox"/>	apeoncache.conf	Contains the settings for the maximum memory cache of Apeon Server.
<input type="checkbox"/>	applications-config.xml	Contains the settings for all applications, such as, application name, transaction object, and so on.
<input type="checkbox"/>	cluster-config.xml	Contains the settings for configuring Apeon cluster.
<input type="checkbox"/>	log4j.properties	Contains the settings of Apeon AEM log.
<input type="checkbox"/>	server-config.xml	Contains the settings for configuring log mode and LDAP security.
<input type="checkbox"/>	threadqueue.xml	Contains the settings for the maximum number of concurrent requests in Apeon Server.
Backup Mode: <input type="radio"/> Server-side <input checked="" type="radio"/> Client-side		
Destination Directory: <input type="text"/>		
<input checked="" type="radio"/> Archive Mode <input type="radio"/> Non-Archive Mode		
<input type="button" value="Back up"/> <input type="button" value="Import"/>		

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 Apeon 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 Apeon 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.

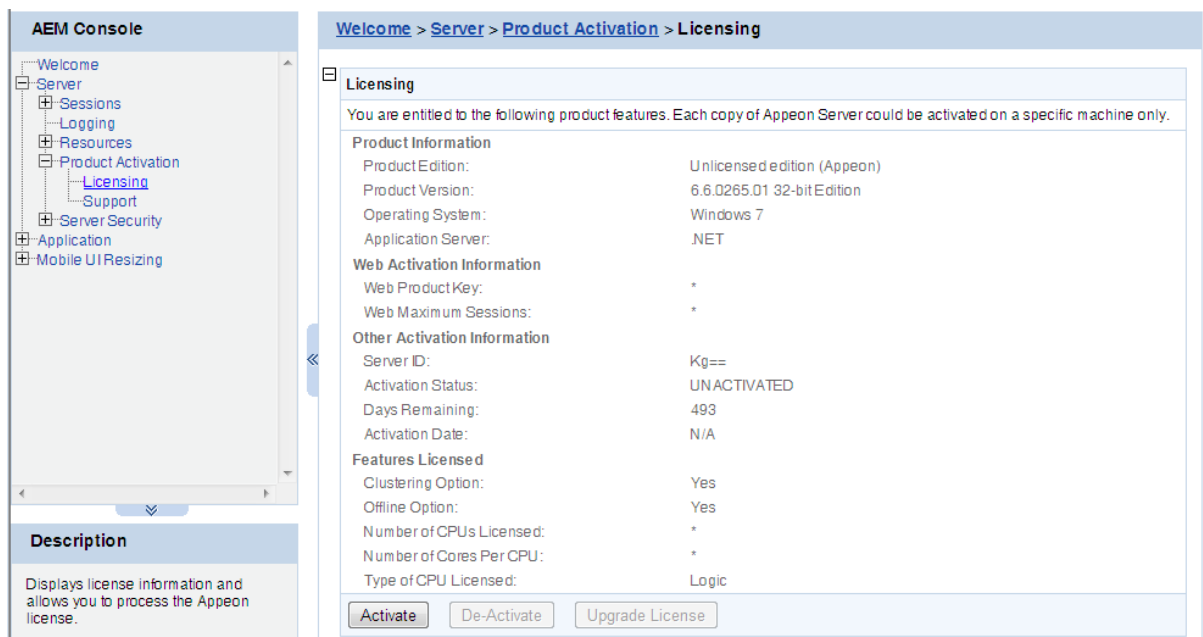
5.3.4 Product Activation

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

Figure 5.23: Product Activation

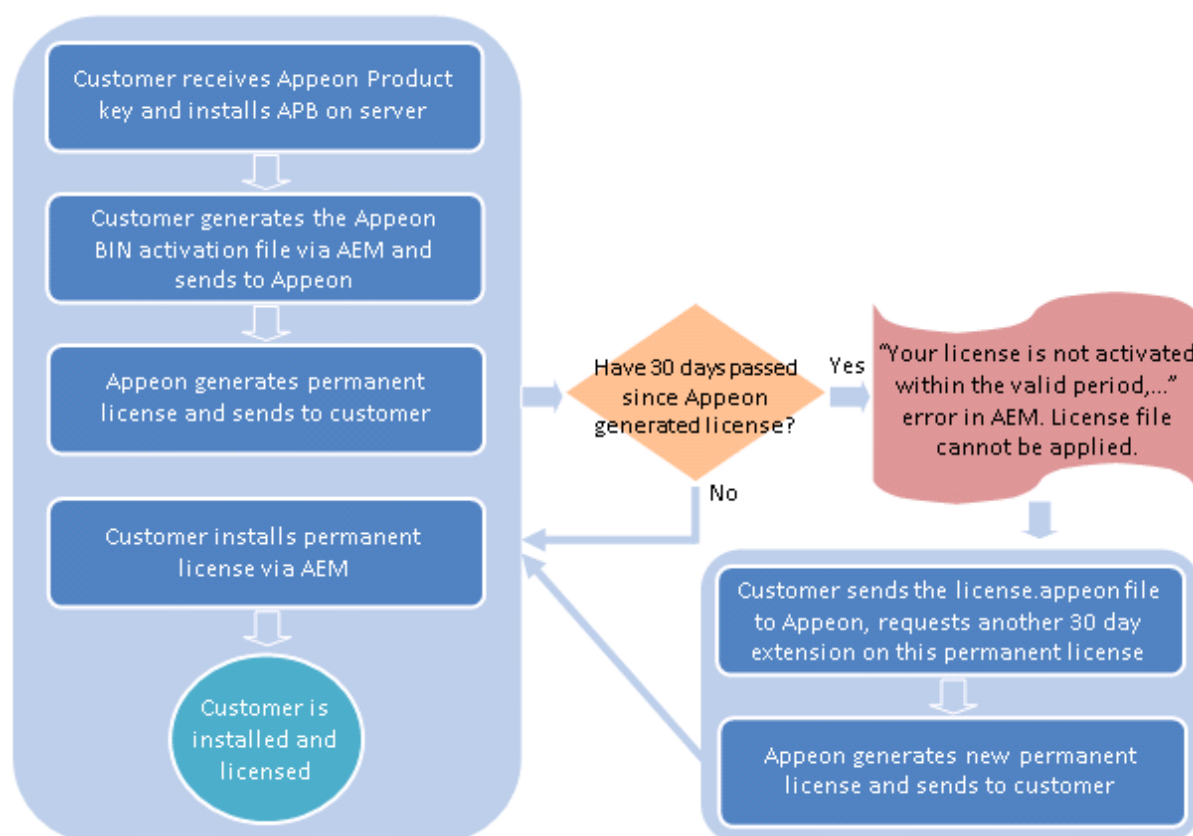
5.3.4.1 Licensing

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

Figure 5.24: Licensing

5.3.4.1.1 Product Activation

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

Figure 5.25: Activation process

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

Step 1: Generate the activation request (the Apeon 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 **Apeon Web & Apeon Mobile** and **Apeon Universal** is mainly the way of allocating the sessions/devices. For **Apeon Universal**, Web apps and mobile apps can share the unused sessions/devices; while for **Apeon Web & Apeon 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 **Apeon Web & Apeon Mobile**, the Web sessions cannot exceed 5 and the Mobile sessions cannot exceed 10, while for **Apeon 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 Apeon 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 5.26: Product activation

Welcome > Server > Product Activation > Licensing > Product Activation

Product Activation

To activate your software, please click the "Generate Activation Request" button. The information displayed in the table will be packaged into a data file that will be used by 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:	MCM3OC00NS1DNC0xMS00Ni0yRg==
Is Virtual Machine:	<input type="checkbox"/> (Select this checkbox if server is a virtual machine.)
Support Offline:	<input checked="" type="checkbox"/>

Generate Activation Request Apply License

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 5.27: 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 5.28: Product activation

Welcome > Server > Product Activation > Licensing > Product Activation

Product Activation

To activate your software, please click the "Generate Activation Request" button. The information displayed in the table will be packaged into a data file that will be used by 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:	MCM3OC00NS1DNC0xMS00Ni0yRg==
Is Virtual Machine:	<input type="checkbox"/> (Select this checkbox if server is a virtual machine.)
Support Offline:	<input checked="" type="checkbox"/>

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 5.29: 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

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

Figure 5.30: Licensing

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:	MCNIGMC00RC18M0yQ50wQ1G0XwwMC01MC01Ni1DMC0wMC0wMXwwMC01MC01Ni1DMC0wMC0wOA==
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:	*
Type of CPU Licensed:	Physics
<input type="button" value="Activate"/> <input type="button" value="De-Activate"/> <input type="button" value="Upgrade License"/>	

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.

Figure 5.31: License deactivation

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:	MCNIGMC00RC1BM0yQ50wQI1GOXwwMC01MC01Ni1DMC0wMC0wMXwwMC01MC01Ni1DMC0wMC0wOA==
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:	*
Type of CPU Licensed:	Physics
[Activate] [De-Activate] [Upgrade License]	

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.

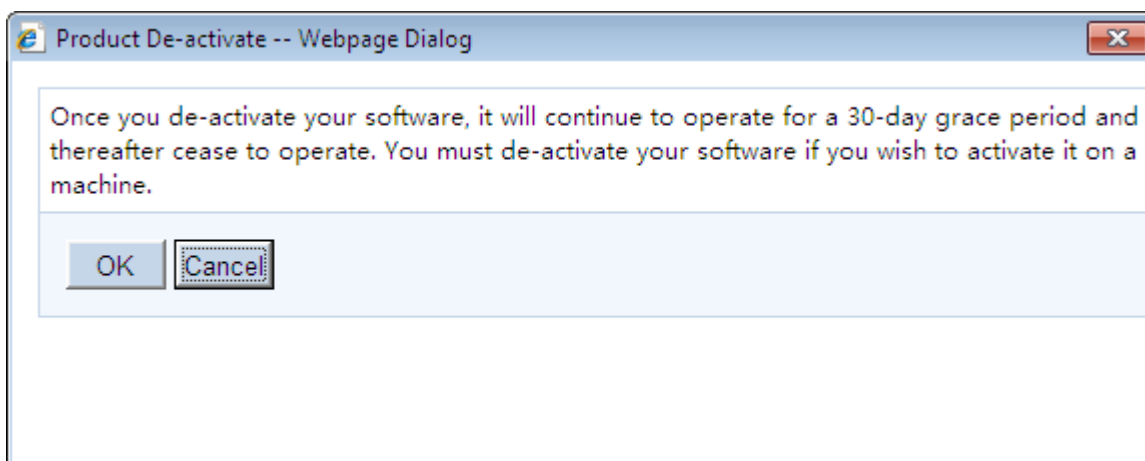
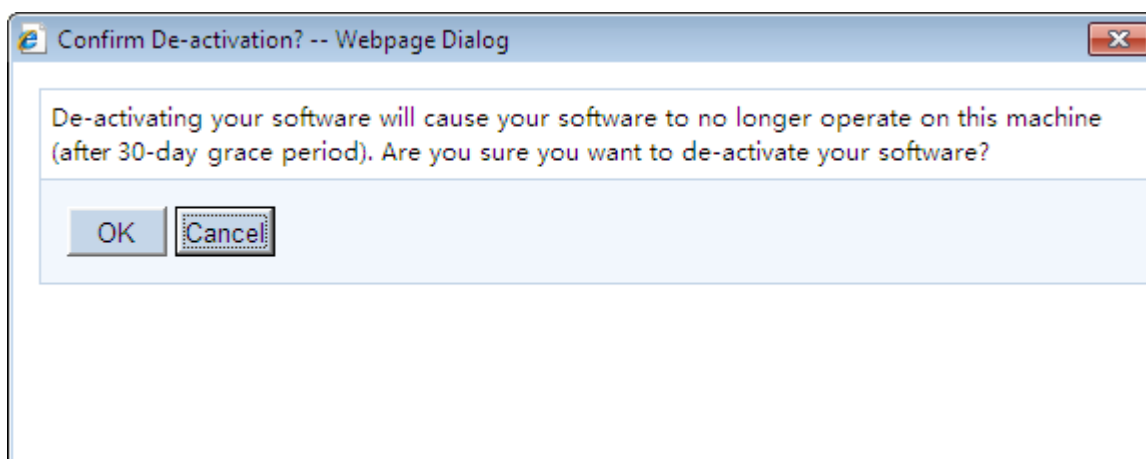
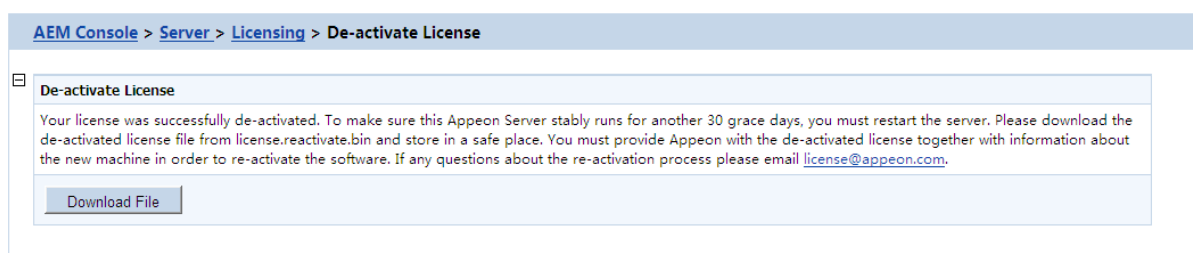
Figure 5.32: Product De-activate

Figure 5.33: Confirm De-activation

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

Figure 5.34: De-activate License

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

Follow the steps in [Generate the activation request](#) 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 [Install the permanent license file](#).

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 5.35: Upgrade license

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@apeon.com>. The request will be processed in Apeon and an upgraded license will be sent to you later.

Figure 5.36: Download license upgrade request

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

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

Figure 5.37: Apply license

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 5.38: Support



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:

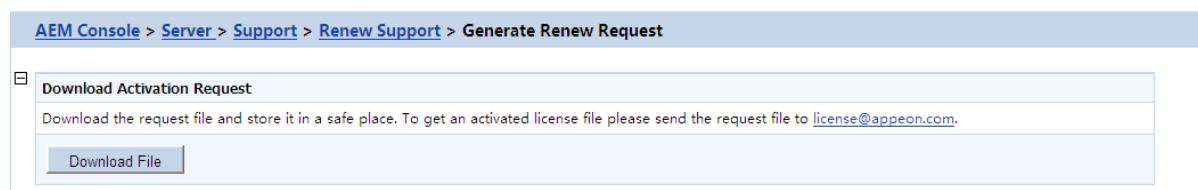
Step 1 - Click the **Renew Support** button. In the **Renew Support** page, enter the time you want to extend, which should only be an integer. Click the **Generate Renew Request** button.

