

# **ApplinX User Guide**

## **Getting Started**

Version 10.15

October 2022

This document applies to ApplinX Version 10.15 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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# 1

## About this Documentation

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## Document Conventions

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| Convention     | Description  |
|----------------|--|
| <b>Bold</b>    | Identifies elements on a screen.   |
| Monospace font | Identifies service names and locations in the format <i>folder.subfolder.service</i> , APIs, Java classes, methods, properties.  |
| <i>Italic</i>  | Identifies:<br><br>Variables for which you must supply values specific to your own situation or environment.<br>New terms the first time they occur in the text.<br>References to other documentation sources. |
| Monospace font | Identifies:<br><br>Text you must type in.<br>Messages displayed by the system.<br>Program code.  |
| { }            | Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.   |
|                | Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the   symbol.  |
| [ ]            | Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.  |
| ...            | Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).  |

## Online Information and Support

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### Product Documentation

You can find the product documentation on our documentation website at <https://documentation.softwareag.com>.

In addition, you can also access the cloud product documentation via <https://www.software-ag.cloud>. Navigate to the desired product and then, depending on your solution, go to “Developer Center”, “User Center” or “Documentation”.

### Product Training

You can find helpful product training material on our Learning Portal at <https://knowledge.softwareag.com>.

## Tech Community

You can collaborate with Software AG experts on our Tech Community website at <https://tech-community.softwareag.com>. From here you can, for example:

- Browse through our vast knowledge base.
- Ask questions and find answers in our discussion forums.
- Get the latest Software AG news and announcements.
- Explore our communities.
- Go to our public GitHub and Docker repositories at <https://github.com/softwareag> and <https://hub.docker.com/publishers/softwareag> and discover additional Software AG resources.

## Product Support

Support for Software AG products is provided to licensed customers via our Empower Portal at <https://empower.softwareag.com>. Many services on this portal require that you have an account. If you do not yet have one, you can request it at <https://empower.softwareag.com/register>. Once you have an account, you can, for example:

- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

## Data Protection

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Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.





## 2 Solutions and Architecture

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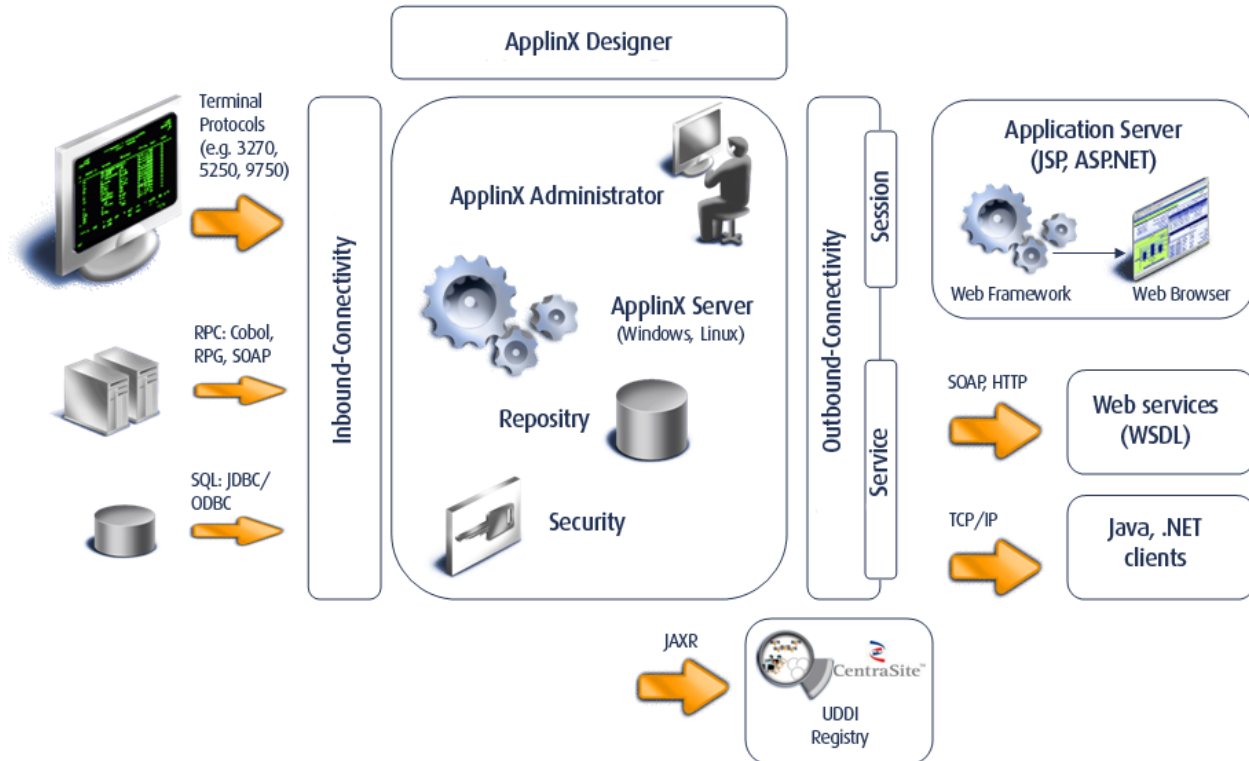
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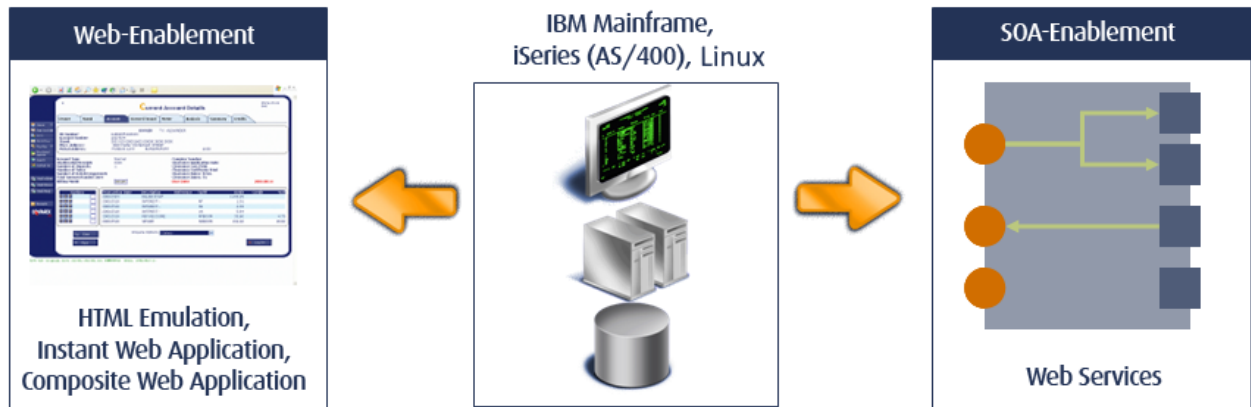
## What is ApplinX?

ApplinX is a server-based technology that provides web-based applications an efficient, robust and easy way to access and integrate core system applications' data and transactions, without changing the core systems.

ApplinX exposes core systems and encapsulates them into standard programmatic components of the new selected environment (web services, .NET, J2EE, XML). These components can then be used as advanced building blocks in any modern platform - for new applications or existing ones (e.g. CRM applications). This way, core back-office systems can be integrated into new strategic IT platforms, and the workflow can be re-engineered to suit a more streamlined and efficient task-oriented and role-based approach.

### webMethods ApplinX - Architecture



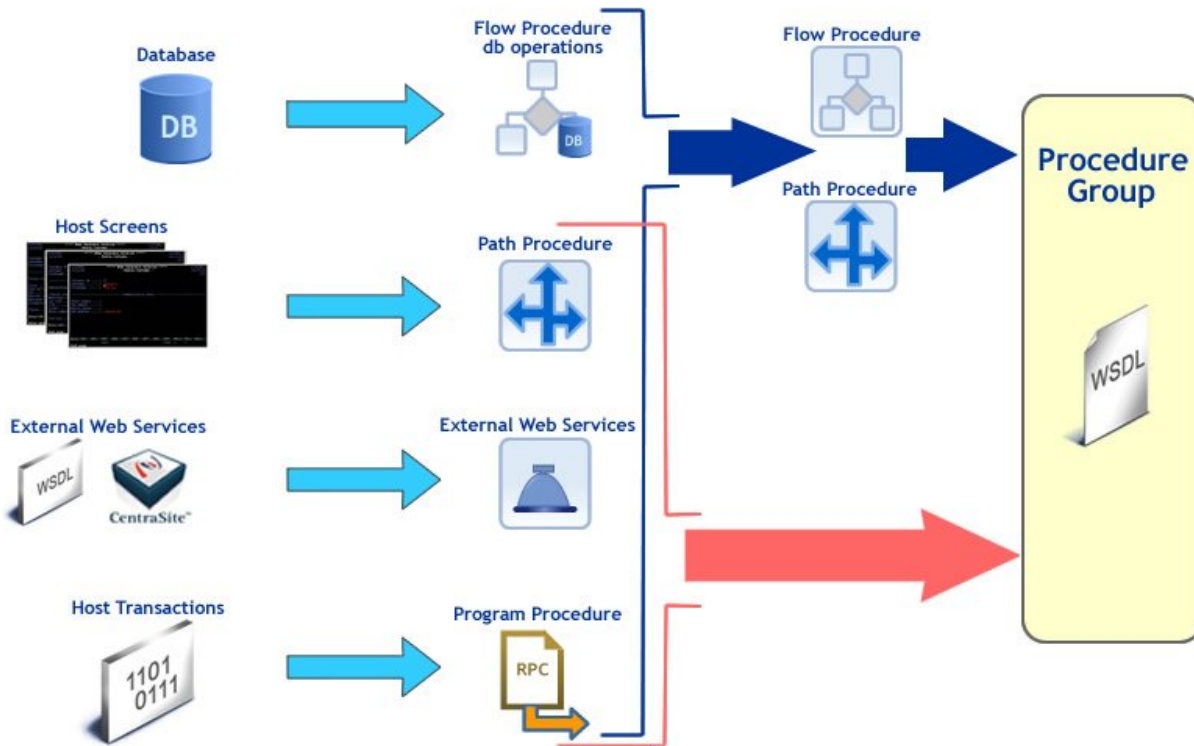


## SOA Enablement

SOA enablement allows reuse of functionality of the core systems, leveraging the operational qualities of the systems' transaction platform to new IT projects. This is accomplished by exposing the core systems' functionality and data as web services - either at the screen or transaction level - and integrating with any other environments that invoke web services. It also enables the core systems to become active equal peer participants in an SOA world.

Refer to [Installing ApplinX Demo Applications](#). Also refer to the self-training material available on the Software AG Empower website.

Refer to *SOA Enablement* in the *ApplinX Solutions* documentation for further details as how to use this solution.



## Web Enablement

### Pure HTML Emulation

ApplinX HTML emulation is an out of the box thin client HTML emulation, available in the .NET and J2EE environments. The screenshot below displays a host screen in ApplinX HTML emulation in the browser.

ApplinX is able to turn an existing terminal emulation instantly into a web browser terminal emulation, providing host key and print support and maintaining existing color schemes. This does not require any training for end users and can easily replace locally installed terminal emulation software with the thin-client web browser.

Refer to [Installing ApplinX Demo Applications](#). Also refer to the self-training material available on the Software AG Empower website.

Refer to *Web Enablement - Pure HTML Emulation* in the *ApplinX Solutions* documentation for further details as how to use this solution.



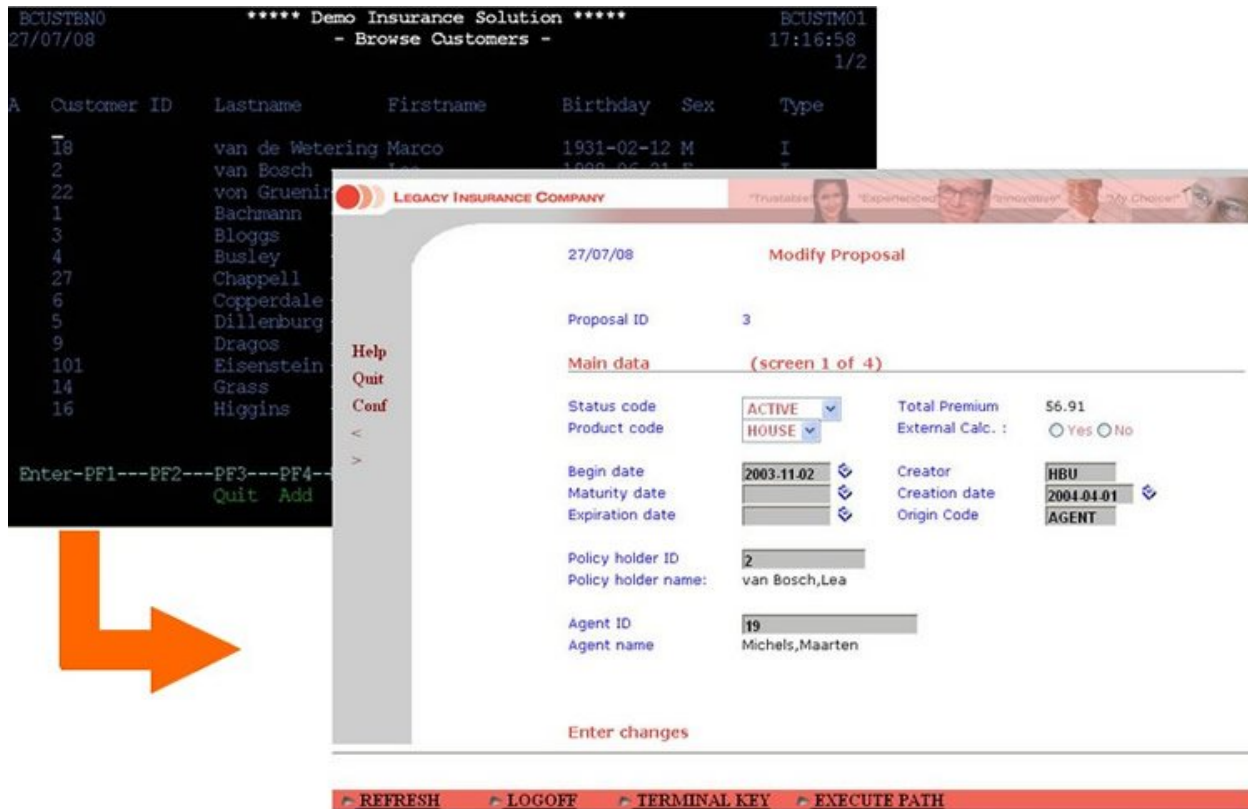
## Instant Web Application

The instant web application allows modernization of core system applications into modern looking web applications with (little or) no coding. Simple web configurations can improve the general "Look & Feel" of the application: designing a template with top and side images and a "company logo" (Inventory System), modifying the style sheet using different fonts, colors, etc. End users get the information quicker and with improved visibility. Also new users can be trained more easily (web-like usage).

Using Screen Groups, the same design can be globally applied to multiple screens. Using Transformations, host patterns can be converted to web components. Such transformations include: formatting the screen's header area, formatting the message line, formatting titles and borders, converting input fields into GUI elements (combo boxes, radio buttons, check boxes), adding a calendar component to date input fields, formatting the host function keys into hyperlinks, buttons or images and removing unnecessary characters.

Refer to [Installing ApplinX Demo Applications](#). Also refer to the self-training material available on the Software AG Empower website.

Refer to *Web Enablement - Instant Web Application* in the *ApplinX Solutions* documentation for further details as how to use this solution.

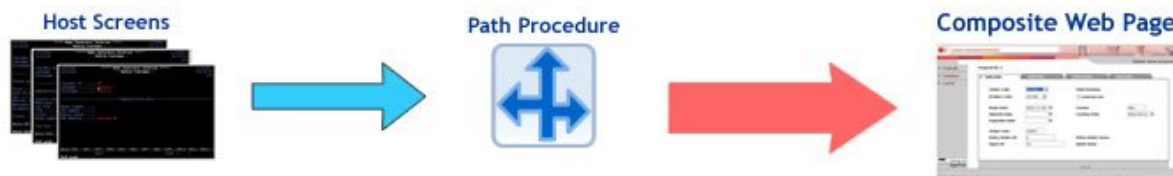


## Composite Web Application

Using the composite web application it is possible to fully customize and extend your web applications using your Java or .NET development environment. The composite web application enables aggregating information from many core systems into one web page. It is possible to integrate legacy assets on various levels (screen, transaction, data), support various web environments making use of the ApplinX Base Objects (API) and customizing web frameworks.

Refer to [Installing ApplinX Demo Applications](#). Also refer to the self-training material available on the Software AG Empower website.

Refer to *Web Enablement - Composite Web Application* in the *ApplinX Solutions* documentation for further details as how to use this solution.



# 3

## Hardware and Software Requirements

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Lists the recommended hardware and software requirements for the various ApplinX components.

## Hardware Requirements

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- [Server](#)
- [ApplinX Development Workstation](#)
- [Network](#)

### Server

- 2 x 3 GHz Intel(R) Xenon(TM) processors (for 500 concurrent users).
- 2GB free disk space.
- RAM: ApplinX Server requires 200 MB. Each application requires additional minimum 40 MB (depending on the application repository size). Host sessions require 1MB per session.
- Network card.

### ApplinX Development Workstation

- 2GB free disk space (server and development tools).
- RAM: minimum 4GB.
- Network card.

### Network

ApplinX supports working with IPv6 as well as IPv4 when working with ApplinX components that use IP addresses.

## Software Requirements

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- [Operating Systems and Supported Platforms](#)
- [ApplinX Repository](#)
- [ApplinX for JSP Web Application](#)
- [ApplinX .NET Web Application](#)



- Supported Browsers

## Operating Systems and Supported Platforms

For details regarding supported platforms, refer to the *Release Notes*. For the most updated information refer to the Software AG Empower website at <https://empower.softwareag.com>.

ApplinX now fully supports Java Version 11 (runtime and compile time). ApplinX can run independently as an independent Java process (this is the default Windows/Linux installation), or as a J2EE application under one of the following application servers:

- Apache Tomcat 8.5, 9
- Oracle WebLogic 12.1.3
- WildFly 23.0.1 / JBoss EAP 7.3
- Microsoft IIS 7.5, 8, 8.5, 10
- WebSphere 9.0.x

When running ApplinX as a J2EE application, the ApplinX server needs to be deployed with the Deployment Manager for J2EE (refer to *Deploying with ApplinX* in the *Designing and Developing an Application* documentation. It is possible to run ApplinX as a standalone server.

## ApplinX Repository

ApplinX uses an internal database as a repository, based on the H2 database. External databases used as repository are no longer supported and will be migrated to the internal DB configuration. If you are using the JDBC/ODBC bridge, you will need to migrate manually. See [Migration of ApplinX Applications with External Database](#).

## ApplinX for JSP Web Application

Developer's station:

- JDK 11
- Apache Tomcat 8.5, 9
- JSP IDE - we recommend using the latest version of Software AG Designer (based on Eclipse 4.19)

Server:

- JDK 1.8
- One of the following application servers:
  - Apache Tomcat 8.5, 9
  - WebLogic 12.1.3

- WebSphere 9.0.x
- WildFly 23.0.1 / JBoss EAP 7.3

### ApplinX .NET Web Application

Developer's station:

- Microsoft IIS 7.5, 8, 8.5, 10
- Visual Studio 2017, 2019
- Microsoft Visual J# .NET Version 2.0 Redistributable Package - Second edition

Server:

- Microsoft IIS 7.5, 8, 8.5, 10
- Microsoft .NET Framework Version 2.0, 3.0, 3.5, 4.0, 4.6 Redistributable Package
- Microsoft Visual J# .NET Version 2.0 Redistributable Package - Second edition



**Note:** When creating an ApplinX .NET web application, view state is turned off by default (*web.config* file). If you want to use Net web controls in generated pages, ensure that you activate this option. Refer to the Microsoft ASP.NET documentation for further details.

### Supported Browsers

- Microsoft Internet Explorer 11, Edge
- Mozilla Firefox: latest version provided by vendor when this version of ApplinX was released
- Google Chrome: latest version provided by vendor when this version of ApplinX was released
- Safari: latest version provided by vendor when this version of ApplinX was released

# 4

## Installation and ApplinX License Keys

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## Installation

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For greater security, default password handling has been enhanced for Software AG products that are installed with the SAG Installer. On the **Administrator Password** panel, enter a default product administrator password for the products you are installing, and choose whether to require the password to be changed on first product login. See *Defining Passwords* in the ApplinX Administration documentation for details.



**Note:** If you are migrating from a previous install base, the password of this previous version applies, regardless of what you specify in the **Administrator Password** panel. We recommend you change this password as soon as possible.

We recommend you always install the latest fixes available for your products. These are available from the Empower Product Support website.

See also [Setting Environment Variables under Linux](#).

## ApplinX License Keys

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- [About ApplinX Licenses](#)
- [License Key Expiration](#)
- [Multiple License Key Handling](#)
- [Updating Your License](#)
- [License Metering using Command Central](#)



**Note:** During the installation process, a check is performed that the license is of the same version as the installed ApplinX server. The license key format from version 9.6 and earlier is no longer supported. If you are logged on to Software AG's Empower site, you can request a new license key from Software AG Logistic Service Center (LSC).