Note: The order date is counted from the first date when your last license expired.

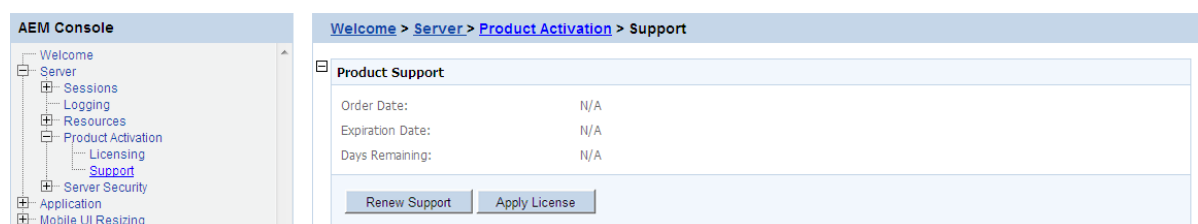
Figure 5.39: Renew support



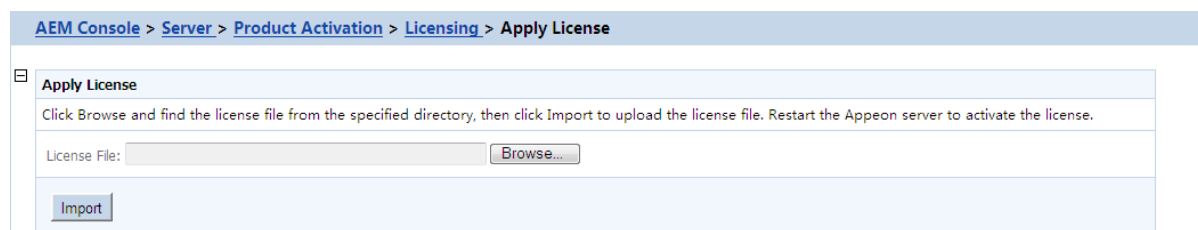
Step 2 - Click the **Download File** button to download the request file which is by default named as license.support.bin and send it to <license@appeon.com>. The request will be processed in Appeon and a new license with extended support period will be sent to you later.

Figure 5.40: Generate renew request

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

Figure 5.41: Product support

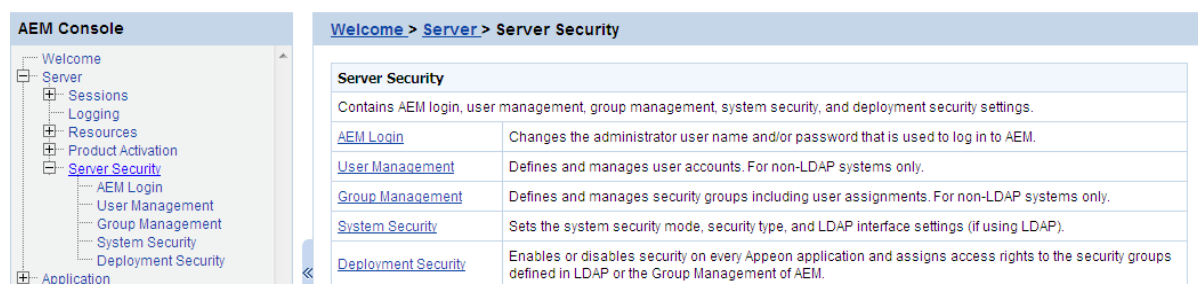
Step 4 - In the **Apply License** window, click the **Browse...** button to select the license.apeon file delivered by Apeon. Click the **Import** button to import your license file.

Figure 5.42: Apply license for support

Step 5 - Restart Apeon 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

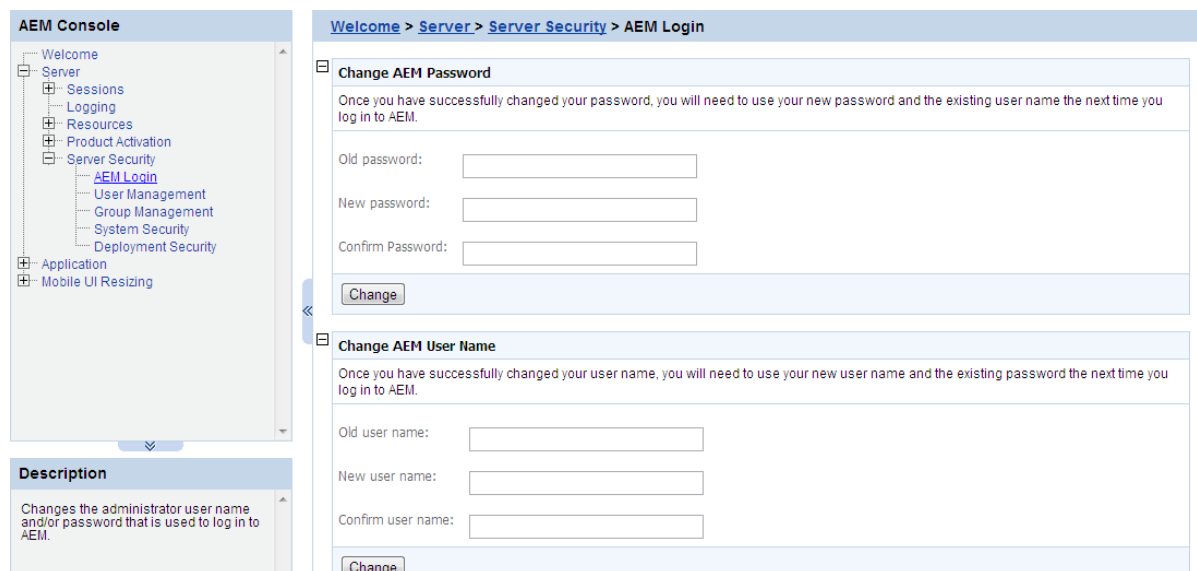
Server Security is a set of tools for viewing and modifying all the security on the server side and prevents unauthorized access to the Apeon Web or Apeon mobile applications using an existing LDAP installation or Apeon's built-in application security. There are five tools: AEM Login, User Management,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

Figure 5.43: 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 5.44: AEM Login



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, Apeon recommends that you change the username and password after the initial login.

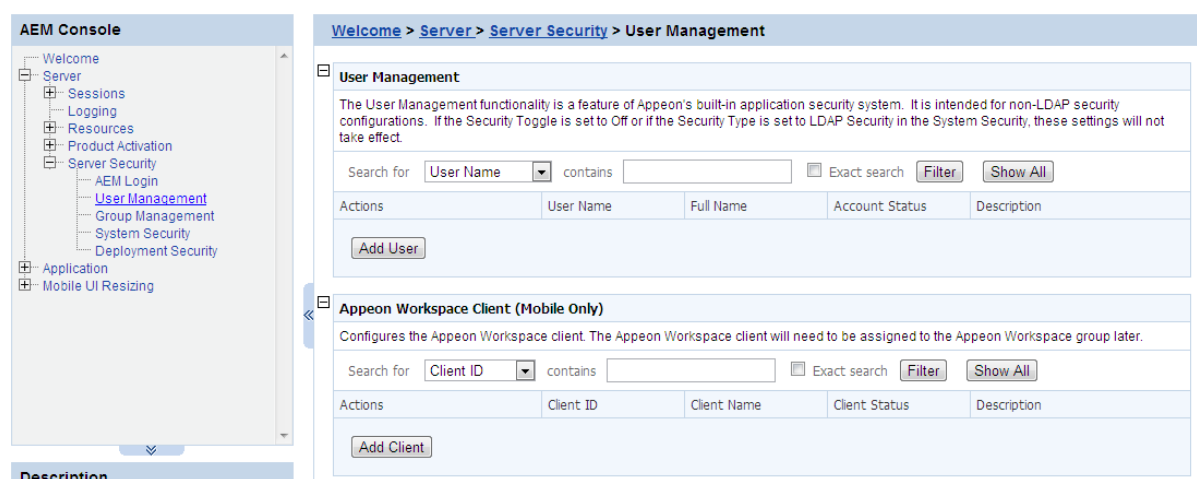
5.3.5.2 User Management

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

1. user accounts for all Apeon applications including Web apps and Mobile apps
2. Apeon Workspace clients for Apeon mobile applications running in Apeon 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 [Group Management](#) tool.

Figure 5.45: User Management



5.3.5.2.1 User Management

If the security type is Apeon 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 5.46: Add a user

AEM Console > Server > Server Security > User Management > Add User

User Account

The user you are adding will not be able to log in to the Appeon application until the user has been assigned to at least one group.

User Name:

Full Name:

Description:

Password:

Confirm Password:

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 5.47: Add a user

Welcome > Server > Server Security > User Management > Edit User

Edit User Account

The user you are adding will 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:

Description:

Password:

Confirm Password:

Account is disabled

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 [Adding a new user](#).

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 a 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 5.48: Add Appeon Workspace Client

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 5.2: 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 accessibility to the Appeon mobile application on this Appeon Server.

Items	Descriptions
	You can select this checkbox to disable the client account, instead of deleting it. The disabled client cannot access any mobile application on this Apeon 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 Apeon Workspace client

To edit an Apeon Workspace client:

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

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

Figure 5.49: Edit Apeon Workspace Client

Apeon Workspace Client (Mobile Only)				
Configures the Apeon Workspace client. The Apeon Workspace client will need to be assigned to the Apeon Workspace group later.				
Search for <input type="text" value="Client ID"/> contains <input type="text"/> <input type="checkbox"/> Exact search <input type="button" value="Filter"/> <input type="button" value="Show All"/>				
				Total: 7 Record(s)
Actions	Client ID	Client Name	Client Status	Description
	000062D957F6627E02B0454F0000410C	000062D957F6627E02B0454F0000410C	Enabled	Automatically registered client.
	00006CE85E6010237D320BF100002539	00006CE85E6010237D320BF100002539	Enabled	Automatically registered client.
	000077F82E33532E4510214A00007570	000077F82E33532E4510214A00007570	Enabled	Automatically registered client.
	000079110CD137000FE225D600002279	000079110CD137000FE225D600002279	Enabled	Automatically registered client.
	85CD096E5DFA412EAF9F97E491A1EFFF	85CD096E5DFA412EAF9F97E491A1EFFF	Enabled	Automatically registered client.
	8E0D0354637E423A93BB09E2C9C5A608	8E0D0354637E423A93BB09E2C9C5A608	Enabled	Automatically registered client.
	969F84D809C143319CBAAFB14BFDB02C	969F84D809C143319CBAAFB14BFDB02C	Enabled	Automatically registered client.
<input type="button" value="Add Client"/>				

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

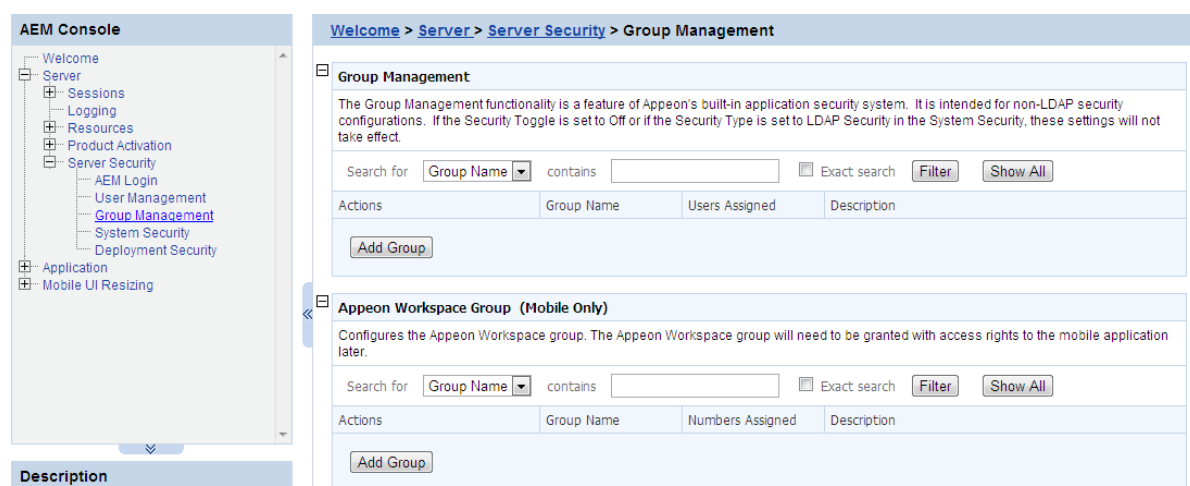
Deleting an Apeon Workspace client

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

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

5.3.5.3 Group Management

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

Figure 5.50: 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 5.51: Add a group

- 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 [User Management](#) 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 [Adding a new group](#).

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 Apeon Workspace Group

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

Viewing Apeon Workspace user groups

In the **Apeon 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 Apeon Workspace group

To add a new Apeon Workspace group:

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

Figure 5.52: Add Apeon Workspace Group

Welcome > Server > Server Security > Group Management > Add Apeon Workspace Group

Add Apeon Workspace Group

Input the detailed information about this new Apeon Workspace group.

Group Name:

Group Description:

Assign the Apeon Workspace clients to this group. All of the Apeon Workspace clients configured in the Apeon Workspace Clients tool will be listed.

Unassigned Apeon Workspace Clients

Assigned Apeon Workspace Clients

APPEONTEST

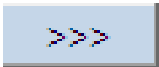
>>>

<<<

Save and Add Save

Step 2: On the **Add Apeon 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 Apeon Workspace Clients** group by selecting a client name from the **Unassigned Apeon Workspace Clients** list box and then clicking the

forward  icon. You can create clients in the [Apeon Workspace Client](#) 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 5.53: Appeon Workspace Group

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 contains Exact search

Total: 1 Record(s)

Actions	Group Name	Numbers Assigned	Description
<input type="button" value="Edit"/> <input type="button" value="Delete"/>	AppeonTest	1	AppeonTest

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 5.54: Edit Appeon Workspace Group

[Welcome](#) > [Server](#) > [Server Security](#) > [Group Management](#) > **Edit Appeon Workspace Group**

Edit Appeon Workspace Group
Input the detailed information about this new Appeon Workspace group.

Group Name:
Group Description:

Assign the Appeon Workspace clients to this group. All of the Appeon Workspace clients configured in the Appeon Workspace Clients tool will be listed.

Unassigned Appeon Workspace Clients:

Assigned Appeon Workspace Clients:

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

Deleting an Apeon Workspace Group

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

You can only delete the Apeon 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.