### About ApplinX Licenses

ApplinX can be purchased with one of the following types of licenses (it is possible to purchase more than one type of license):

- SOA license: Used for SOA enablement, including host transactions (RPC connections) and direct database access, and for web page integration solutions. From ApplinX 9.12, licenses are calculated based on number of connections or number of cores.
- Web enablement license: Used for HTML emulation, instant web application and for composite web application. Printer connections are also counted as web enablement connections.

The table below shows the possible combinations of web and SOA licenses:

| Scenario                                | SOA              |            | Web Enablement | Notes  |
|---|------------------|------------|----------------|--|
|   | Connection-based | Core-based |                |  |
| SOA connection-based license only       | X                |            |                | Only one connection-based license possible per server                                      |
| SOA Core-based license only             |                  | X          |                | License is calculated on number of cores. Only one core-based license possible per server. |
| Web enablement license only             |                  |            | X              | Printer connections are also counted as Web enablement connections.                        |
| SOA connection-based and Web enablement | X                |            | X              | SOA core-based license not possible in this combination.                                   |
| SOA core-based and Web enablement       |                  | X          | X              | SOA connection-based license not possible in this combination.                             |

The ApplinX license is purchased for a number of users for each type of license. For example, you can purchase a license for 100 SOA users, and another license file for 50 web enablement users. When connecting to a session, the number of opened connections is compared with the number of users defined in the license file. The number of possible users must be equal to or greater than the number of opened connections. When trying to connect with an additional user, you will receive the following error message: Cannot connect session. The server has reached the full capacity of concurrent users.



#### Notes:

1. When working with a Connection Pool entity, connections will be related to a specific license type only once they are in use within a specific solution (SOA or web enablement).
2. A session used by a developer within the Designer is not counted as a connection.
3. Once the expiration date defined in a license file is reached, the connections count defined in the file is dropped from the accumulated connection count (per type).
4. License keys from version 9.6 and earlier are no longer supported. The following user messages appears when the server starts if in the license directory there is an old license: License key format from version 9.6 and earlier is no longer supported. You can request a new license key from Software AG Logistic Service Center (LSC). STOPPING SERVER...

## License Key Expiration

For ApplinX licenses of type subscription or test, a daily message in server log will appear if there are less than 60 days to expiration date.

## Multiple License Key Handling

If you received more than one ApplinX license key from Software AG Logistics and you want to use the functionality of multiple licenses on one ApplinX server instance (for example SOA Enablement and HTML Emulation), follow the steps below:

### » To use multiple license keys

- 1 Install ApplinX by using one of the provided license keys.
- 2 Before you start ApplinX server, manually copy all other provided ApplinX license keys to directory `<Software AG Installation>\common\conf`.

When you restart your ApplinX server, the total number of licensed connections for all provided license keys will be available to this ApplinX server instance.

## Updating Your License

If you wish to change the license key after the installation, you need to locate the license file (`<Software AG Installation>\common\conf`) and replace the old license with the new one. Restart ApplinX server and the Designer.

## License Metering using Command Central

ApplinX now supports the license metering functionality provided by Command Central. License metering depends on license manifest files. Each license manifest file issued by Software AG contains all contracts for one location of your organization. If you received license manifest files from Software AG, you can generate or view a report of the current state of your landscape. For details see *Creating and Viewing License Metering Reports* in the Command Central Online Help.



**Note:** This functionality is provided for single-license landscapes only. Multiple licenses are not supported.

# 5

## Building an ApplinX Docker Image

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This document describes how to build an ApplinX Docker image and run the Docker container using scripts provided with ApplinX. It covers the following topics:

See also *High Availability with Container Orchestration* in the *Administration* documentation.

## Prerequisites

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- Docker installation 1.13.1 or compatible.
- Software AG ApplinX installation. The minimum requirement is ApplinX Server and Framework for JSP.

## Building and Running the ApplinX Docker Image

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The scripts provided with ApplinX support the following two methods of building a Docker image and running the Docker container.

- [Using a Modified Configuration](#)
- [Using a Customer Application File \(GXAR File\)](#)
- [General Notes](#)

### Using a Modified Configuration

In this option a configuration file is used to define properties to connect to the host. You can set these properties in a Docker build command or in a Docker run as follows:

#### ➤ To use modified configuration files in the Docker build

- 1 Set your working directory to `<install_dir>/ApplinX/Docker`.
- 2 Create the TAR file containing all the necessary files with the following command:

```
./createApplinXDistributions.sh
```

- 3 Provide your License file and put it in your *license* folder: `<install_dir>/ApplinX/Docker/license/myLicense.xml`.
- 4 Update `gx_updateAppConfig.xml` file in folder `<install_dir>/ApplinX/Docker/configuration` with the properties to connect to the host.
- 5 Build the ApplinX image with `--build-arg USE_CONFIG_FILE=true`, for example:



```
docker build --build-arg USE_CONFIG_FILE=true -t [Image Name] .
```

With this method, the Docker build copies the configuration into the image; this file will be used to set the configuration of the ApplinX application. You then will need to map ports and set the credentials to connect to the ApplinX server. For example:

```
docker run -p 8080:8080 -p 2323:2323 --env USERNAME=<Applinx server user> ↵
--env PASSWORD=<Applinx server password> [Image Name] .
```

#### ■ Advantages

Configuration changes can be persistent; you can reuse the configuration when a new version or fix is to be built. The complete configuration is in the image. For troubleshooting, Software AG Support will require only the image and the command you entered.

#### ■ Disadvantage

If the configuration changes, you will need to build a new image and rerun the container.

#### » To use modified configuration files in the Docker run

- 1 Set your working directory to *<install\_dir>/Applinx/Docker*.
- 2 Create the TAR file containing all the necessary files with the following command:

```
./createApplinxDistributions.sh
```

- 3 Provide your License file and put it in your *license* folder: *<install\_dir>/Applinx/Docker/license/myLicense.xml*.
- 4 Build the ApplinX image with, for example:

```
docker build -t [Image Name] .
```

- 5 Add to the docker run the `USE_CONFIG_FILE=true` property and specify the location of the configuration file (*gx\_updateAppConfig.xml*) with `-v` prefix as follows:

```
docker run -v <local machine configuration folder>:/config -p 8080:8080 -p ↵
2323:2323 --env USERNAME=<Applinx server user> --env PASSWORD=<Applinx server ↵
password> --env USE_CONFIG_FILE=true [Image Name]
```

#### ■ Advantages

You can set for each container (instance of the image ) the specific configuration to connect to host.

## Using a Customer Application File (GXAR File)



**Note:** This is the correct way to create a complete Docker image with the ApplinX application. You can set properties in a Docker build command or in a Docker run as follows:

### ➤ To use customer application file using a Docker build

- 1 Set your working directory to `<install_dir>/ApplinX/Docker`.
- 2 Create the TAR file containing all the necessary files with the following command:

```
./createApplinXDistributions.sh
```

- 3 Provide your License file and put it in your *license* folder: `<install_dir>/ApplinX/Docker/license/myLicense.xml`.
- 4 Provide your application GXAR file and put it in the *data* folder: `<install_dir>/ApplinX/Docker/data/yourApplication.gxar`.
- 5 Build the ApplinX image, for example:

```
docker build --build-arg GXAR_NAME_ARG=<yourApplication[.gxar]> -t [Image Name] .
```

With this method, the Docker build copies the application into the image. You will need to map your ApplinX ports and set the credentials to connect to the ApplinX server during startup, for example:

```
docker run -p 8080:8080 -p 2323:2323 --env USERNAME=<ApplinX server user> --env PASSWORD=<ApplinX server password> [Image Name]
```

### ■ Advantages

You can provide your application file; this file will be added to the image. For troubleshooting, Software AG Support will require only the image and the command you entered.

### ■ Disadvantage

If you want to connect to another ApplinX application, you will need to build a new image and rerun the container.

### ➤ To use customer application file using a Docker run

- 1 Set your working directory to `<install_dir>/ApplinX/Docker`.
- 2 Create the TAR file containing all the necessary files with the following command:

```
./createApplinXDistributions.sh
```

- 3 Provide your License file and put it in your *license* folder: `<install_dir>/ApplinX/Docker/license/myLicense.xml`.
- 4 Build the ApplinX image, for example:

```
docker build -t [Image Name] .
```

- 5 Add to the Docker run the ApplinX GXAR file and its location (you also need to map the open ports and the ApplinX server credentials):

```
docker run -v <local location of gxar file>:/data --env GXAR_NAME_ARG=<the name of the gxar file>[.gxar] -p 8080:8080 -p 2323:2323 --env USERNAME=<ApplinX server user> --env PASSWORD=<ApplinX server password> [Image Name]
```

### ■ Advantages

You can set for each container (instance of the image) the specific ApplinX application to connect to host.

### General Notes

- If the Docker container wasn't defined correctly and there is a need to make some changes in the configuration, you can use an ApplinX Designer to connect to the ApplinX server through the port defined to it (the default is 2323). Then you can open the ApplinX application and make the needed changes. Those changes will be saved in the container and the container will become functional.
- In the Docker run you can also provide local license files and configuration files by mapping them to the image specific folders as follows:

```
docker run -v <user_dir>/MyLicense:/license -v <user_dir>/MyConfig:/config -p 8080:8080 -p 2323:2323 [Image Name]
```

- You can change/add configuration files and they will be added to the image when you run the Docker build:
  - `<install_dir>/ApplinX/Docker/configuration/gx_updateAppConfig.xml`
  - `<install_dir>/ApplinX/Docker/configuration/gx_appConfig.xml`
  - `<install_dir>/ApplinX/Docker/configuration/gx_clientConfig.xml`
  - `<install_dir>/ApplinX/Docker/configuration/gx_keyboardMappings.xml`
- You can change the name of the imported ApplinX application by setting the `APP_NAME_ARG` property (the default name is `DockerApplication`).
- In the Docker run phase, we need to connect to the ApplinX server in order to import the ApplinX application. For this you need to supply the ApplinX server credentials

either in the Docker build phase:

```
docker build --build-arg USERNAME_ARG=<Applinx server user> --build-arg ↵  
PASSWORD_ARG=<Applinx server password>
```

or in the Docker run:

```
docker run --env USERNAME=<Applinx server user> --env PASSWORD=<Applinx server ↵  
password>
```

## Verifying the Build

---

### ➤ To verify the build

- 1 Show the image with command

```
docker images
```

- 2 Start the docker image to be verified as described above, for example:

```
docker run -d -p 8080:8080 -p 2380:2380 --name applinx_container_1 applinx_image_1
```

- 3 Show the log:

```
docker logs -f applinx_container_1
```

- 4 Show the containers:

```
docker ps
```

- 5 Stop the container:

```
docker stop applinx_container_1
```

- 6 Delete the container:

```
docker rm applinx_container_1
```

- 7 Remove the image:

```
docker rmi applinx_image_1
```

## Healthcheck for the ApplinX Docker Image

The *docker* directory contains a script `healthcheck.sh`. Execution of this script pings the APX server and returns the result of the ping command:

0 success

1 failure

In the Docker context, this `healthcheck.sh` is put into the Docker container and enabled by setting the `HEALTHCHECK` instruction in the Dockerfile.