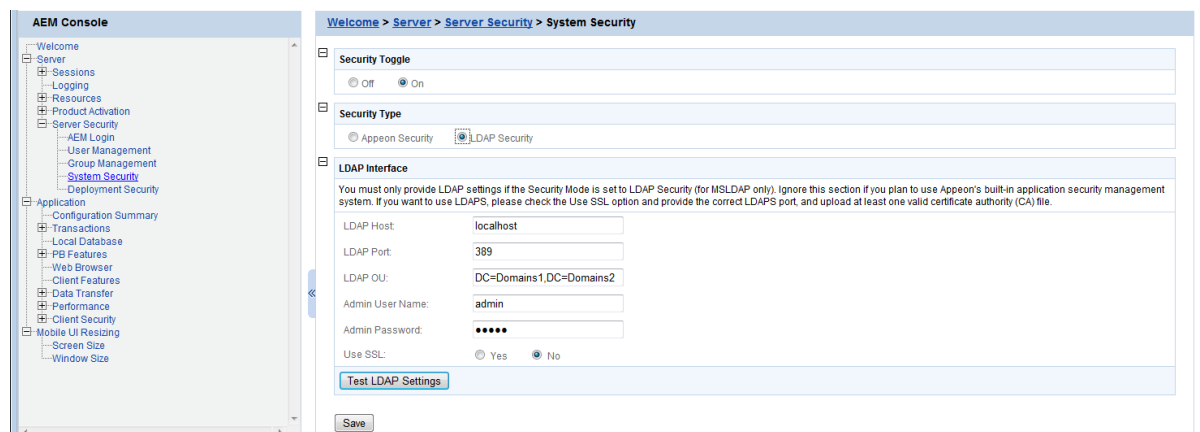
2. Create an organization unit in the LDAP server.

Only a single organization unit can be used to host all the groups and users for the Apeon Web or Apeon 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

Figure 5.55: 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 [Client Security](#) are ignored when set to off, but the settings will not be lost.
- **Security Type** -- Determines which system, Apeon 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 Apeon 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 Apeon Server. Apeon .NET version only supports Microsoft LDAP server, which requires Windows 2003 & 2008 Active Directory.

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.

Table 5.3: Security toggle, Security type and Security Settings

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	Apeon Security	User Management Group Management Client Security Deployment Security	The Apeon 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.

- Apeon security and LDAP security provides the user with options of using Apeon Server or LDAP to assign groups to the application. The security groups will be read from either LDAP (if it is LDAP security) or Apeon Server (if it is Apeon 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 Apeon Server:

1. One Apeon 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 <http://support.appeon.com/index.php?/Knowledgebase/Article/View/22/0/appeon-ldap-security-configuration-guide/>.

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 domain name of the LDAP Server.
- LDAP port -- The network port (by default 389) of the LDAP server. The default port for LDAP over SSL (LDAPS) is 636.
- LDAP OU -- The LDAP organization unit where the users and groups are created.
For Microsoft LDAP server, the LDAP OU should be "CN=*Common Name*, DC=AAA, DC=BBB, (DC=CCC)", where CN denotes common name of the entry, DC denotes domain component, in this example, AAA stands for the domain component (DC) that contains all the groups, and BBB stands for the domain component that contains the AAA component.
- 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 -- A common alternate method of securing LDAP communication. The default port for LDAP over SSL is 636. If Yes is selected, the communication between Appeon Server and LDAP Server will use LDAPS protocol. You need to import the Certificate Authenticated file of LDAPS (see [the section called "Importing certificate file of LDAPS"](#) for details). If No is selected, the communication between Appeon Server and LDAP server will use LDAP protocol.

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.

Importing certificate file of LDAPS

In order to use LDAP over SSL (LDAPS), every Appeon Server needs to import the certificate authenticated file of LDAPS in the following way:

1. Add the Apeon Server machine to the domain. Please consult the network administrator if you do not know how to do this.

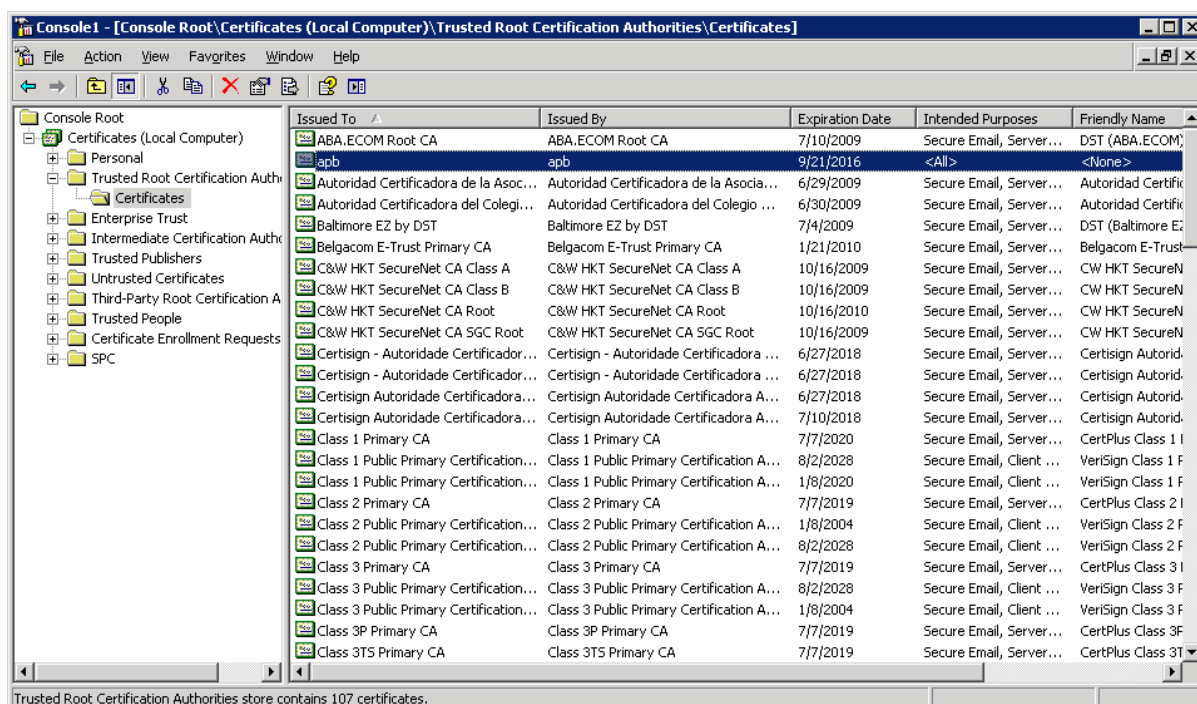
2. On the Apeon Server machine, import the certificate file of the domain server.

Here are detailed steps:

- a. Choose from **Start > Run**, then type *MMC*, and then click **OK**.
- b. On the **Console** menu, click **Add/Remove Snap-in**. The **Add/Remove Snap-in** dialog box opens.
- c. Click **Add** to display the **Add Standalone Snap-in** dialog box that lists the snap-ins installed on your computer.
- d. From the list of snap-ins, double-click **Certificates** to open the **Certificates snap-in** wizard.
- e. Select **Computer account**, then click **Next**, and then click **Finish**. Click **Close** and then **OK** to return to the Console.
- f. Choose from **Console Root > Certificates (local computer) > Trusted Root Certification Authorities**, then right-click **Certificates**, and then select from **All Tasks > Import...** in the **Certificate Import Wizard**, and then select and import the certificate file.

When the certificate file is imported successfully, you will be able to see the certificate listed, as shown below.

Figure 5.56: Imported Certificates



5.3.5.6 Deployment Security

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

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

Figure 5.57: Deployment Security



The Deployment Security tool enables you to do the following:

1. Disable deployment security for Apeon 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 Apeon Server profile will be ignored, and the Apeon Server profile will always work for application deployments.

2. Enable deployment security for Apeon 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 Apeon Server. If a user name and password that belongs to the group is specified in the Apeon Server profile configuration in Apeon Developer, the profile will work for application deployments. Otherwise, application deployments to the Apeon Server profile give an error message "Failed to call methods in Apeon Server; cannot find the user..."

By default, all groups are listed in the Unassigned Groups list. The groups are read from the Apeon Server (if the security type is Apeon 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 Apeon Server are registered in AEM with their application profile names.

Application are a set of tools for setting the server-related properties for the Apeon Web or mobile applications. There are nine 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.

Figure 5.58: Application

The screenshot shows the AEM Console interface. On the left, a tree view shows the navigation structure: Welcome, Server, Application (selected), Configuration Summary, Transactions, Local Database, PB Features, Web Browser, Client Features, Data Transfer, Performance, Client Security, and Mobile UI Resizing. The main content area is titled 'Welcome > Application' and contains a table with the following data:

Application	
Configures various settings of the deployed applications.	
Configuration Summary	Views all the configurations of each application.
Transactions	Contains transaction objects and timeout settings.
Local Database	Views the local data source on the mobile device.
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.
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.
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 Apeon Workspace client.

5.4.1 Configuration Summary

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

Figure 5.59: Application Summary

The screenshot shows the AEM Console interface. On the left, a tree view shows the navigation structure: Welcome, Server, Application, Configuration Summary (selected), Transactions, Local Database, PB Features, Web Browser, Client Features, Data Transfer, Performance, Client Security, and Mobile UI Resizing. The main content area is titled 'Welcome > Application > Configuration Summary' and contains a table with the following data:

Application Configuration Summary					
Views 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	
codeexamples	12.5	6667.20	76.00	0.00	
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	
vouhoops	12.5	3169.69	0.00	0.00	

Click **Application Name** to sort the applications.

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

Figure 5.60: Application Configuration Summary

Welcome > Application > Configuration Summary > [sales]

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
Request Timeout	3600
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 Apeon registry emulation
Maximum Threads	2
INI File Mode Settings	Client-side
Run Mode	Normal Mode
Encoding	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.

Figure 5.61: Transactions

AEM Console

Welcome > Application > Transactions

Transactions

Contains transaction objects 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.
Timeout	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 to the Web, Apeon Server handles the database connection using data sources configured in Apeon Server rather than transaction objects defined in the PowerBuilder application.

All transaction objects in the PowerBuilder application must be mapped to a correct Apeon Server data source. "Correct" means that the data source should be created correctly in Apeon 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:

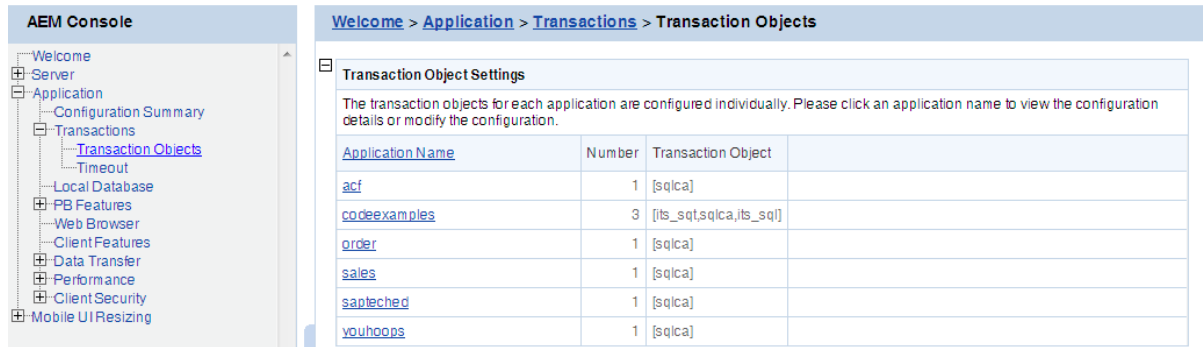
- Dynamic Transaction object to data source mapping via PowerScript
- Static Transaction object to data source mapping in AEM

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 Configuring transaction object mappings

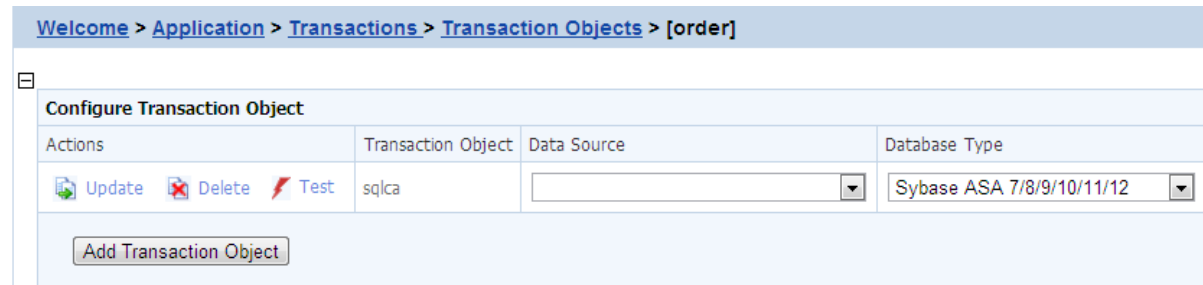
When an application is deployed to Apeon Server, AEM automatically adds the application profile name into the application list of the Transaction Objects tool.

Figure 5.62: 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.

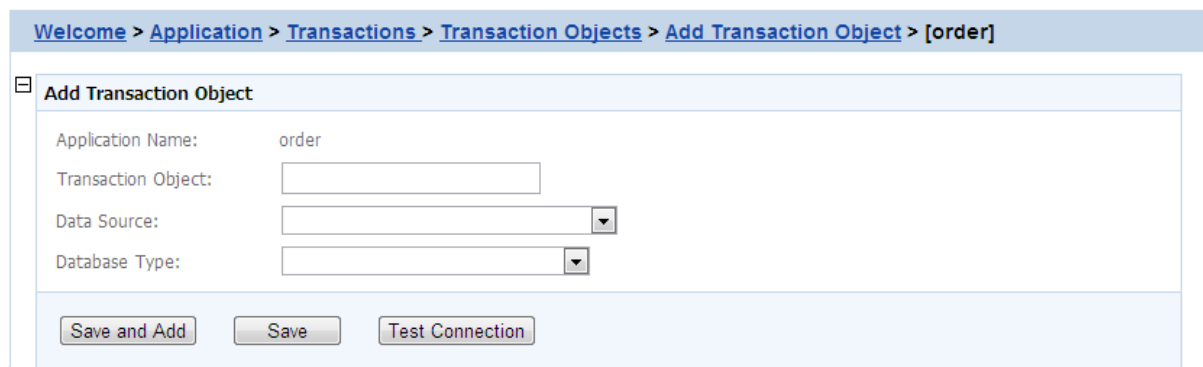
Figure 5.63: Configuring transaction object mappings for an application



Adding a transaction object mapping

Step 1: Click the **Add Transaction Object** button. The Add Transaction Object page appears.