You can also use the `healthcheck.sh` script in the context of an orchestration tool (e.g. Kubernetes) to enable healthcheck functionality.

## End-to-End Healthcheck for Natural for Linux and Cloud

A typical installation of ApplinX connecting to Natural on a Linux host consists of the following:

- Tomcat serving web page of the ApplinX Framework (or other web container such as JBoss, WebSphere, WebLogic)
- ApplinX server
- ApplinX daemon that checks the authentication of users
- Natural-APX executable
- Adabas (or another database)

ApplinX provides an end-to-end healthcheck for Natural for Linux and Cloud that identifies the point of failure. Two approaches are provided:

- [Command Line inside the Docker Container](#)

- [Healthcheck URL](#)

## Command Line inside the Docker Container

### ➤ To perform an end-to-end healthcheck using the command line

- Call the script `/opt/softwareag/natuxhealthcheck.sh` with the required parameters.

| Option                              | Description  |
|-------------------------------------|--|
| <code>--help</code>                 | Show help for this utility   |
| <code>-s &lt;url&gt;</code>         | The ApplinX server url to connect to. By default <code>applinx://localhost:2323</code>     |
| <code>-u &lt;username&gt;</code>    | Specify the username to connect to the host (as required by the Natural Open System hosts) |
| <code>-p &lt;password&gt;</code>    | Specify the password to connect to the host (as required by the Natural Open System hosts) |
| <code>-d &lt;dbId&gt;</code>        | ID of The Adabas DB that you wish to test  |
| <code>-a &lt;application&gt;</code> | Specify the ApplinX application to use for host connectivity information.                  |

The return value of the script indicates the end-to-end test result:

| Response Code | Output Message   | Meaning   |
|---------------|--|---|
| 0             | OK.  | All five elements seem to be OK and running.                      |
| -1            | The ApplinX web application is not available.  | The Web Framework is not installed or tomcat is not up.           |
| -2            | The ApplinX server is not available.   | No connection to ApplinX server can be established.               |
| -3            | The ApplinX daemon is not available.   | No connection possible between the ApplinX server and the daemon. |
| -4            | Natural is not available.  | the natapx binary is not installed / buffer pool is full.         |
| -5            | Adabas is not available.   | Adabas (or the back-end DB) is not available.                     |
| -6            | No username was specified.   |   |
| -7            | An invalid DB ID was specified.  |   |
| -8            | Invalid username or password.  |   |
| -9            | The healthcheck functionality is supported with Natural version 9.1.2 and above. To use this functionality, upgrade your Natural installation accordingly. |   |

| Response Code | Output Message                    | Meaning |
|---------------|-----------------------------------|---------|
| -10           | One of the parameters is missing. |         |
| -11           | Unexpected error.                 |         |

## Healthcheck URL

### ➤ To perform an end-to-end healthcheck using a URL

- Enter the following:

```
http://<host>:<port>/ApplinX/healthcheck?check_db=<db_id>&username=<username>&password=<password>
```

Provide appropriate values for host, port, DB ID, user and password.

The HTTP status indicates the result of the end-to-end test:

| HTTP Status | Message                                       | Meaning   |
|-------------|---|---|
| 200         | OK.   | All five elements appear to be OK and running.                    |
| 403         | No username was specified.                    |   |
|             | Invalid username or password                  |   |
| 404         | The ApplinX web application is not available. | The Web Framework is not installed.                               |
| 503         | The ApplinX server is not available.          | No connection to applinx server can be established.               |
| 500         | The ApplinX daemon is not available.          | No connection possible between the ApplinX server and the daemon. |
|             | An invalid DB ID was specified.               |   |
|             | Unexpected error.                             |   |
| 501         | Natural is not available.                     | The natapx binary is not installed / buffer pool is full.         |
|             | Application misconfigured.                    |   |
| 507         | Adabas is not available                       | Adabas (or the back-end DB) is not available.                     |





## 6 Setting Environment Variables under Linux

---

If you installed ApplinX on a Linux system, source the Software AG environment file *apxenv* to set the environment variable `APPLINX_ROOT`, or set the variable permanently by copying the setting from the *apxenv* file into your profile. The *apxenv* file is located in the `<Software AG_directory>/ApplinX` directory.



# 7

## Upgrading, Migrating and Installing Fixes

---

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## Updating a Service Pack (from ApplinX Version 9.7 and above)

---

The upgrade process is similar to the installation process. Please refer to the SAG Installer documentation, which you can find at <http://documentation.softwareag.com/>. When selecting the installation directory, ensure not to select the directory where ApplinX is currently installed (the default path is *C:\SoftwareAG*).

In the panel including the ApplinX specific parameters, browse and select the ApplinX license file.

### Post-update Results

- When opening the Software AG Designer, the default workspace will point to a new location. If you use the new workspace location, check that the preferences suit your needs.
- From version 8.2, the batch and shell commands used to start and stop the server, and to start the Administrator are located in the *<ApplinX installation>/bin* folder.

### Post-update Tasks

- When using ApplinX web applications (JSP or .NET): Upgrade the web application using the ApplinX Web Application Manager in the Designer (refer to *Framework Management* in the *Web Application Development* documentation of ApplinX).
- You may have made changes in your previous ApplinX version, in one of the following files. Backup copies of these files can be found (unless otherwise stated) in the ApplinX installation directory with the *.bak* suffix. To apply these changes to your current ApplinX version, you must copy the changes from within the backup files to the relevant file.
  - *GXApplinXService.ini*
  - *bin/startup.bat*
  - *bin/startup.sh*
  - *bin/gxadmin.bat*
  - *bin/gxadmin.sh*
  - *config/gxadmin.prp*
  - *config/gxstartup.prp*

## Migrating

---

ApplinX applications from previous ApplinX versions are able to run on the current ApplinX version once you have performed a number of migration activities. The migration process has been tested for supported versions. Migration can be performed when installing the new ApplinX server version or via batch files after the new server has been installed.

The following topics are covered below:

- [Pre-Migration Steps and Prerequisites](#)
- [Migration Options](#)
- [Migration Results](#)
- [Post-migration Tasks](#)
- [Post-migration Web Application Tasks](#)

### Pre-Migration Steps and Prerequisites

- Back up the repository database.

### Migration Options

Migration can be carried out as follows:

- [Migration of all ApplinX Applications when installing ApplinX](#)
- [Migration of all ApplinX applications after installing ApplinX](#)
- [Migration of a Specific Applinx Application](#)
- [Migration of ApplinX Applications with External Database](#)

### Migration of all ApplinX Applications when installing ApplinX

To migrate ApplinX applications during the installation process: In the screen where you select the ApplinX parameters, select the **Migrate previous ApplinX data** check box and specify the existing installation location.

The screenshot shows the 'Software AG Installer' window for the 'ApplinX' component. The window has a blue header with the 'software AG' logo and the title 'Software AG Installer'. Below the header is a navigation bar with tabs: Proxy, Release, Directory, Products, Languages, License, **Configure**, Confirm, and Install. The 'Configure' tab is active, showing the 'ApplinX' configuration page. The page includes a 'License file' field with a 'Browse...' button, an 'Install as' section with radio buttons for 'Application' and 'Service' (selected), a 'Migrate previous ApplinX data' checkbox, and a 'Location of previous ApplinX installation' field with a 'Browse...' button. A 'Ports' section contains a warning message: 'If you specify multiple instances of an Applinx component on the same machine, you must specify unique ports for each instance.' Below this are input fields for 'Applinx server port' (2323), 'SSL port' (23443), 'HTTP server port' (2380), 'Administration port' (2305), and 'AJP port' (2309). A 'Restore Defaults' button is located at the bottom right of the ports section. At the very bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

### Migration of all ApplinX applications after installing ApplinX

To migrate all ApplinX applications after the installation has been completed: Run the `<Applinx root>\utilities\migrate_Applinx_server.bat/sh` file, enter the installation path of your previous installation, and then enter the new path of the current installation.

For example: `migrate_Applinx_server.bat "c:\Applinx52" "c:\SoftwareAG\Applinx"`

## Migration of a Specific Applinx Application

### ➤ To migrate a Single Applinx Application

- 1 Export the relevant GXAR file of the application (the GXAR file includes both the application and entities)
- 2 Import the GXAR to the new version. Refer to *Importing an Application's Configuration or Entities* in the *Designing and Developing an Application* documentation.

## Migration of ApplinX Applications with External Database

For ApplinX applications that use an external database (except JDBC-ODBC), the database type will be changed automatically to internal database. A message warns that there are applications containing a JDBC-ODBC database type that will not be migrated. You have two options:

1. Choose **OK** to continue with the installation. ApplinX will migrate all applications except for the JDBC-ODBC types. The names of these applications will be written to a log.
2. Choose **Cancel** to stop the installation, then modify those applications.

### ➤ To modify JDBC-ODBC applications

- Change the repository type to internal DB /gxz in the original ApplinX installation installed on your computer, and then restart the installation and migration.

## Migration Results

The following is the outcome of the migration process and relates to migrating all ApplinX applications:

- The entire old *config* folder (except for the *http.xml* file) is copied to the new installation location. The *gxstartup.prp* file from this folder is renamed to *.bak*, and the new *gxstartup.prp* file (from the new installation) is used.
- The new *config* folder (from the new installation) is renamed to *config.bak*.
- The entire *host-applications* folder is copied except for the demo applications. The demo applications from the new installation are used.
- All database related jar/zip (*classes\*.zip*, *classes\*.jar*, *\*sql\**, *\*db2\**) are copied to the *lib* folder of the new installation. Note: any other DB driver should be copied manually to *\Applinx\applinx-web\WEB-INF\lib*.
- The batch and shell commands used to start and stop the server, and to start the Administrator are no longer located in the ApplinX installation folder. These files are now located in *<Applinx installation>/bin* folder and are named *startup.bat* and *shutdown.bat* accordingly for the server, and *gxadmin* for the Administrator.

The *start-gxserver.bat/sh* and *gxadmin.bat/sh* files from the previous ApplinX installation are copied to *<ApplinX Installation>\bin* and the *gxstartup.prp* and *GXApplinXService.ini* files are copied to *<ApplinX Installation>*. These files are renamed to *\*.bak*.

**Notes:**

1. Any manual changes made in the previous ApplinX versions (such as language, file encoding, database jar etc.) must be backed up and copied to the new version.
2. When migrating from APX 8.0, *conf* folder (internal Tomcat) is not copied from the old installation. Therefore any manual change made in this folder must be re-done again in the new *conf* folder.

**Relevant for migrating from ApplinX versions before 8.0:**

The following actions occur when the server is started for the first time after the migration process has been completed:

- Each application (configured in *config/gxconfig.xml*), will be created as a separate file and copied to *host-application/<application name>/gxconfig.xml*. The original file *config/gxconfig.xml* will hold from now on only ApplinX server configuration and host definitions which are not in use by any application.
- Replay files are copied to *host-applications/<application name>/records* and new recorded files are saved in this location.
- If a file based repository (GXZ or MDB) is configured for the application, the repository is copied to *host-applications/<application name>/db*.

A post-migration report is written to the *<ApplinX root>/log/gxlog.txt*.



**Note:** If the application name includes space characters, these are replaced by underscores, as space characters are not supported in versions from 8.0 and above. However, previous SOAP clients will be able to connect to old addresses which include spaces.

**Post-migration Tasks**

- When opening ApplinX Designer, enter the name of a workspace directory. When upgrading from ApplinX version 8.0 and above, define a new workspace directory in order to be able to work with both versions.



## Post-migration Web Application Tasks

### JSP:

1. Ensure that you have:
  - SAG JDK
  - A supported web server (refer to [ApplinX for JSP Web Application](#) in the section *Software Requirements*).
2. It is recommended to import/copy the web applications from older Eclipse versions to the latest version of the Software AG Designer, as this is the common Software AG development tool, used with other Software AG products such as ApplinX, EntireX, CentraSite and Integration Server.
3. Upgrade the web application using the ApplinX Web Application Manager in the Designer (refer to *Framework Management* in the *Web Application Development* documentation).
4. Compile the JSP project:
  - With IDE (from Eclipse or any other IDE)
  - Without IDE (*make.bat*)



**Note:** When working with an application which included space characters in the application name, you are required to manually change the application name in the web application (e.g. in *GXBasicWebForm.jsp* file, or in the Framework Configuration Editor, in the **Application name** parameter).

### .NET:

1. It is recommended to convert from .NET project type "Web Project" to "Web Site" as from the current version ApplinX generates .NET web pages based on the "Web Site" format and file structure.
2. Upgrade the web application using the ApplinX Web Application Manager in the Designer (refer to *Framework Management* in the *Web Application Development* documentation).
3. Compile (relevant for .NET "Web Projects" type projects):
  - With IDE (from Visual studio)
  - Without IDE (*make.bat*)



**Note:** When working with an application which included space characters in the application name, you are required to manually change the application name in the web application (e.g. in *GXBasicWebForm.cs/GXBasicWebForm.vb* file, or in the Framework Configuration Editor, in the **Application name** parameter).

## Installing a Fix using Scripts

---

Fixes are available for Linux and Windows on the Software AG Empower website. Follow the instructions below when downloading the fix from Empower.

Note that when applying a fix, you must make sure that the installed ApplinX version is of the same service pack as the fix version, i.e. that the first three digits are the same (e.g. 10.1.0).

### ➤ To install a fix

- 1 The fix will install and add all the necessary new files to your existing ApplinX installation.
- 2 Before starting the fix installation, shut down the ApplinX Server service and close the Software AG Designer.
- 3 To start the fix installation process, extract the fix zip file to the existing ApplinX directory: For example: `C:\SoftwareAG\ApplinX`. A new directory is created: `\hotfix-<hot fix version>`.
- 4 To install the fix, just run `install-hotfix.bat` on Windows platforms, or `install-hotfix.sh` on Linux platforms. On Windows platforms: Check that the `ECLIPSE_PATH` parameter is pointing to the desired Eclipse installation location and that you have removed the `rem` remark indication.



**Note:** Installing the fix also updates the Eclipse plug-in.

- 5 During the fix installation, a backup folder will be created containing the original files from before the update (`backup-for-hotfix-<hot fix version>`).
- 6 After the fix installation, a log is created with a list of all the copied files (`install.hotfix.log`).
- 7 Upgrade the web application using the ApplinX Web Application Manager in the Designer. Refer to *Framework Management* in the *Web Application Development* documentation.



**Note:** It is possible to uninstall the fix. This will revert all updated files to their original state. To uninstall the fix, just run `uninstall-hotfix.bat` on Windows platforms, or `uninstall-hotfix.sh` on Linux platforms. After the fix uninstallation, a log is created with a list of all copied files (`uninstall.hotfix.log`).

## Upgrading the ApplinX Server

---

When upgrading the ApplinX server - for example when applying a fix or during migration - **you will need also to upgrade the web application as well**. If the client and server versions do not match, you will get the following error message:

"Error 6002- Version mismatch.

The application version [<version>] does not match the server version [<version>]. Server version must be equal to the application version.

Action: Upgrade the web application."

## Troubleshooting

---

- [Upgrading from Version 5.2](#)
- [Converting Old Paths](#)
- [Installing a Fix using Scripts \(Hotfix or Fix in Hand\)](#)
- [Upgrading a Web Application](#)
- [Use New and Different Workspace for each Environment](#)
- [Uninstalling the ApplinX Server and Designer](#)

### Upgrading from Version 5.2

#### ■ **GXAR File**

If you had trouble migrating from 5.2 or earlier version, you can also upgrade from 5.2 version by creating a new ApplinX Application (GXAR file) in the new environment and importing the GXZ file you have exported from the 5.2 version. In this case you can import all the entities directly to the new application's repository.

#### ■ **Binary Client**

If you are using a binary client, you will need to re-generate this after migrating from version 5.2.

#### ➤ **To re-generate a binary client**

- From the ApplinX Designer, choose Generate Procedure Client on the relevant procedure group.

See *Generating a Procedure Client* under *Designing and Developing an Application*.

The newly generated class files will replace the old class files that are currently included in your web project.

## Converting Old Paths

ApplinX offers a built-in utility to convert old paths, which are only supported for runtime, into the new Path Procedures. After conversion, check that all fields were mapped correctly and match the old path in the 5.2 version.

The new Path Procedures are much more powerful. We recommend you convert the old paths to Path Procedures. See *Path Procedures* in section *Designing and Developing an Application*.

## Installing a Fix using Scripts (Hotfix or Fix in Hand)

Follow the instructions as described under [Installing a Fix using Scripts](#). Make sure you unzipped the hotfix into the ApplinX installation directory, otherwise the upgrade process will not work.

## Upgrading a Web Application

After applying the hotfix on the ApplinX server and Designer you must also upgrade the web application as well, otherwise if the client and the server versions do not match, you will get the following error message: "Error 6002- Version mismatch. The application version [<version>] does not match the server version [<version>]. Server version must be equal to the application version. Action: Upgrade the web application".

See *Framework Management* in the *Web Application Development* documentation.

## Use New and Different Workspace for each Environment

When upgrading to a new version it is important to also create and use a different workspace. After you have created a new workspace, you can use the workspace import wizard to import the old workspace configuration to the new one.

## Uninstalling the ApplinX Server and Designer

If you want to revert the changes made by the hotfix process and return to your original state, you can use the uninstall batch file utility to return to the old ApplinX server version and build; the Designer's plug-in must be uninstalled manually.

### ➤ To return to original state

- 1 Close the ApplinX Server and use the uninstall batch file (in Linux it the .sh file) located in the hotfix directory to remove the fix installed.



**Note:** If the user has multiple hotfixes, you will need to downgrade the last one first and then the older one.

- 2 Open the Designer and choose **Help > About > Installation Details**. Select the ApplinX plug-in and choose **Uninstall**.

- 3 Reinstall the ApplinX plug-in. Open the Designer and choose **Help > Install new software**.
- 4 Click **Add** and select the ApplinX plug-in installation file (located in <Installation directory>\Software\Designer\updates or <last hotfix folder>\Designer). The file naming convention is:  
com.softwareag.applinx.workbench-[version number][XX].[Y].
- 5 Select the ApplinX plug-in from the list on the Main screen and click **Finish**.
- 6 Restart the Designer and open the **ApplinX** perspective.  
After the fix has been uninstalled, a log is created with a list of all copied files (*uninstall.hotfix.log*).

You also need to unzip the old web application file located in the previous version to the location of the web application folder.



## 8 ApplinX Server

---

The ApplinX server can be started either as a Windows service or using a batch file. ApplinX can also run under a Java Application Server (for further details, refer to the relevant topics in *Deploying with ApplinX* in the *Designing and Developing an Application* documentation).

See also Managing the ApplinX Server in the *Administration* section.

### Windows Service:

In the installation process, it is possible to define that ApplinX server runs as a Windows system service, started and stopped via **Start > Settings > Control Panel > Administrative Tools > Services**. By default, the service is automatically run when starting the computer.

### Batch Files:

ApplinX Server can be run using batch command files, located in the *<ApplinX installation>/bin* folder:

|                     |                            |
|---------------------|----------------------------|
| <i>startup.bat</i>  | Starts the ApplinX server. |
| <i>shutdown.bat</i> | Stops the ApplinX server.  |

### Linux Environments:

In the ApplinX installation directory, you can find the following shell scripts:

|                    |                            |
|--------------------|----------------------------|
| <i>startup.sh</i>  | Starts the ApplinX server. |
| <i>shutdown.sh</i> | Stops the ApplinX server.  |





## 9      **ApplinX Server Administrator**

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## Starting the Server Administrator

---

From the **Start** menu, select **Software AG > Administration > ApplinX Administration <version number>**.

Alternatively, you can run the Administrator from a remote PC (for example: on a Microsoft Windows operating system) and connect to the server using TCP/IP.

## Logging On

---

Once you start the ApplinX Administrator, the **Logon** screen is displayed. When this is the first time you are logging on, by default, "Administrator" will be displayed in the **User name** field. Type the server address (IPv4 and IPv6 address formats are supported) and port. When it is not the first time you are logging on, the Administrator will automatically try to connect to the last server it connected to.

You may have to set a new password when connecting for the first time.