Figure 5.64: Add transaction object



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

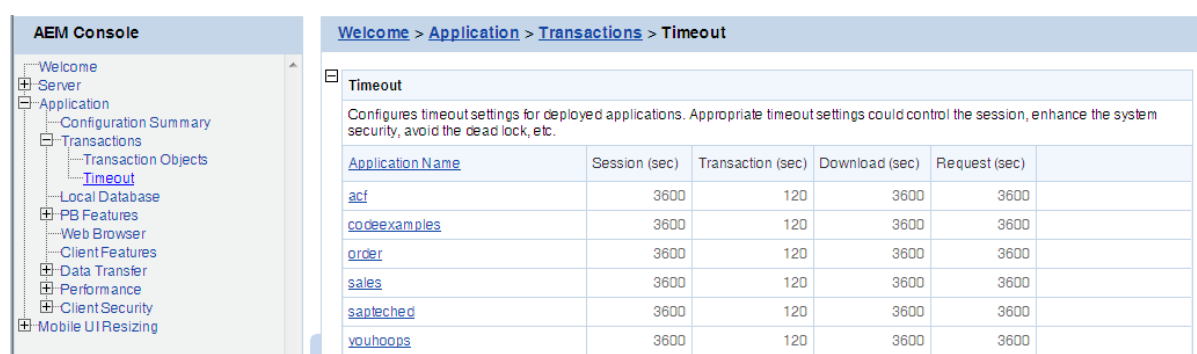
Clicking the **Delete** button will delete a transaction object mapping. A pop-up message will ask you to confirm deletion.

5.4.2.2 Timeout

The Timeout provides configuration for six important functions of Appeon Server for the Appeon Web or Appeon mobile 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)
- When the rollback of transactions will complete (Rollback Completion Time)
- The maximum times to retry the rollback of transactions (Maximum Rollback Retries)

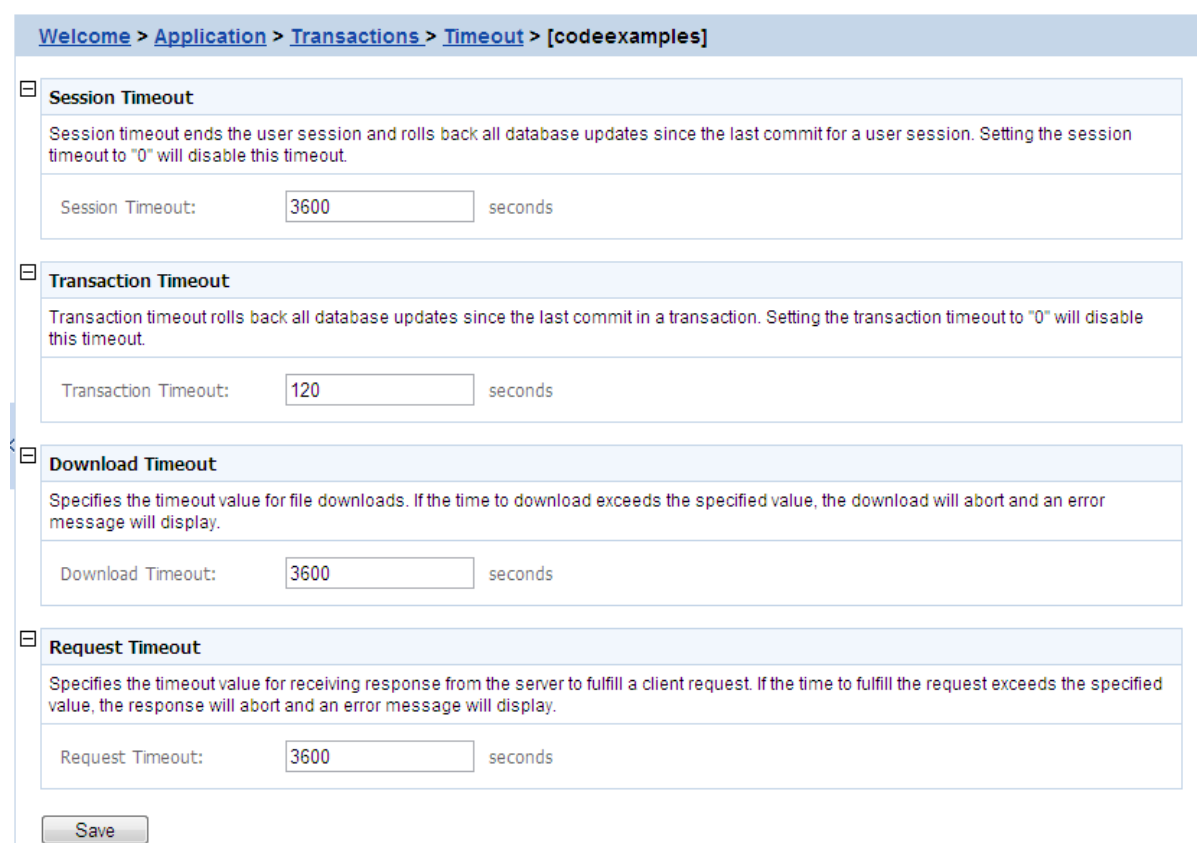
Figure 5.65: Timeout



Application Name	Session (sec)	Transaction (sec)	Download (sec)	Request (sec)
act	3600	120	3600	3600
codeexamples	3600	120	3600	3600
order	3600	120	3600	3600
sales	3600	120	3600	3600
sapleched	3600	120	3600	3600
youwhoops	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 5.66: Timeout settings



Session Timeout
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: seconds

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: seconds

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: 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: seconds

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.

5.4.2.2.5 Rollback Completion time

The Rollback Completion time setting is to specify the maximum time (in seconds) to complete a rollback of a transaction. If the time to roll back transaction exceeds the specified value, the transaction rollback will be terminated. You can use this setting to prevent the deadlock from causing the application to hang for a long time.

The default value is 3 seconds. It is recommended that it is set to a number between 3 seconds and Transaction Timeout *0.1.

5.4.2.2.6 Maximum Rollback Retries

The Maximum Rollback Retries setting is to specify the maximum times to retry a rollback of a transaction. Appeon Server executes a rollback if a transaction times out. If the rollback fails, Appeon Server will keep retrying until this maximum value is reached. Setting this value to 0 will disable this feature.

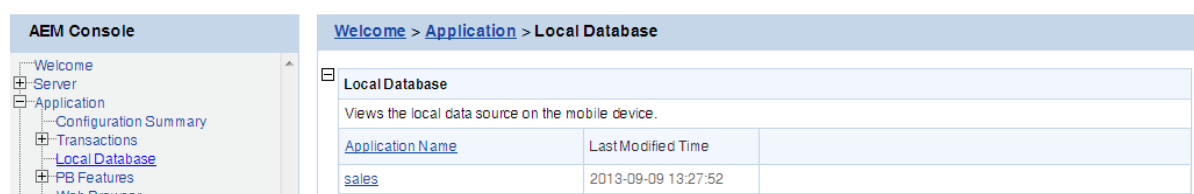
The default value is 3. It is recommended that it is set to a number smaller than 10.

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.

Figure 5.67: Local database



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 5.68: Local database connections for an application

Welcome > Application > Local Database > [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 5.69: PB Features

AEM Console

Welcome > Application > PB Features

PB Features

Contains PB-related features, such as registry mode, INI files, DLL/OCX files, decimal precision, and Web Service DataWindow.

Registry Mode	Specifies the mode to execute PowerBuilder Registry functions.
INI 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.
DLL/OCX Files	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.
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.

Figure 5.70: Registry Mode

AEM Console

Welcome > Application > PB Features > Registry Mode

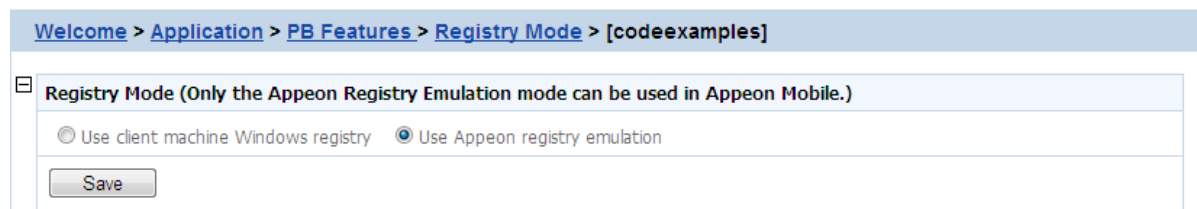
Registry Mode

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.

Application Name	Registry Mode
acf	Use Appeon registry emulation
codeexamples	Use Appeon registry emulation
order	Use Appeon registry emulation
sales	Use Appeon registry emulation
sapteched	Use Appeon registry emulation
youhoops	Use Appeon registry emulation

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 5.71: Registry Functions Execution Mode



By default, all the Appeon applications are set to "Use Appeon registry emulation".

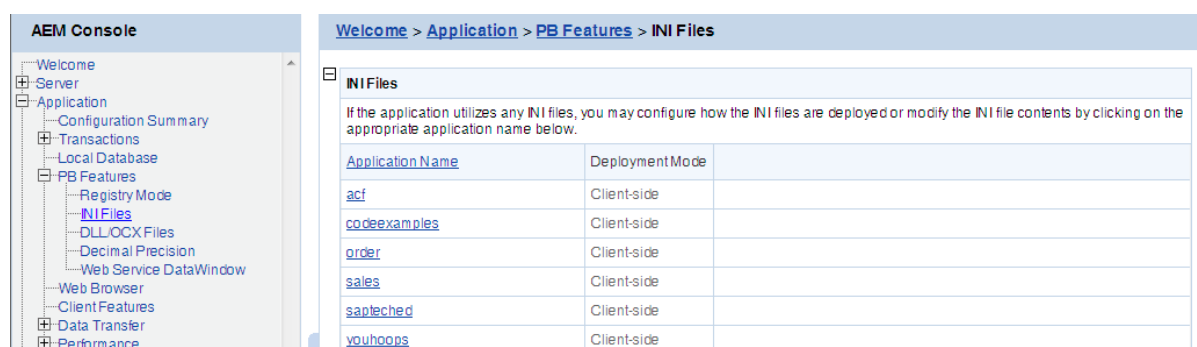
Appeon recommends you change the default value to "Use client machine Windows registry" if the application is deployed as a Web application. This option is recommended because it enables the application to directly interact with the client registry, the same as that in PowerBuilder.

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

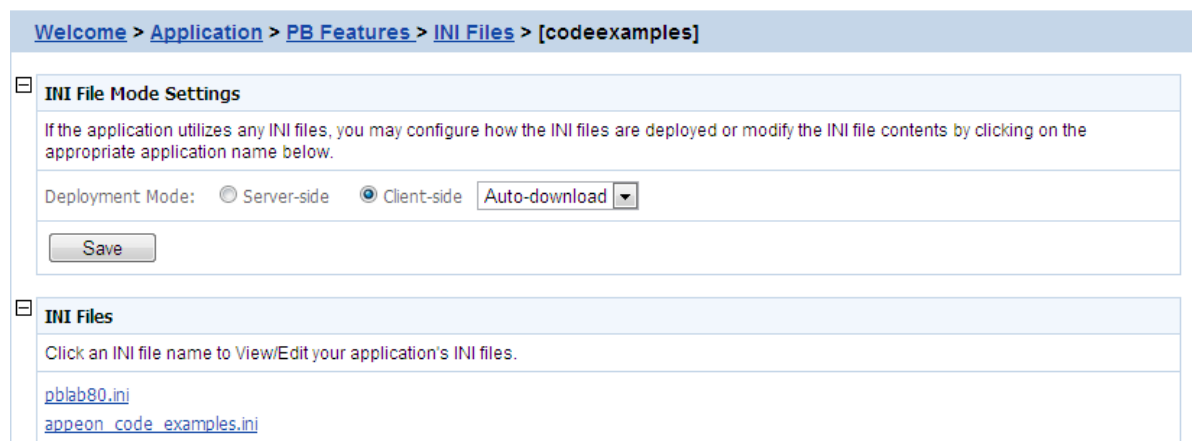
The INI Files tool determines whether the Appeon deployed applications would download XML files that emulate INI files to the clients for profile functions, or directly use the XML files stored in Appeon Server database, and it also provides the function to allow you to view and modify the INI file contents of the application.

Figure 5.72: 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 5.73: INI file mode settings

In the server-side manipulations mode, the Apeon 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\ApeonINI\ directory at the client side, if you have selected the **Default User Profile Location** or the **Browser Cache Folder** option in [Client Storage Location](#).
2. in the specified directory, if you have selected **Customized Location** in [Client Storage Location](#).

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 Apeon 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 Apeon Server cluster.
- D. The "Server-side" mode keeps the confidential profile information in Apeon 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:

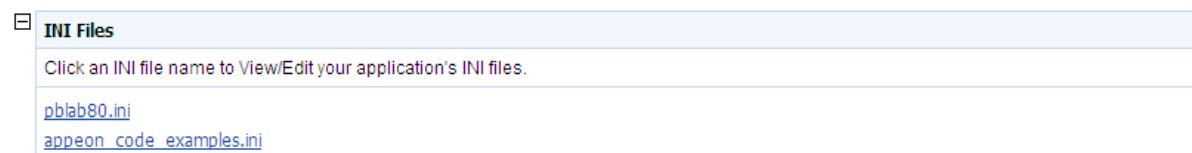
1. AEM does not allow the user to dynamically create an INI file on the local machine. Instead, AEM transfers the INI file from PowerBuilder into an XML file and allows the user to manipulate the XML file on the local machine. The INI file is transferred by Appeon Developer during the parsing process 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 5.74: INI files



Click a file name of INI file to view or edit its content.

Figure 5.75: INI file content



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 [Registry Mode](#) 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.

Figure 5.76: DLL/OCX Files

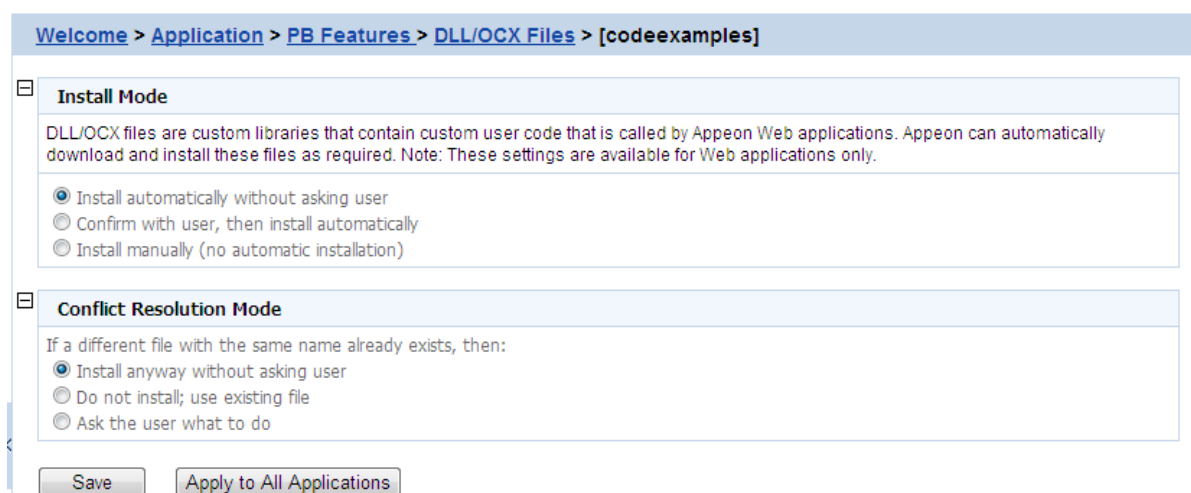
The screenshot shows the AEM Console interface. On the left, the navigation tree is expanded to 'Application > PB Features > DLL/OCX Files'. The main content area displays the 'DLL/OCX Files Download (Web Only)' configuration page. This page includes a descriptive text about DLL/OCX files and a table with two columns: 'Application Name' and 'Install Mode'. The table lists several application names and their corresponding install modes, all of which are set to 'Install automatically without asking user'.