## Main Screen

---

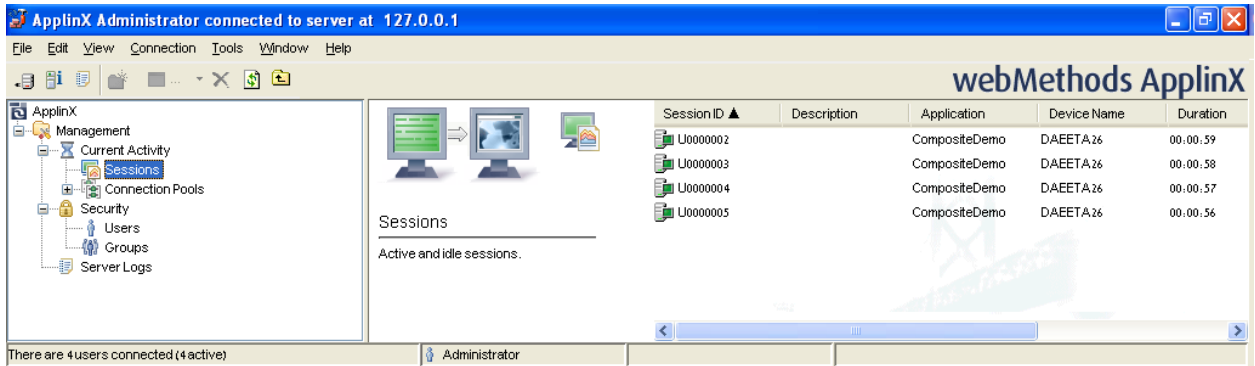
The screen consists of four parts:

- Title bar, menu bar and toolbar.
- ApplinX Explorer pane.
- Main view: The main view corresponds to the selected node/entity/session in the ApplinX Explorer.
- Status bar: The status bar displays information according to the object selected in the main view. The status bar may include information such as: the user name, application name, the number of users connected, indication of file tracing/replaying or the host address.

Operations, features and applications that the logged-in user is not authorized to use will be disabled or are invisible.

- [ApplinX Explorer](#)
- [Toolbar](#)

## ■ Menu Bar





## ApplinX Explorer

Enables viewing and controlling users' activity, maintaining the server's configuration, viewing runtime information about connection pools, sessions, server logs, define hosts and design and configure applications.

|                  |   |
|------------------|---|
| ApplinX          | The root node.  |
| Management       | Includes managerial functions.  |
| Current Activity | Controls the sessions connected to the server, the server activity and the connection pools. The <b>Current Activity</b> node is unavailable when the ApplinX Administrator is not connected to the server. |
| Sessions         | Lists the currently connected sessions.   |
| Connection Pools | Provides runtime information regarding the connection pools.  |
| Security         | Holds the definitions of the users, their permissions and roles, and the user groups.   |
| Server Logs      | Lists the server logs.  |

## Toolbar

| Icon | Description            |
|------|------------------------|
|      | Disconnect from Server |
|      | Connect to Server      |
|      | Server Information...  |
|      | Server Log             |
|      | New Folder             |
|      | New User               |
|      | New Group              |
|      | Delete                 |

| Icon  | Description  |
|---|--------------|
|  | Refresh      |
|  | Up One Level |

## Menu Bar

### File Menu

| Menu Item  | Description                                |
|------------|--|
| New        | Creates a new user or group.               |
| Open       | Opens the selected item.                   |
| Delete     | Deletes the selected item.                 |
| Properties | Opens the properties of the selected item. |
| Exit       | Exits the Administrator.                   |

### Edit Menu

| Menu Item        | Description   |
|------------------|---|
| Select All       | Selects all entities displayed in the main view.  |
| Invert Selection | Selects all entities that were not selected, and deselects entities that were selected. |

### View Menu

| Menu Item        | Description   |
|------------------|---|
| ApplinX Explorer | Hides/shows the ApplinX Explorer tree area of the screen.       |
| Summary          | Hides/shows the summary area of the screen.                     |
| Server Log       | Displays the server log.  |
| Refresh          | Refreshes the main view to match the data stored on the server. |

### Connection Menu

| Menu Item          | Description  |
|--------------------|--|
| Connect/Disconnect | Connects and disconnects the Administrator from the server.      |
| Cancel Session     | Displays the <b>View Session</b> window of the selected session. |

## Tools Menu

| Menu Item        | Description  |
|------------------|--|
| Server Info      | Displays the <b>Server Information</b> dialog box. |
| User Information | Displays the <b>User Information</b> dialog box.   |



# 10

## ApplinX Designer (Software AG Designer)

---

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## Starting the ApplinX Designer

---

From the **Start** menu, select **All Programs > Software AG > Tools > Software AG Designer <version number>**.

Alternatively, you can run the Designer from a remote PC (for example: on a Microsoft Windows operating system) and connect to the server using TCP/IP. When running the Designer from a remote PC, some Designer features may not work, for example opening the file system.

The first time you start the Designer, a Welcome page will be displayed. From this page you can access the ApplinX perspective and the help contents. If you close the Welcome page, and you would like to display the ApplinX perspective, go to **Window > Open Perspective > Other** and select **ApplinX**.

If you are not yet familiar with Eclipse, see the Eclipse online help at <http://www.eclipse.org/documentation/>, or start the Software AG Designer and then choose **Help > Help Contents**. General information on Eclipse can then be found under *Workbench User Guide*. When working with the Software AG Designer, the online help also provides help for the currently installed Software AG products; this can be found under *Software AG Designer Guides*.

## Logging on

---

Once the Designer is displayed, you will see the available list of servers. Double-click on a server or select **Connect** from the right-click context menu. When this is the first time you are logging on, by default, "Administrator" will be displayed in the **User name** field. When it is not the first time you are logging on, ApplinX Designer will automatically try to connect to the last server it connected to.

You can select to remember the user password in the **Login** dialog box. Once this is selected, the **Login** dialog box is not shown again. To require entering a password and displaying the **Login** dialog box, change the **Remember passwords** check box in **Window > Preferences > Software AG > ApplinX**.



**Note:** The first time the **Remember password** check box is selected, an Eclipse Secure Storage message is displayed. This message offers remembering an internal Eclipse password using a hint, but this is not applicable to the ApplinX server password, therefore click **No**.



## Adding a New Server Connection

---

Additional connections to servers can be added. To add an additional server connection, in the **Server** menu, select **Add ApplinX Server Connection....** The wizard is displayed. Enter the name of the server, the relevant address (IPv4 and IPv6 address formats are supported) and port. Also determine whether the connection will be a secured connection.

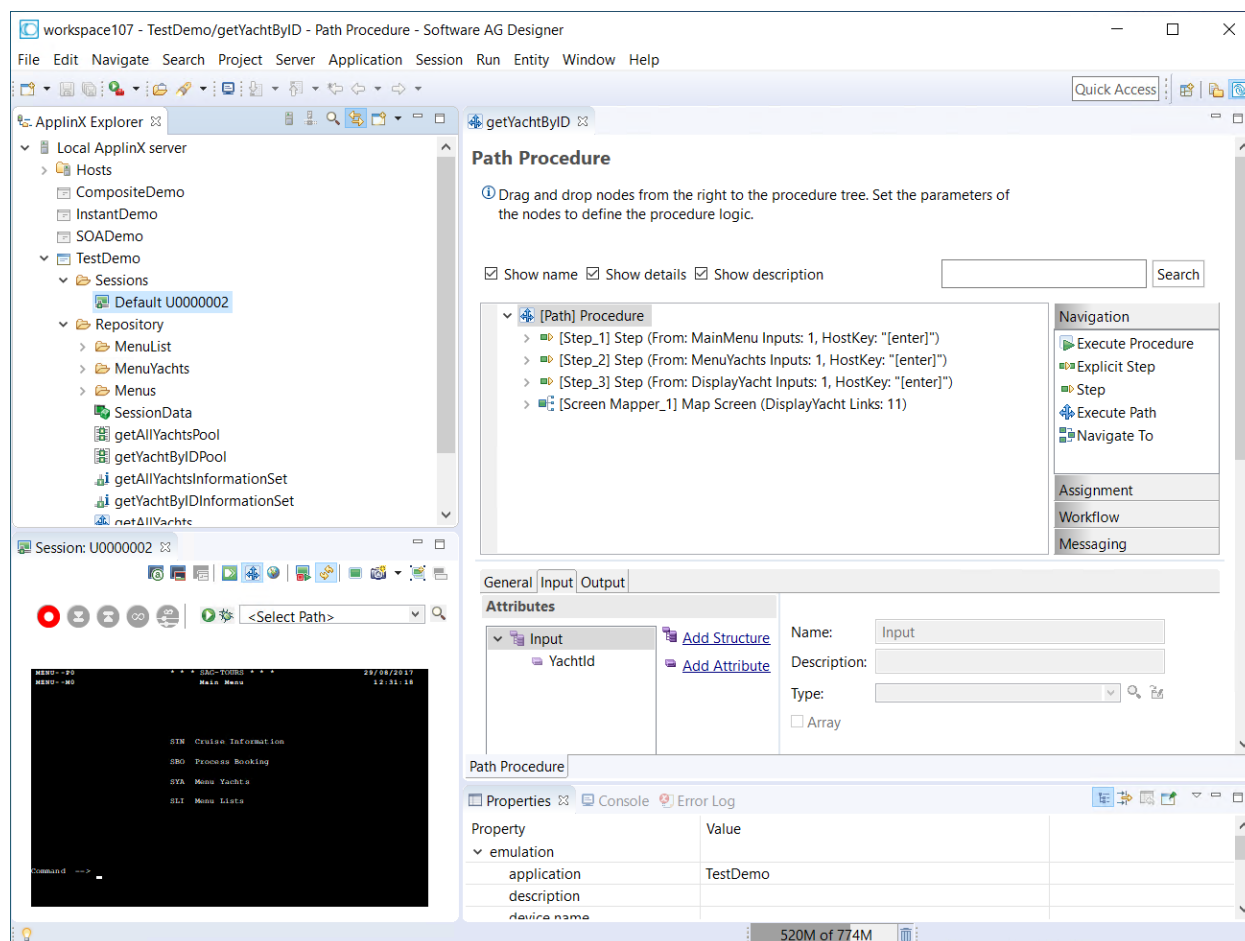
For further details regarding the server configuration, refer to *Configuring the Server* in the *Administration* documentation.

## The Designer Layout

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- [ApplinX Related Menu Bar Commands](#)
- [ApplinX Explorer](#)
- [Editor](#)
- [Application Map](#)
- [Properties](#)
- [Console](#)
- [Error Log](#)
- [Status Bar](#)

By default the layout is as displayed below, but as possible in Eclipse, the layout can be changed.



## ApplinX Related Menu Bar Commands

Detailed below are the ApplinX related commands that are included in the menu bar.