Application Name	Install Mode
acf	Install automatically without asking user
codeexamples	Install automatically without asking user
order	Install automatically without asking user
sales	Install automatically without asking user
sapteched	Install automatically without asking user
youhoops	Install automatically without asking user

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 5.77: DLL/OCX Files settings

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
Install automatically without asking user	Default. Before the Web application runs, the DLL and OCX files of the application are automatically downloaded and installed without giving any notification.
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, Apeon does not handle the DLL and OCX files installation for the application. Users must manually install 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.

Table 5.5: Conflict resolution mode options

Conflict Resolution Mode	Description
Install anyway without asking user	Default. Directly replaces the file of the same name without notifying you.

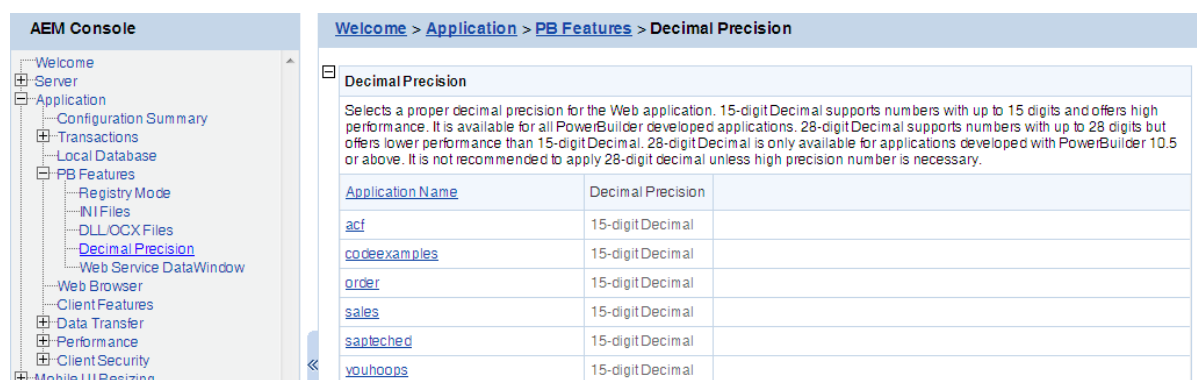
Conflict Resolution Mode	Description
Do not install; use existing file	Continues using the existing file.
Ask the user what to do	Displays a message box for the user to select whether to replace or keep the existing file.

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.

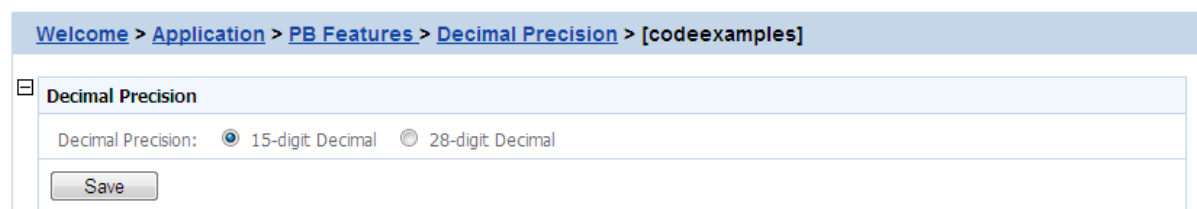
- 15-digit Decimal supports numbers with up to 15 digits and offers high performance. It is available for all PowerBuilder developed applications.
- 28-digit Decimal supports numbers with up to 28 digits but offers lower performance than 15-digit Decimal. 28-digit Decimal is only available for applications developed with PowerBuilder 10.5 or above. It is not recommended to apply 28-digit decimal unless high precision number is necessary.

Figure 5.78: Decimal Precision



Step 1: Click the application name listed in the **Decimal Precision** table, and then select a decimal mode on the page that appears.

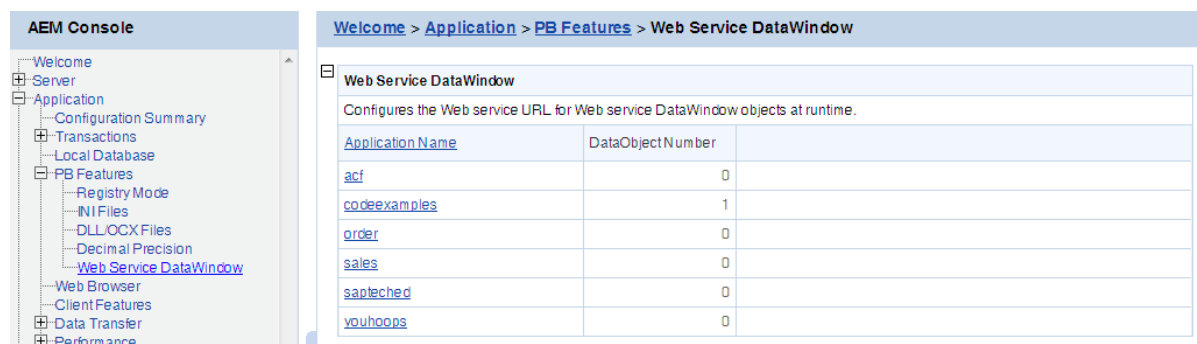
Figure 5.79: Decimal Precision Settings



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

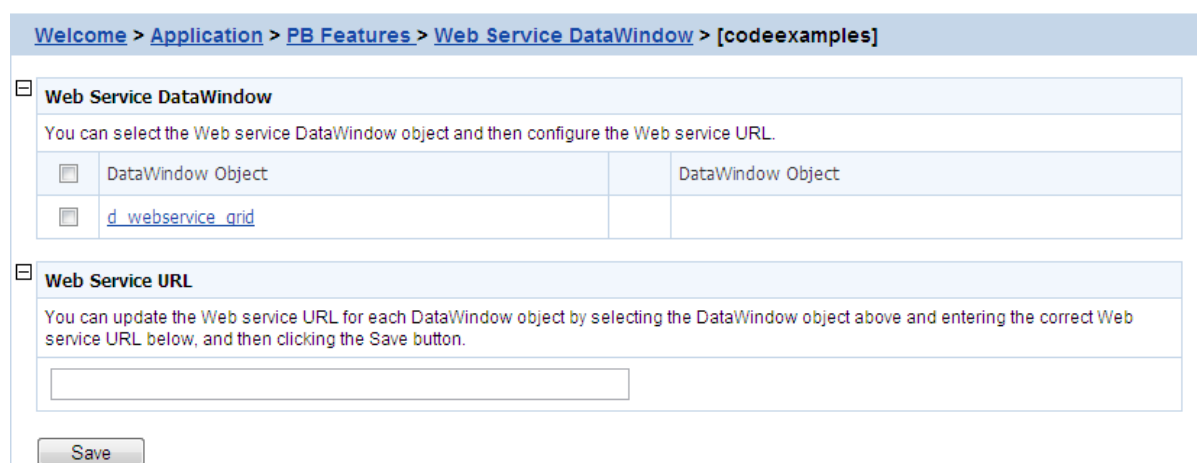
5.4.4.5 Web service DataWindow

You select the Web service DataWindow object and then configure the Web service URL.

Figure 5.80: Web service DataWindow

This section takes the `apeon_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 5.81: Web service DataWindow for `apeon_code_examples`

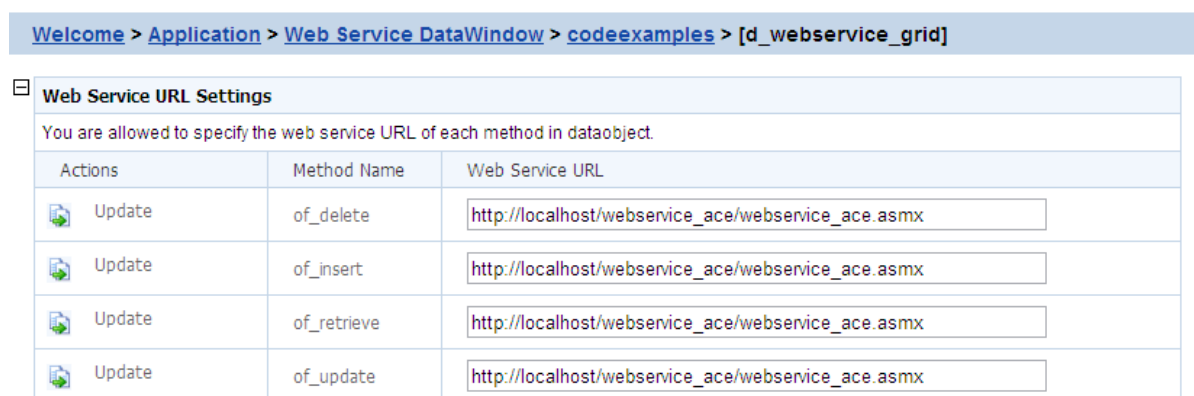
Step 2: Select the DataWindow Object to configure or modify the Web Service URL(s).

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:

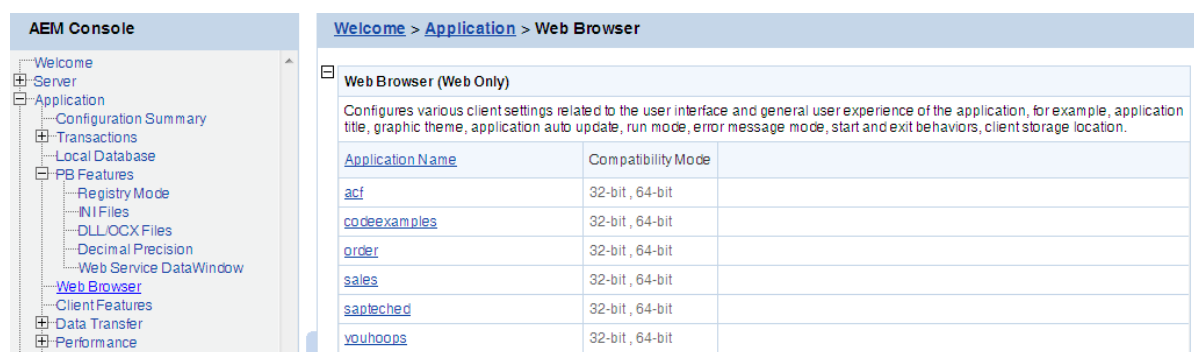
1. In the **Web Service DataWindow** table, click the name of the DataWindow.
2. On the Web Service URL Settings page that displays, modify the Web Service URL for a method.

Figure 5.82: Modify URL for DataWindow methods

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 5.83: Web Browser

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 32-bit 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 5.84: IE compatibility settings

IE Compatibility

Specifies running Apeon Web application in IE 32-bit mode and/or 64-bit mode. Make sure the OCX/DLL/OLE files that are deployed with the application will use the same mode; otherwise the incompatibility between the IE mode and OCX/DLL/OLE files will cause malfunctions related to these files. Apeon will prompt the end user about this incompatibility and you can customize the warning message here.

Compatibility Mode: 32-bit 64-bit

Warning Message: You are running the Web application in an incompatible IE browser. The OCX/DLL/OLE

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:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Display the Status Bar in IE browser:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Display the Address Bar in IE browser:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Display all of the toolbars in IE browser:	<input checked="" type="radio"/> Yes	<input type="radio"/> No
Open the IE browser in Full Screen view:	<input type="radio"/> Yes	<input checked="" type="radio"/> No

Save

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 compiled under 32-bit compatibility mode for running in 32-bit IE browsers, the other compiled 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 Apeon Workarounds PBL to determine if the IE browser is 64-bit. Refer to Section 2.3.1, “ApeonExtFuncs 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 5.85: IE Browser Interface

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:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Display the Status Bar in IE browser:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Display the Address Bar in IE browser:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Display all of the toolbars in IE browser:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Open the IE browser in Full Screen view:	<input type="radio"/> Yes <input checked="" type="radio"/> No

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 5.86: Client Features

AEM Console

Welcome > Application > Client Features

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.

Application Name	Web Application Theme	Web Application Auto Update	Client Storage Location
acf	Windows Vista/XP	Yes	Default User Profile Location
codeexamples	Windows Vista/XP	Yes	Default User Profile Location
order	Windows Vista/XP	Yes	Default User Profile Location
sales	Windows Vista/XP	Yes	Default User Profile Location
sapteched	Windows Vista/XP	Yes	Default User Profile Location
youhoops	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 5.87: Application Title



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 5.88: Web Application Theme



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

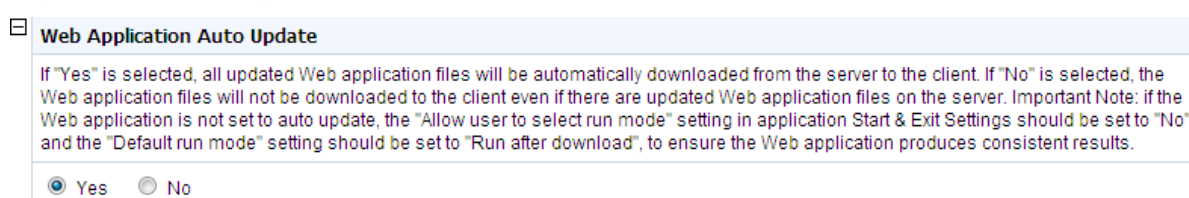
When an Appeon Web or Appeon mobile application is re-deployed and run, it will compare the application files on the client with the files on the server, if there are updated files on the server, it will download the files to the client if "Auto Update Web Files" is set to Yes, and will not download 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 Apeon Developer toolbar | Configure button | Application Profiles tab page) and re-deploy 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 re-deployed under release mode (or debug mode) cannot directly use the cached files which were generated under debug mode (or release mode).