### File Menu

|                              |  |
|------------------------------|--|
| New > ApplinX Application... | Creates a new ApplinX application.   |
| New > ApplinX Host...        | Creates a new ApplinX host.  |
| New > Entity                 | Creates a new entity from the list of entities.                                      |
| New > Session                | Creates a new display session or printer session (according to the selected option). |
| Import....                   | Enables importing ApplinX entities or importing/replacing an ApplinX application.    |
| Export...                    | Enables exporting ApplinX entities or application.                                   |

## Session Menu

|                              |   |
|------------------------------|---|
| Duplicate Session Definition | Creates another session with the same definitions as the selected session.  |
| Connect                      | Connects to the host using the selected session definitions.  |
| Disconnect                   | Disconnects the session from the host.  |
| Open HTTP Session            | Opens the session as an instant web application. The session is displayed by default in the Editor area of Eclipse. It is possible to display the session in your system's browser by changing the web browser definitions in Eclipse ( <b>Window &gt; Preferences &gt; General &gt; Web Browser</b> ). This is convenient for checking transformations. This is only available when you have a web enablement license. |

## Entity Menu

|   |   |
|---|---|
| Show WSDL                                       | Displays the WSDL in the Editor area.   |
| Copy WSDL URL                                   | Copies the WSDL URL to the Clipboard.   |
| Open HTML Preview                               | Displays an HTML preview of the screen. Useful to preview transformations that are used in this screen. |
| Generate > JSP Page from Screen...              | Generates a JSP page from the current screen.   |
| Generate > JSP Page from Screen Group...        | Generates a JSP page from the current screen group.   |
| Generate > Procedure Client...                  | Generates a Procedure Client from a procedure group.  |
| Generate > JSP Page from Procedure...           | Generates a JSP page from a procedure.  |
| Convert > Screen to Screen Group                | Converts a screen to a screen group.  |
| Convert > Screen Group to Screen                | Converts a screen group to a screen.  |
| Convert > Path / Path Wrapper to Path Procedure | Converts a path to a path procedure.  |

## Application Menu

|   |   |
|---|---|
| Open Application  | Opens the application.  |
| Close Application   | Closes the application.   |
| Reload Application  | Reloads the repository.   |
| Import Predefined Transformations                         | Imports into the application a list of predefined transformations.            |
| Import Host Screen Maps                                   | Opens a wizard which enables importing screen maps.                           |
| Show Application Map                                      | Displays the Application Map view.  |
| Automatically Identify Screens/Steps using Trace Files... | Opens a wizard which enables to automatically identify screens.               |
| Extract Business Process Activities                       | Opens a wizard which enables to extract business activities from trace files. |

|                                |  |
|--------------------------------|--|
| Web Application Manager...     | Initiates the Web Application Manager wizard which enables creating a web application. |
| Deployment Manager for J2EE... | Initiates the Deployment Manager wizard which enables deploying.                       |
| Open in File System            | Opens the file system and allows viewing the files in the relevant folder.             |






## Server Menu

|                                  |   |
|----------------------------------|---|
| Add ApplinX Server Connection... | Adds an additional server connection.   |
| Connect to Server                | Connects to the server.   |
| Disconnect from Server           | Disconnects from the server.  |
| Reload                           | Reloads the server configuration, i.e. the configuration of all applications connected to the server. |
| Show Web Services                | Displays a list of the available web services.  |








## ApplinX Explorer














The ApplinX Explorer is comprised of the ApplinX Explorer toolbar and the ApplinX Explorer tree.

### ApplinX Explorer Toolbar

|   |  |
|---|--|
|  | Adds a new server connection.  |
|  | Connects to the selected server.                                     |
|  | Disconnects from the selected server.                                |
|  | Enables finding an entity.   |
|  | Enables creating new entities in the currently selected application. |

### ApplinX Explorer Tree

|   |                        |
|---|------------------------|
|  | Local ApplinX server   |
|  | Hosts                  |
|  | <Host name>            |
|  | <Application name>     |
|  | Session (disconnected) |
|  | Session (connected)    |
|  | Printer Session        |

|   |                            |
|---|----------------------------|
|  | Repository                 |
|  | Screen                     |
|  | Screen Group               |
|  | Transformation             |
|  | Connection Pool            |
|  | Connection Information Set |
|  | Procedure Group            |
|  | Flow Procedure             |
|  | Path Procedure             |
|  | Program Procedure          |
|  | Data Structure             |
|  | Database Connection        |
|  | External Web Service       |

## Editor

The various entity editors are displayed in the editor area: Screen, Screen Group, Transformation, Connection Pool, Connection Information Set, Path Procedure, Procedure Group, Flow Procedure, Program Procedure, Data Structure, Database Connection and External Web Service. This area also displays the HTML preview of a screen, the list of all relevant web services and a specific WSDL.

## Application Map

The **Application Map** view displays application screens through which the user has navigated. Refer to *Application Map* in the *Designing and Developing an Application* documentation for further details.

## Properties

This area displays basic details regarding the object selected in the ApplinX Explorer tree. For example, when selecting the Server, the **Properties** area displays a number of parameters such as the server address, port, state and version. Another example is when selecting the Repository, or a folder within the repository, the **Properties** area displays parameters such as the application name, a detailed list of all the entities, and the number of each type of entity.

**Console**

This area displays the console messages.

**Error Log**

This area displays the error log.

**Status Bar**

|                           |   |
|---------------------------|---|
| Online/Offline indication | Name of GCT trace file/application name.                          |
| Screen name               | UNKNOWN when the screen has not been identified.                  |
| Cursor position           | Row and column, and position in the host.                         |
| Mouse position            | Row and column, and position in the host.                         |
| Selection start           | Starting position of the currently selected area (in host units). |

# 11

## Creating a New Application

---

An application is a project which can contain an internal system within an organization, such as human resources, billing, customer services etc. In this task, you will create a new ApplinX application. Every ApplinX application is connected to a host and has a repository containing all the ApplinX entities. The steps detailed in this task include the basic steps required to create an application. Advanced configuration is explained in *Application Configuration Parameters* in the *Reference Guide*.

### » To create an ApplinX application

Before creating a new application, ensure that ApplinX server is available and **running**, and start the **Designer**. Log in to the relevant server or add an additional server as required (refer to the sections [Logging on](#) and [Adding a New Server Connection](#)).

- 1 In the ApplinX Explorer, right-click on the ApplinX server and select **New Application...** .

Or:

Select the menu item **File > New > Other....** In the resulting window, expand the **Software AG** node, then the **ApplinX** node, select **Application**, and then click **Next**.

The **Create a New Application** wizard is displayed.

**Create a New Application**

**General Application Information**

Enter a name for the application, a suitable description and select the initialization mode.

Application name:

Description:

Initialization mode: ☐ Automatic  
☒ When first accessed

Note: When working with Web Services, select the Automatic initialization mode, to ensure that the services will be available when the server is loaded.

? < Back Next > Finish Cancel

- 2 Enter a name for the application and a suitable description.
- 3 Select the initialization mode:

**Automatic**

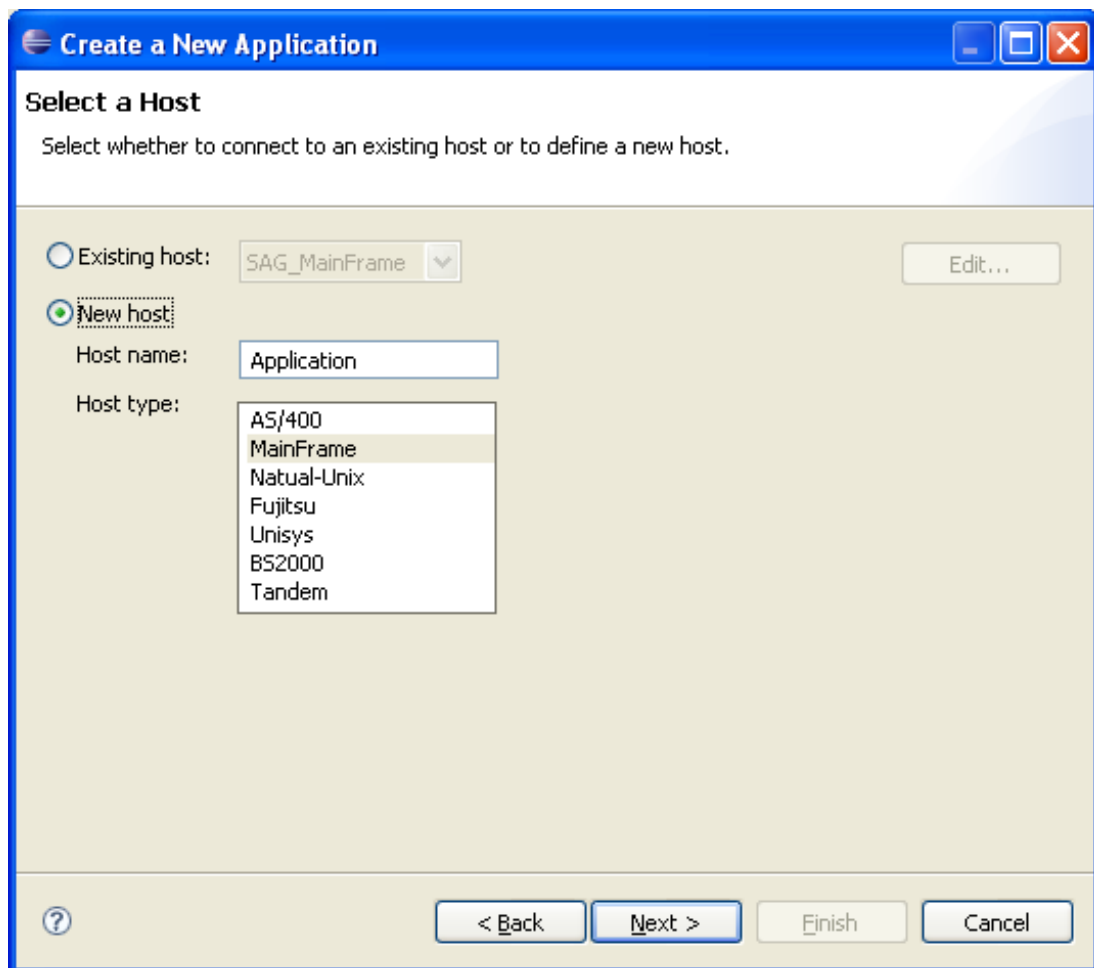
Automatically loaded when the server is started.

**When first accessed**


Loaded when first accessed, in other words, when the code that initializes startup is first called (default).

- 4 Click **Next**.





Select whether to use an existing host or to create a new host.

 **Note:** SAG\_MainFrame is accessible only from within the Software AG network. Therefore, this host can only be selected when working offline using a trace file.

- 5 When selecting to define a new host, enter a name for the host and select the relevant type of host. Click **Next**.

**Create a New Application**

**Connectivity to Host**

Configure the connection and conversion parameters.