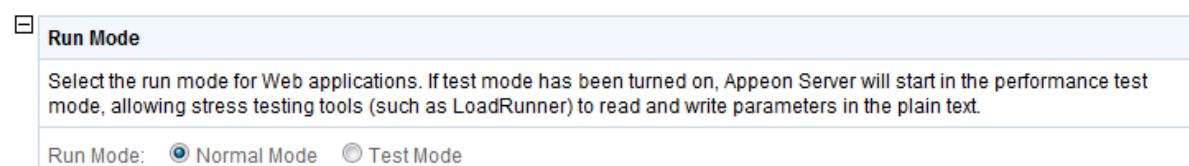
Figure 5.89: Auto Update



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 5.90: Run mode



There are two Run Mode options:

- **Normal Mode:** This is the default and recommended mode for running the Apeon Web or Apeon 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 **Test Mode** is selected, be sure to disable the data cache in the [DataWindow Data Cache](#) page before the application is run.

2. If the setting of **Test Mode** has 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.
3. Mobile applications cannot run in **Test Mode**.

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 5.91: Error mode configuration

Error Message Mode (Browser-Based Apps Only)	
Specifies where to display error messages. Note: In IWA and mobile apps, error messages always display in pop-ups.	
Error Level	Display Mode
0	<input checked="" type="radio"/> Display in the status bar <input type="radio"/> Display in a popup message
1	<input type="radio"/> Display in the status bar <input checked="" type="radio"/> Display in a popup message
2	<input type="radio"/> Display in the status bar <input checked="" type="radio"/> Display in a popup message
10	<input type="radio"/> Display in the status bar <input checked="" type="radio"/> Display 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 5.92: 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:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Default run mode:	<input checked="" type="radio"/> Run now <input type="radio"/> Run after download
Exit Mode:	<input type="radio"/> Close browser <input type="radio"/> Close tab <input checked="" type="radio"/> Redirect to <input type="text" value="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 `ApeonGetCacheDir` function in *Workarounds & API Guide* to get the current directory for the application.

Note: This setting is available for Web applications only.

Figure 5.93: Client storage location

Client Storage Location (Web Only)	
Specifies where to cache the web application files. Note: These settings are available for Web applications only.	
<input checked="" type="radio"/> Default 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.
<input type="radio"/> Browser Cache Folder	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.
<input type="radio"/> 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:\Apeon\) or utilize one of the following dynamic paths: %system% denotes Windows system path; %userLocation% 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%\apeon folder allocated by the Windows system, unless you remove them manually. The %appdata%\apeon folder in Windows Vista/7/8 is: %SYSTEMDRIVE%\users\{username}\AppData\Roaming\apeon
- **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:
 Windows Vista/7: %SYSTEMDRIVE%\Users\{username}\AppData\Local\Microsoft\Windows\Temporary Internet Files\
 Windows 8/8.1: %SYSTEMDRIVE%\Users\{username}\AppData\Local\Microsoft\Windows\INetCache\
- **Customized Location:** The Web application files will be stored in the location specified here. You must specify absolute path here (e.g. C:\Apeon\) 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.

Figure 5.94: Customized location

Customized Location	
Specifies where to cache the web application files. Note: These settings are available for Web application only.	
Path Type	Path
System Files Storage Path	<input type="text"/>
Application Object Files Storage Path	<input type="text"/>
OLE Files Storage Path	<input type="text"/>
Menu Object Files Storage Path	<input type="text"/>
Image File Storage Path	<input type="text"/>
OCX/DLL Files Storage Path	<input type="text"/>
INI Files Storage Path	<input type="text"/>
DataWindow Meta Files Storage Path	<input type="text"/>

5.4.6.8 Client Logs

Select one of the following modes for the logs generated on the client side, and specify the maximum size for the log files.

Figure 5.95: 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 it off once not necessary.	
Log Mode	Log File
<input checked="" type="radio"/> Off (default) <input type="radio"/> Error mode <input type="radio"/> Info mode <input type="radio"/> Debug mode	Log file size: <input type="text" value="2"/> MB (2MB<=File size<=5MB)

See the following table for details on the mode options.

Table 5.6: Client Log Mode

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.

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:
 1. If you select **Default User Profile Location** as the client storage location in [Client Storage Location](#), the log is saved in C:\Users\{username}\AppData\Roaming\apeon\%appname%\log\apeonclient.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 [Client Storage Location](#), the log is saved in C:\Users\{username}\AppData\Local\Microsoft\Windows\Temporary Internet Files\{systemfolder1}\{subsystemfolder1}\apeonclient.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 Apeon provides. See ApeonGetCacheDir function in *Workarounds & API Guide*.
 3. If you select **Customized Location** as the client storage location in [Client Storage Location](#), the log is saved in %System Files Storage Path%\log\apeonclient.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\apeonclient.log*.
- For mobile applications (that run in Apeon 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 Apeon Workspace. For details on how to view the log or send the log via email, refer to Section 5.8, “Configuring logs” in *Apeon 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: `ApeonGetCacheDir()+"/Log/EonMob.log"`.

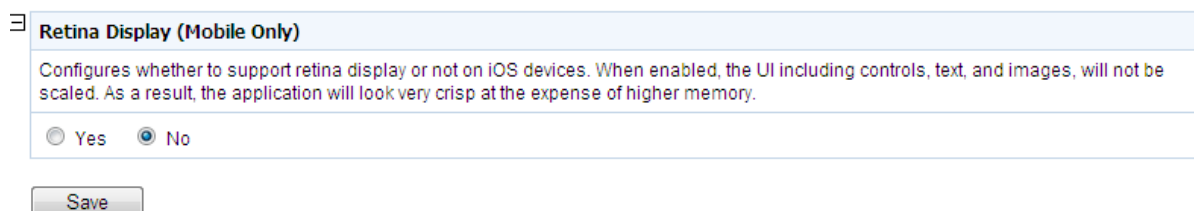
Refer to the section called “of_sendmail” in *Workarounds & API Guide* for details.

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.

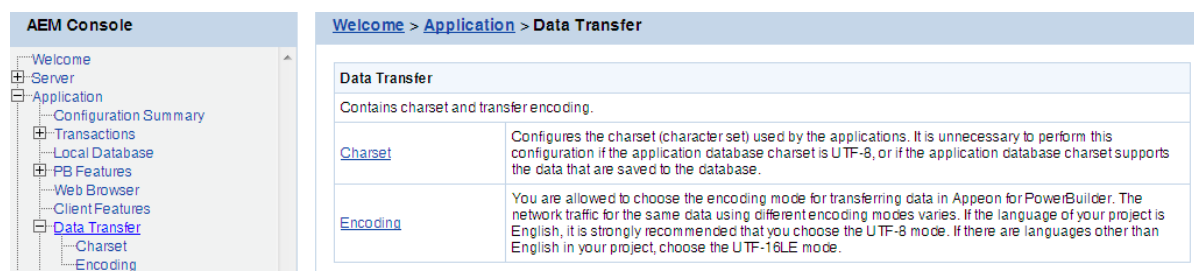
Figure 5.96: Retina Display Supported



5.4.7 Data Transfer

Data Transfer is a set of tools for viewing and modifying Charset and Encoding.

Figure 5.97: Data Transfer



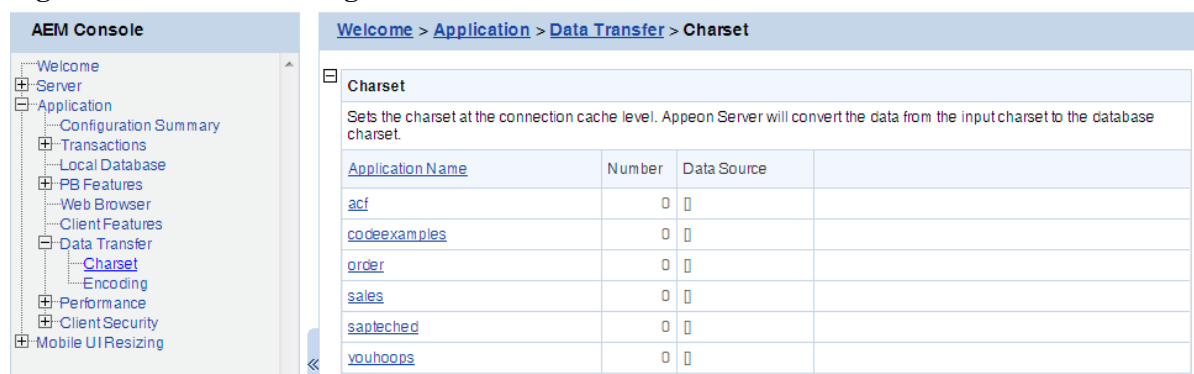
5.4.7.1 Charset

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:

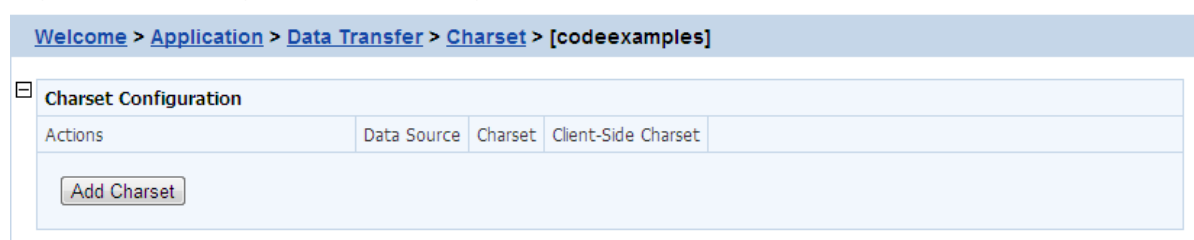
- The database uses non-UTF-8 character set, and
- The language display of the application has error code in it

Otherwise, it is unnecessary to use this tool.

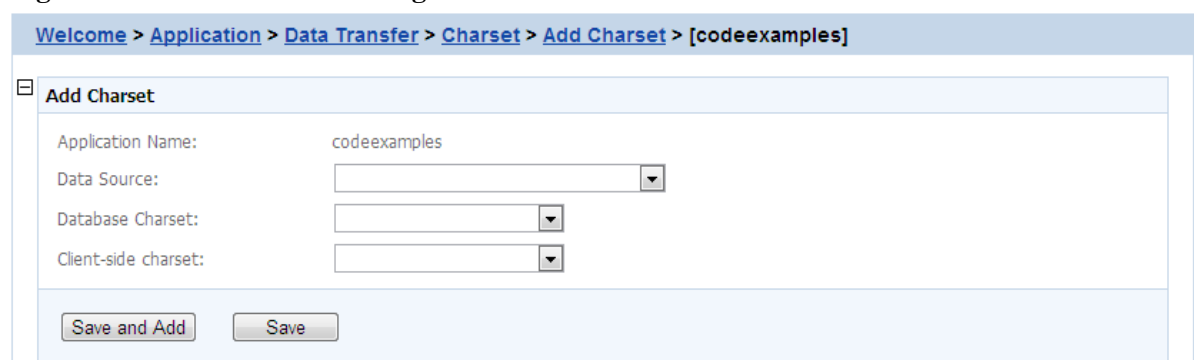
Figure 5.98: Charset settings

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 5.99: Configure charset settings

Step 2: Click the **Add Charset** button. The Add Charset window opens.

Figure 5.100: Add charset settings

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.

Table 5.7: Charset and code pages

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)	
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)	

Page	Charset	Description	Asterisk
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)	
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)	

Page	Charset	Description	Asterisk
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	*
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.)	

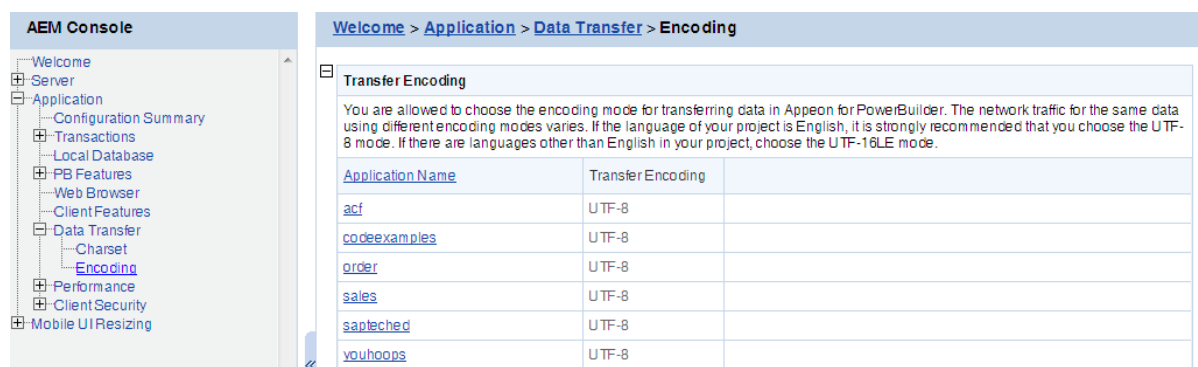
Page	Charset	Description	Asterisk
20290	IBM290	IBM EBCDIC (Japanese Katakana)	
20297	IBM297	IBM EBCDIC (France)	
20420	IBM420	IBM EBCDIC (Arabic)	
20423	IBM423	IBM EBCDIC (Greek)	
20424	IBM424	IBM EBCDIC (Hebrew)	
20833	x-EBCDIC-KoreanExtended	IBM EBCDIC (Korean Extension)	
20838	IBM-Thai	IBM EBCDIC (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)	
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)	*

Page	Charset	Description	Asterisk
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

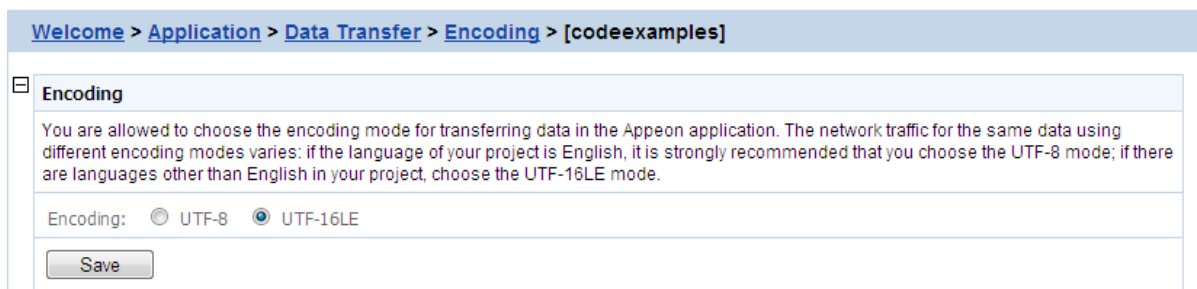
Encoding specifies the encoding format for data transferred between the clients and the server. The transfer speed varies when the encoding format changes.

Figure 5.101: Encoding



If the language of the application is pure English, select UTF-8; otherwise, select UTF-16LE.

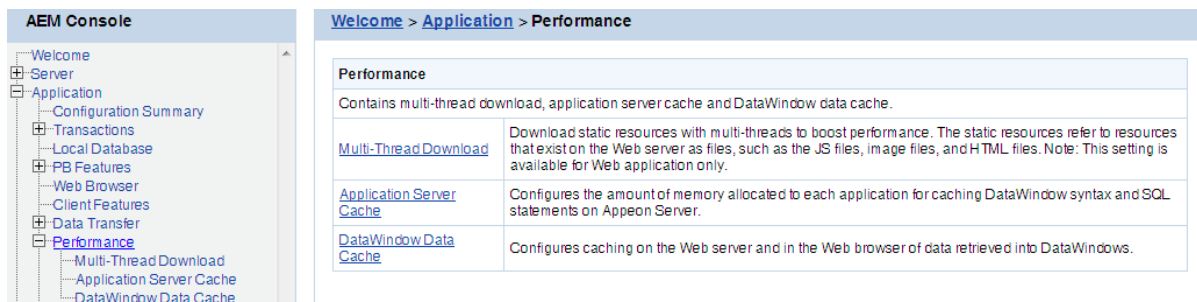
Figure 5.102: Encoding settings



5.4.8 Performance

Performance is a set of tools for viewing and modifying Multi-thread Download, application Server Cache and DataWindow Data Cache.

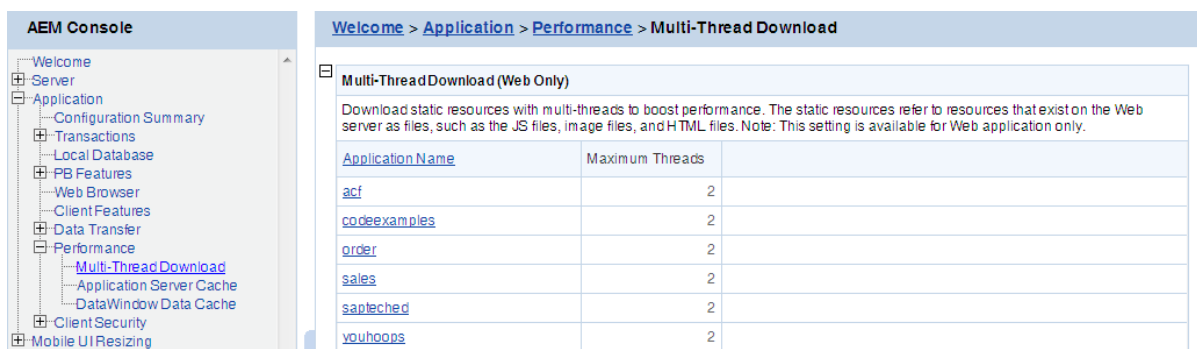
Figure 5.103: Performance



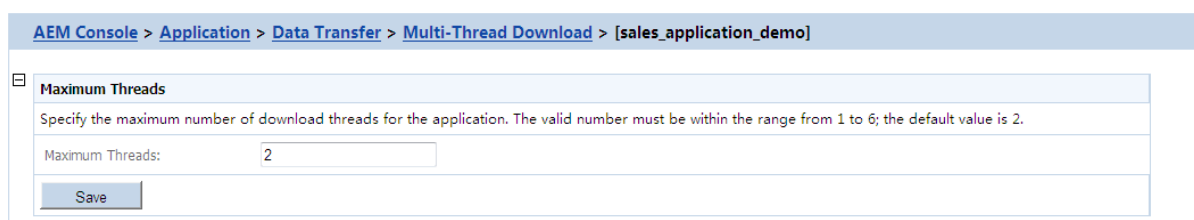
5.4.8.1 Multi-Thread Download

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.

Figure 5.104: 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 5.105: Maximum Threads

The screenshot shows the AEM Console configuration page for the 'Maximum Threads' setting. The breadcrumb navigation at the top reads: 'AEM Console > Application > Data Transfer > Multi-Thread Download > [sales_application_demo]'. Below the breadcrumb, there is a section titled 'Maximum Threads' with a collapse icon on the left. The text below the title reads: '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.' Below this text is a text input field labeled 'Maximum Threads:' containing the value '2'. At the bottom of the section is a 'Save' button.

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 5.106: Application Server Cache

Application Server Cache		
Specifies the size of Apeon Server cache, which stores DataWindow syntax and SQL statements.		
Application Name	Cache (MB)	Cache Usage (KB)
acf	3	0.000
codeexamples	3	0.000
order	3	0.000
sales	3	0.000
sapteched	3	0.000
youhoops	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 5.107: Modify Cache Setting

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: MB

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, Apeon Server loads a maximum of 3MB syntax and SQL into its memory; if the client runs appB, Apeon 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. Apeon 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. Apeon Server will load all the DataWindow syntax, DataWindow SQLs, and Embedded SQLs of the application into the cache.

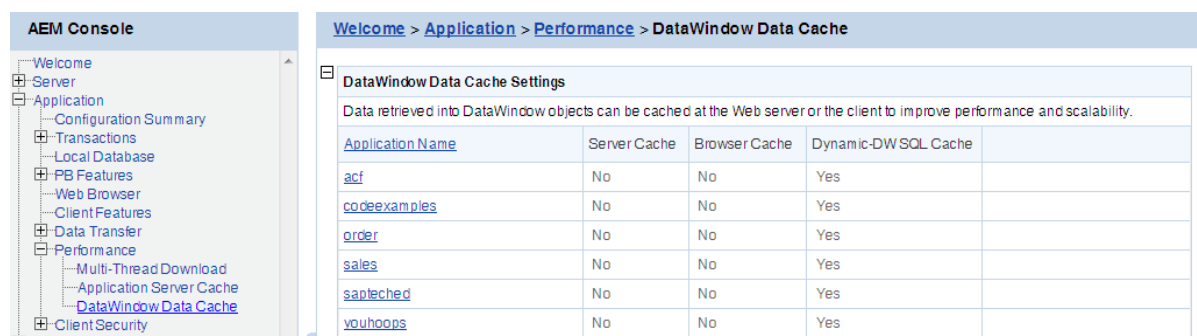
Setting the size to "0" is not recommended because it will result in slow performance. If the server has enough memory and the number of the deployed applications is less than 10, it is recommended that you set the size for all applications to less than "0". If the server does not have enough memory, 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 5.108: DataWindow Data Cache



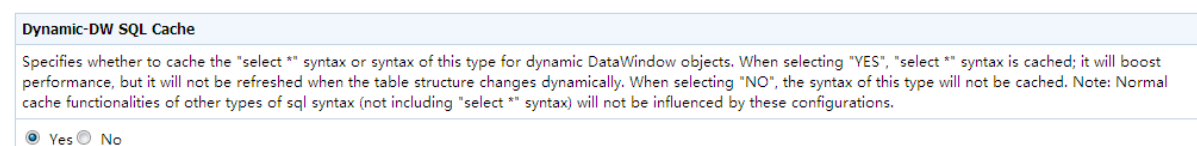
5.4.8.3.1 Dynamic-DW SQL Cache

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 5.109: Dynamic-DW SQL Cache



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 Apeon Server and/or the client.

- DataWindow Data Cache at the Apeon 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 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.

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.

Table 5.8: SQL files for each database server

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.
DB2	To enable this feature, execute install_appeon_cache_DB2.sql.

Database Type	SQL File
	To disable this feature, execute <code>uninstall_appeon_cache_DB2.sql</code> .

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 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 5.110: DataWindow Data Cache for `sales_application_demo`

AEM Console > Application > Cache > DataWindow Data Cache > [sales_application_demo]

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

Application Cache

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

<input type="checkbox"/> DataWindow Object Cache	<input type="checkbox"/> DataWindow Object Cache
--	--

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 Apeon Workspace securities.

Figure 5.111: Client Security



5.4.9.1 User Authentication

User Authentication is a tool to configure the security of the Apeon deployed applications. All the deployed applications are listed in the tool and are configured individually.

Figure 5.112: Application Security



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 [Group Management](#) page.

- **User Authentication** -- Shows the security mode for the user authentication. This is only effective when the [Security Toggle](#) 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.

Figure 5.113: Detailed security settings for an application

The screenshot shows the configuration interface for user authentication. At the top, the breadcrumb trail reads: [Welcome](#) > [Application](#) > [Client Security](#) > [User Authentication](#) > [codeexamples]. Below this, there are two main sections:

- User Authentication:** This section contains two radio buttons: "Security Off" (which is selected) and "Security On".
- Security Permissions:** This section includes a descriptive text: "If the Security Type is set to LDAP Security, all user groups configured in LDAP are listed in the table below. If the Security Type is set to Appeon Security, all user groups configured in Group Management will be listed below." Below the text are two list boxes: "Unassigned Groups" and "Assigned Groups". The "Unassigned Groups" list contains: Domain Admins, Enterprise Admins, Group Policy Creator Owners, HelpServicesGroup, IIS_WPG, Schema Admins, and 'sg'. Between the two list boxes are two arrow buttons: ">>>" and "<<<". At the bottom left of the form is a "Save" button.

As the following table shows, different application security settings determine different security behaviors in an Appeon application.

Table 5.9: Application security settings and 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 being prompted for a user name or password.
	Unassigned	

User Authentication	A Given Group	Security behaviors in an Appeon application
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.

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 Apeon Workspace

Figure 5.114: Apeon Workspace application security



5.4.9.2.1 Introduction to Apeon Workspace

Apeon 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 Apeon to simplify distributing, running and managing the Apeon native mobile applications. In Apeon Workspace, you can download and run the Apeon native mobile applications conveniently, and can configure a number of settings for the application, such as log, title bar, etc. For detailed information on Apeon Workspace, please refer to the Apeon Workspace User Guide (Mobile only).

Since Apeon Workspace can install the native mobile application from Apeon Server, you may want different applications on the same Apeon 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 Apeon Workspace security tools in AEM to control each application's access rights. You can follow these procedures to configure the tools:

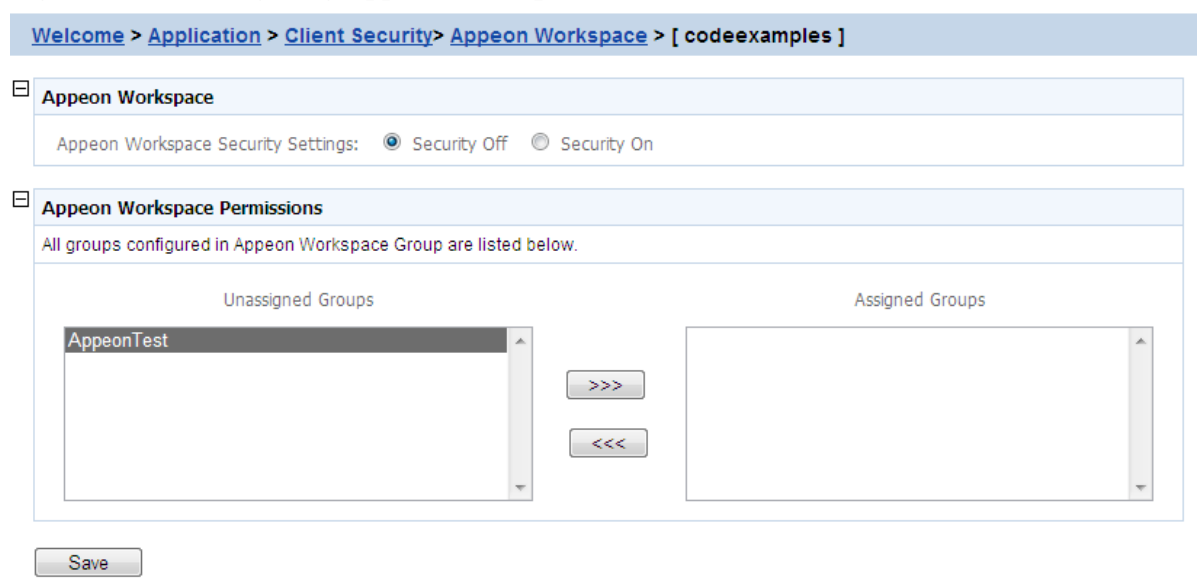
1. Adding an Apeon Workspace client: see [Adding an Apeon Workspace client](#) for details.
2. Adding an Apeon Workspace group and assigning the client to the group: see [Adding an Apeon Workspace group](#) for details.
3. Enabling the Apeon Workspace security and assigning the app accessibility rights to the group: see [Setting Apeon Workspace security](#) and [Assigning access permissions](#) for details.

5.4.9.2.2 Setting Apeon Workspace Security

Apeon Workspace security settings for each application are configured individually.

Step 1: Click on an application name, and the Appeon Workspace page appears.

Figure 5.115: Configuring Appeon Workspace



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 [Security Toggle](#) 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 [Appeon Workspace Security Settings](#) 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 5.116: Upload the installer

Uploads stand-alone mobile projects or customized Appeon Workspace to Appeon Server, and manages their download URLs and QR codes.

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 deploy 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) IPA (for iOS devices)

Installer

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 5.117: View and edit the installer information

Stand-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.						
<input type="checkbox"/>	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	View/Edit
<input checked="" type="checkbox"/>	My Workspace	Android	8.0.1075.00	com.appeon.myworkspace	2016-08-30 11:24:46	View/Edit
<input type="button" value="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 5.118: Download URL of the installer

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	<input type="text" value="http://localhost:80/aws/packages/My_Workspace-com_appeon_my"/>
<input type="button" value="Reset"/> <input type="button" value="Save"/>	

Step 2: Make sure the download URL is accessible to your users. By default the IP address/domain name and port number of Apeon 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 Apeon Workspace, the download URL is bound to the Apeon Workspace download center by default; you can de-select the **Bind the above URL to Download Center** box to unbind them.

Figure 5.119: Download URL of the installer

Download URL	For Download on Mobile Devices:	<input type="text" value="http://localhost:80/aws/8.0.1062.00.plist"/>
	For Download to iTunes on Desktops:	<input type="text" value="http://localhost:80/aws/8.0.1062.00.ipa"/>


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 Apeon Workspace on their mobile devices.

Figure 5.120: QR code of the installer

Download or Copy QR Code

Here is the QR code created for your selection (Apeon Workspace or applications). Your users can scan the code using their Android or iOS devices.



[JPG|EPS|SVG](#)

Download

Use the following HTML code to embed the QR code on your website.

```

<img id='ImageQrcode' src='GenerateImage.aspx?
c=http://localhost:80/aws/8.0.1026.00.plist&type=aws' width='200' height='200'
align='middle' />

```

Copy QR Code to Clipboard

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 Apeon Server using the Apeon Deployment Wizard. For how to deploy the mobile app using the Apeon Deployment Wizard, refer to Chapter 6, *Deploying PowerBuilder Applications in Apeon 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 5.121: QR code generation for apps (mobile only)

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):

<input type="checkbox"/>	Application Name
<input checked="" type="checkbox"/>	sales
<input type="checkbox"/>	acf
<input type="checkbox"/>	codeexamples
<input checked="" type="checkbox"/>	order
<input type="checkbox"/>	sapteched

Get 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 Apppeon Workspace and use the scan tool in Apppeon Workspace to directly download and install mobile application(s). For more about the scan tool in Apppeon Workspace, refer to Section 4.1, “Adding applications” in *Apppeon Workspace User Guide (Mobile only)*.

Figure 5.122: Download or copy QR code of the installer

Download or Copy QR Code

Here is the QR code created for your selection (Apppeon Workspace or applications). Your users can scan the code using their Android or iOS devices.



[JPG|EPS|SVG](#)

[Download](#)

Use the following HTML code to embed the QR code on your website.

```

                    <img id='ImageQrcode'
                    src='http://localhost:80/Servlet/APPConfig/GenerateImage.aspx?
                    c=http://192.0.3.150:80&type=app&apps=sales~order' width='200' height='200'
                    align='middle' />
                
```

[Copy QR Code to Clipboard](#)

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.

Figure 5.123: Mobile UI Resizing

AEM Console

- Welcome
- Server
- Application
- Mobile UI Resizing
 - Screen Size
 - Window Size

Welcome > Mobile UI Resizing

Mobile UI Resizing

Configures the display 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 Apppeon 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.

5.5.1 Screen Size

Screen Size is a tool for managing the Apppeon-supported mobile devices. It allows adding, editing and removing devices. But those devices which Apppeon Mobile claims to support cannot be modified or deleted. All the supported device screen size (measured in points) added are listed below.

Figure 5.124: Screen Size

AEM Console

- Welcome
- Server
- Application
- Mobile UI Resizing
 - Screen Size
 - Window Size

Welcome > Mobile 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 Apppeon have claimed to support cannot be deleted.

1/1 Previous Next 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

[Add Device](#)

Click the **Edit** button to view the details of the device screen size.

Figure 5.125: Screen details

The screenshot shows a dialog box titled "View Device" with a breadcrumb path: "Welcome > Mobile UI Resizing > Screen Size > View Device". The dialog contains the following information:

- Display Size :** 1024 * 768 Points
- Status Bar Height:** 20.0 Points
- Full Screen:**
 - 1024 * 748 Points (Landscape)
 - 768 * 1004 Points (Portrait)
- Applicable Type:** iPad

A "Back" button is located at the bottom left of the dialog.

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 5.126: Add a device

The screenshot shows a dialog box titled "Add Device" with the subtitle "Specifies the device information." The dialog contains the following input fields:

- 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:** (empty text box)

At the bottom, there are two buttons: "Save and Add" and "Save".

Step 2: On the **Add Device** page, enter the following values:

Settings	Descriptions
Display Size	<p>The size of the device screen.</p> <p>You should be able to get this information from the device specification provided by the manufacturers.</p> <p>Or you can use the device to access a deployed application and use the screen size that is automatically loaded.</p> <p>Refer to Automatically adding a device to an application for details.</p>

Status Bar Height	<p>Height of the system status bar.</p> <p>a. iOS devices: The status bar is 20 points high.</p> <p>b. Android devices: The status bar height is subject to the devices. Developers may need to write scripts to get the height first.</p> <p>The height of the system status bar will be automatically deducted when calculating the available screen space for the application window.</p>
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 5.127: Edit a device

The screenshot shows the 'Edit Device' page with the following details:

- Display Size: 1920 x 1080 Points
- Status Bar Height: 0 Points
- Full Screen: 1920 x 1080 Points (Landscape) and 1080 x 1920 Points (Portrait)
- Applicable Type: Galaxy Note 3
- Save button

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.

Figure 5.128: 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
vouhoops	0	0

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 5.129: Screen size list

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 [Screen Size](#) are listed for choices.

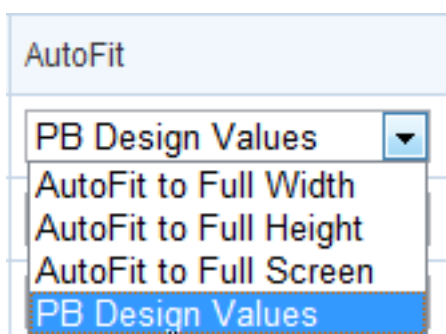
Automatically adding a device for an application

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 5.130: Autofit mode



The modes and the corresponding descriptions are listed in the following table.

Table 5.10: Autofit mode

Mode	Descriptions
PB Design Values	Windows will be displayed in the original size on the target device. 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 Width (X axis)	Windows will be displayed in full screen in the X direction only. 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 Full Height (Y axis)	Windows will be displayed in full screen in the Y direction only. 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 Screen (X & Y axis)	Windows will be displayed in full screen in both the X and Y directions. 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

Mode	Descriptions
	entire window and all of its controls in the device screen without needing to scroll.

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).

Figure 5.131: Windows List

Window List

Clicks the window name to configure the size of each individual window. All the windows of the current applications are listed below.

Show All Windows 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)
w_9k	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
w_call_track	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
w_calldll_n_tier	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

Restore Defaults

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.

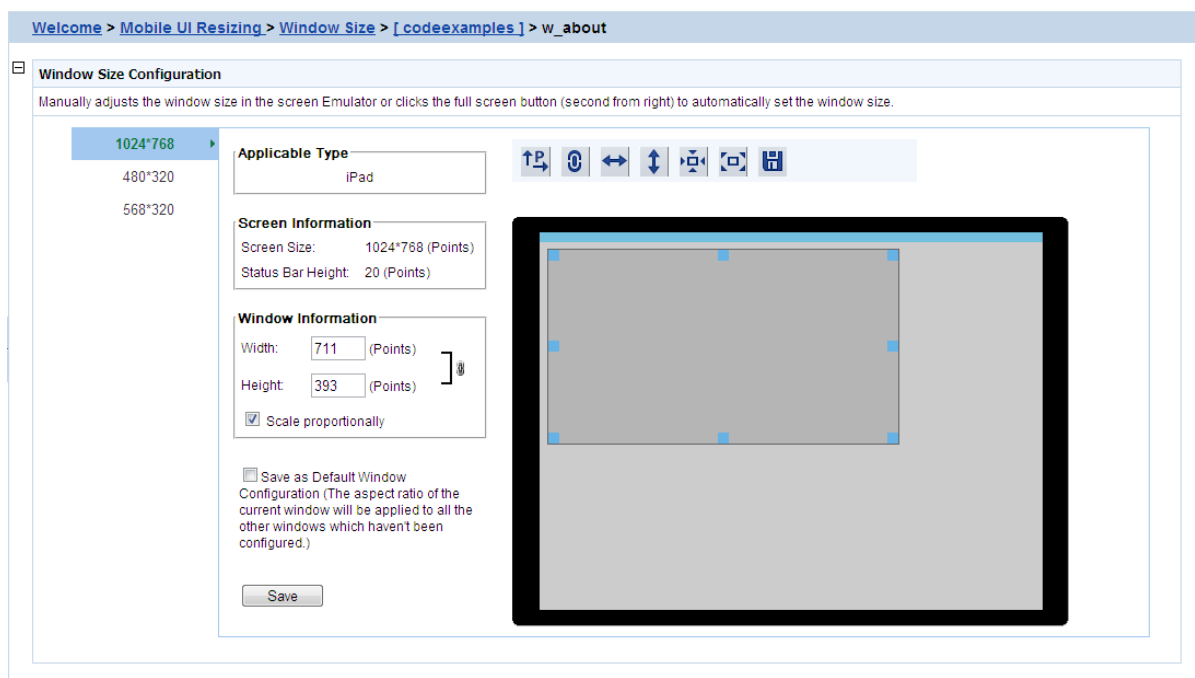
Restore defaults: You can revert all the windows to default by clicking the **Restore Defaults** button at the bottom.

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 5.132: Screen emulator




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 (). 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, [46](#)
active transaction, [48](#)
Adding a data source, [58](#)
Adding a new group, [82](#)
Adding a new user, [78](#)
Adding a transaction object mapping, [93](#)
Adding an Apeon Server, [54](#)
AEM Help, [45](#)
AEM language, [44](#)
AEM login, [76](#)
AEM Tools, [41](#)
AEM URL, [43](#)
AEM User Guide, [41](#)
AEM user name and password, [43](#)
Allow user to select run mode, [112](#)
Apeon security, [39](#)
Apeon Server Monitor, [9](#)
Apeon Workspace, [132](#)
Apeon Workspace Client, [79](#)
Apeon Workspace Group, [84](#)
Application, [91](#)
application security, [37](#)
Application Server Cache, [124](#)
Application Title, [109](#)
Audience, [1](#)

C

Charset, [116](#)
Charset options given in the Charset fields, [118](#)
Checking status of Apeon Server, [55](#)
Client Features, [108](#)
Client Logs, [114](#)
client security, [129](#)
Client Storage Location, [113](#)
Cluster, [53](#)
Cluster Server List, [53](#)
Common Monitors tab, [12](#)
Configuration Backup, [63](#)
Configuration during application deployment, [5](#)
Configuration during debugging, [5](#)
Configuration during performance management, [6](#)

Configuration during security management, [6](#)
Configuration during server information management, [7](#)
Configuration for emergency control, [7](#)
Configuration required for AEM, [128](#)
Configuration required for database servers, [127](#)
Configuration stages and tasks, [4](#)
Configuration summary, [91](#)
configurations related with database connection, [37](#)
Configuring database Charset for a data source, [117](#)
Configuring Monitors, [10](#)
Configuring transaction object mappings, [93](#)
conflict resolution mode, [103](#)

D

data source, [57](#)
data source settings for ASE Native driver, [31](#)
data source settings for IBM DB2 native driver, [33](#)
data source settings for Informix Native drive, [25](#)
data source settings for mySQL Native driver, [30](#)
Data source settings for ODBC driver, [21](#)
data source settings for Oracle Native driver, [24](#)
data source settings for PostgreSQL native driver, [34](#)
data source settings for SQL Anywhere .NET Data Provider, [22](#)
data source settings for SQL Server Native driver, [25](#)
data source settings for Teradata driver, [32](#)
Data Transfer, [116](#)
Database auditing, [40](#)
Database Connection Setup, [20](#)
database security, [38](#)
DataWindow Data Cache, [126](#)
DataWindow Object Cache Settings, [126](#)
Decimal Precision, [104](#)
Default run mode, [112](#)
Deleting a data source, [62](#)
Deleting a group, [83](#)
Deleting a user, [79](#)

Deleting an existing transaction object mapping, [94](#)
Deployment Security, [90](#)
Deployment Sessions, [49](#)
DLL/OCX Files, [102](#)
Download timeout, [96](#)
Dynamic transaction object to data source mapping, [36](#)
Dynamic-DW SQL Cache, [126](#)

E

Editing a data source, [61](#)
Editing an existing group, [83](#)
Editing an existing user, [78](#)
Encoding, [122](#)
Error Message Mode, [111](#)
Exit mode, [112](#)

F

Failover Settings, [56](#)

G

General tab, [11](#)
Group Management, [81](#)
Group management, [82](#)

H

Heartbeat backup, [56](#)
How to use this book, [1](#)

I

IE browser interface, [108](#)
IE Compatibility, [106](#)
If you need help, [3](#)
Import certificate file of LDAPS, [88](#)
incorporate Apeon security in PowerBuilder code, [40](#)
INI file Mode, [99](#)
INI Files, [99](#)
INI files, [101](#)
install mode, [102](#)
Installing Apeon Workspace, [43](#)

K

kill sessions and devices, [48](#)

L

Launching Apeon Server Monitor, [9](#)
LDAP Interface Settings, [87](#)
LDAP Interface Settings in AEM, [88](#)

Licensing, [65](#)
Limitations, [87](#)
Load Balancing Settings, [56](#)
Local Database, [97](#)
Log mode, [51](#)
Log Settings tab, [16](#)
Logging, [50](#)

M

Mail Settings tab, [15](#)
Maintenance, [62](#)
Maximum Rollback Retries, [97](#)
mobile app distribution, [133](#)
Mobile UI resizing, [137](#)
Modifying an existing transaction object mapping, [94](#)
Modifying the Apeon Server cache setting for an application, [124](#)
Modifying the security settings of an application, [131](#)
Multi-Thread Download, [123](#)

P

PB Features, [98](#)
performance, [123](#)
predefined data sources, [38](#)
Product Activation, [64](#), [65](#)

R

Re-activation, [70](#)
Re-configuring database auditing functionality, [40](#)
Recycle Monitor tab, [14](#)
Registry Mode, [98](#)
Related documents, [1](#)
Removing an Apeon Server, [55](#)
Renew Support, [74](#)
Replace log files, [52](#)
Request timeout, [96](#)
Resources, [53](#)
Retina Display, [116](#)
roll back active transaction, [49](#)
Rollback Completion time, [97](#)
Run Mode, [110](#)
Running Apeon Server, [42](#)

S

Scope of configurations discussed in this book, [4](#)

Screen Size, [137](#)
Security Toggle and Security Type, [87](#)
Server, [46](#)
Server Configuration Tasks, [4](#)
Server Security, [75](#)
Session backup, [56](#)
Session timeout, [96](#)
Sessions, [46](#)
Setting up Apeon Server data sources, [21](#)
Setting up transaction object to data source mapping, [35](#)
Start & Exit, [112](#)
Starting AEM, [43](#)
Static transaction object to data source mapping, [37](#)
Support, [74](#)
Supported database drivers, [20](#)
Synchronizing AEM settings to servers in a cluster, [57](#)
System Security, [86](#)

T

Testing a data source, [62](#)
Three ways to launch AEM, [43](#)
Timeout, [94](#)
Transaction Objects, [92](#)
Transaction timeout, [96](#)
Transactions, [92](#)

U

Understanding the information in monitor window, [18](#)
Upgrade license, [72](#)
use INI files for connection security, [38](#)
User and Group Management at LDAP server side, [86](#)
User Authentication, [129](#)
User Management, [77](#), [77](#)

V

view active sessions, [47](#)
view active transaction, [49](#)
Viewing groups, [82](#)
viewing logs, [50](#)
Viewing the current settings, [129](#)

W

Web Application Auto Update, [109](#)
Web Application Theme, [109](#)

Web Browser, [106](#)
Web service DataWindow, [104](#)
What is Apeon Server data source, [20](#)
What is Application Server cache, [124](#)
window size, [139](#)