**Connection parameters**

Name/IP address:  Port:

Device type:

Protocol:

Model:

Connection timeout:  ms

☐ Automatically attempt to reconnect

**Conversion**

Code page:

☐ Convert input to uppercase

The host connection and conversion parameters are displayed. It is mandatory to enter the host's name/IP address (IPv4 and IPv6 address formats are supported). Configure the other parameters as required. Further details of these parameters are available in *Host Configuration Parameters* in the *Reference Guide*.

- 6 Click **Finish**. The application is displayed in the ApplinX Explorer. It is possible to further configure the application properties by right-clicking on the application name and selecting **Properties**. Refer to *Application Configuration Parameters* in the *Reference Guide* for details regarding the advanced configuration properties.

## Confirming Connectivity

### ➤ To confirm connectivity to the host

- 1 In the ApplinX Explorer, expand the relevant application node.
- 2 Expand the **Sessions** node. Right-click on **Default** and select **Connect**. The first host screen is displayed and the icon of the default session changes to . Navigate between the screens

to confirm connection and host functionality. If there is a connection problem, check that the host is working and that the host definitions are correct.

Further information regarding application configuration can be found in *Defining Applications* in the *Designing and Developing an Application* documentation.



# 12

## Creating an ApplinX Web Application

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- Creating an ApplinX for JSP Web Application using the Software AG Designer (recommended) ..... 66
- Creating an ApplinX for JSP Web Application using JDK and Tomcat (no IDE) ..... 75
- Creating an ApplinX .NET Web Application using Visual Studio 2015 or 2017 ..... 78
- Creating an ApplinX .NET Web Application using .NET (no IDE) ..... 78
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## Creating an ApplinX for JSP Web Application using the Software AG Designer (recommended)

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The following is based on the released Eclipse version. Additional information can be found on Eclipse website and WTP (web tool platform) site.

### ➤ To create a new Dynamic Web project

- 1 In the Eclipse workspace, select **File > New > Project** to create a new project.
- 2 Select **Web > Dynamic Web Project**.
- 3 Click **Next** to create a new web project. The **New Dynamic Web Project** dialog box is displayed.

**New Dynamic Web Project**

Create a standalone Dynamic Web project or add it to a new or existing Enterprise Application.

Project name:

Project location

☒ Use default location

Location:

Target runtime

Dynamic web module version

Configuration

A good starting point for working with Apache Tomcat v8.0 runtime. Additional facets can later be installed to add new functionality to the project.

EAR membership

☐ Add project to an EAR

EAR project name:

Working sets

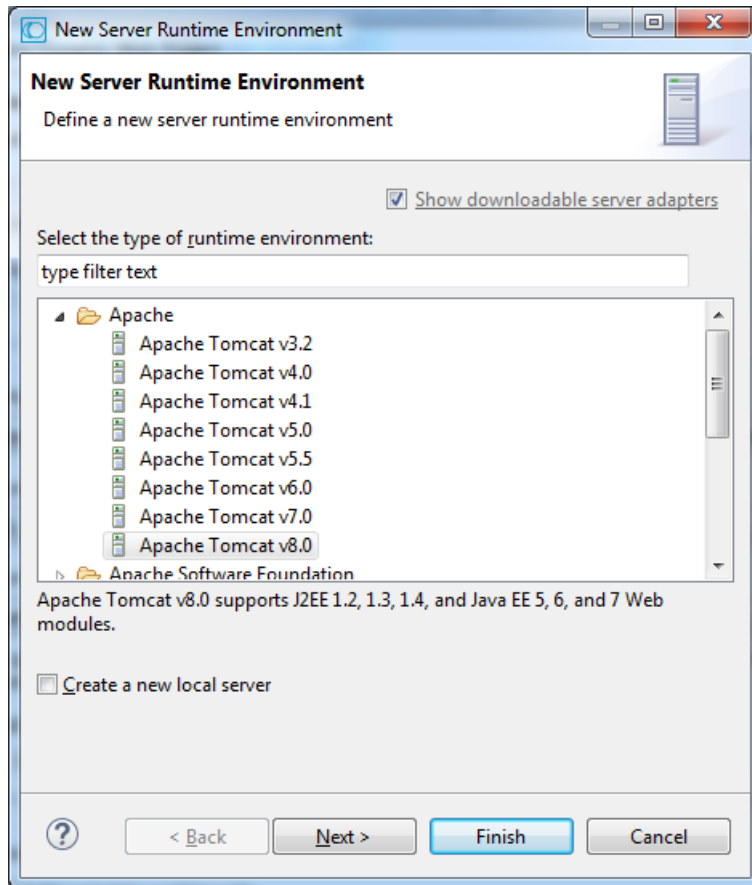
☐ Add project to working sets

Working sets:

- 4 Enter a name for the project.
- 5 In the **Target Runtime** field, select the Tomcat installation: click **New...** and select the server to be used: Either **J2EE Preview** (recommended) or **Tomcat v5.5**.

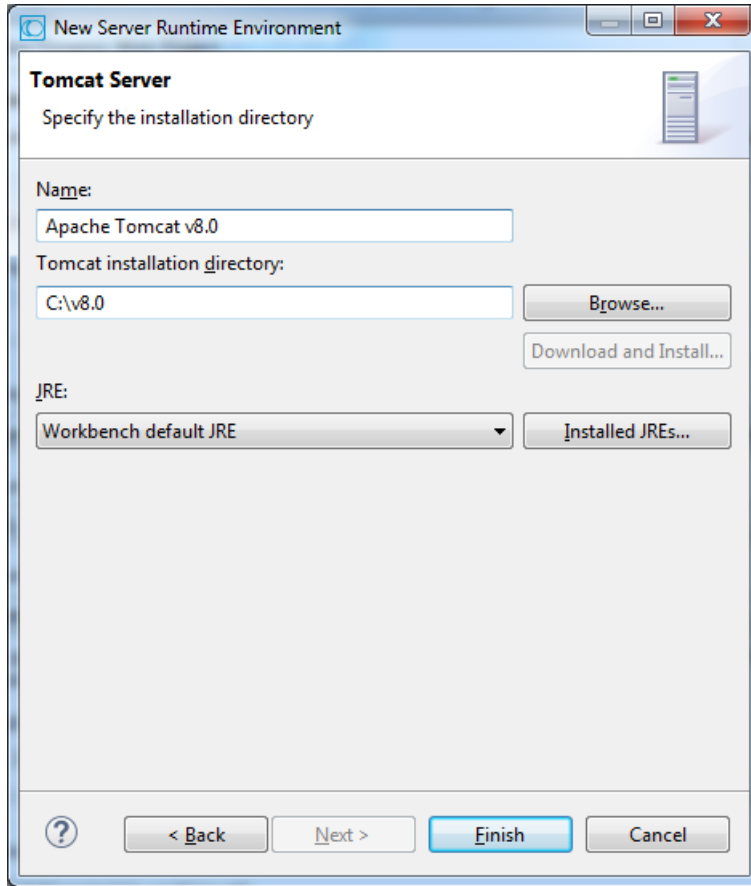


**Important:** The Restart function in the J2EE Preview server does not work properly. Instead of using the Restart function, stop and the start the server. In addition, editing files only works after stopping and starting the server.



6 Click **Next**.



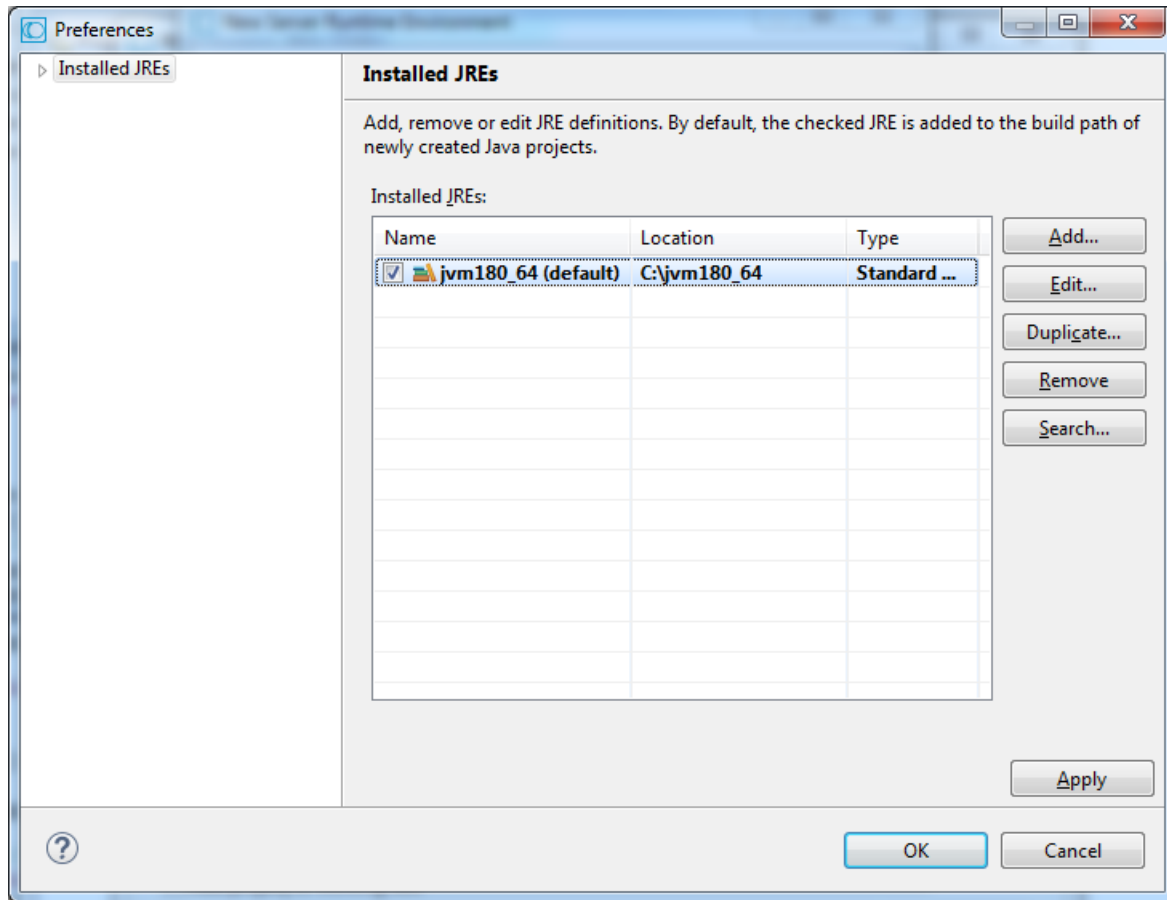


- 7 Browse and select the Tomcat installation.

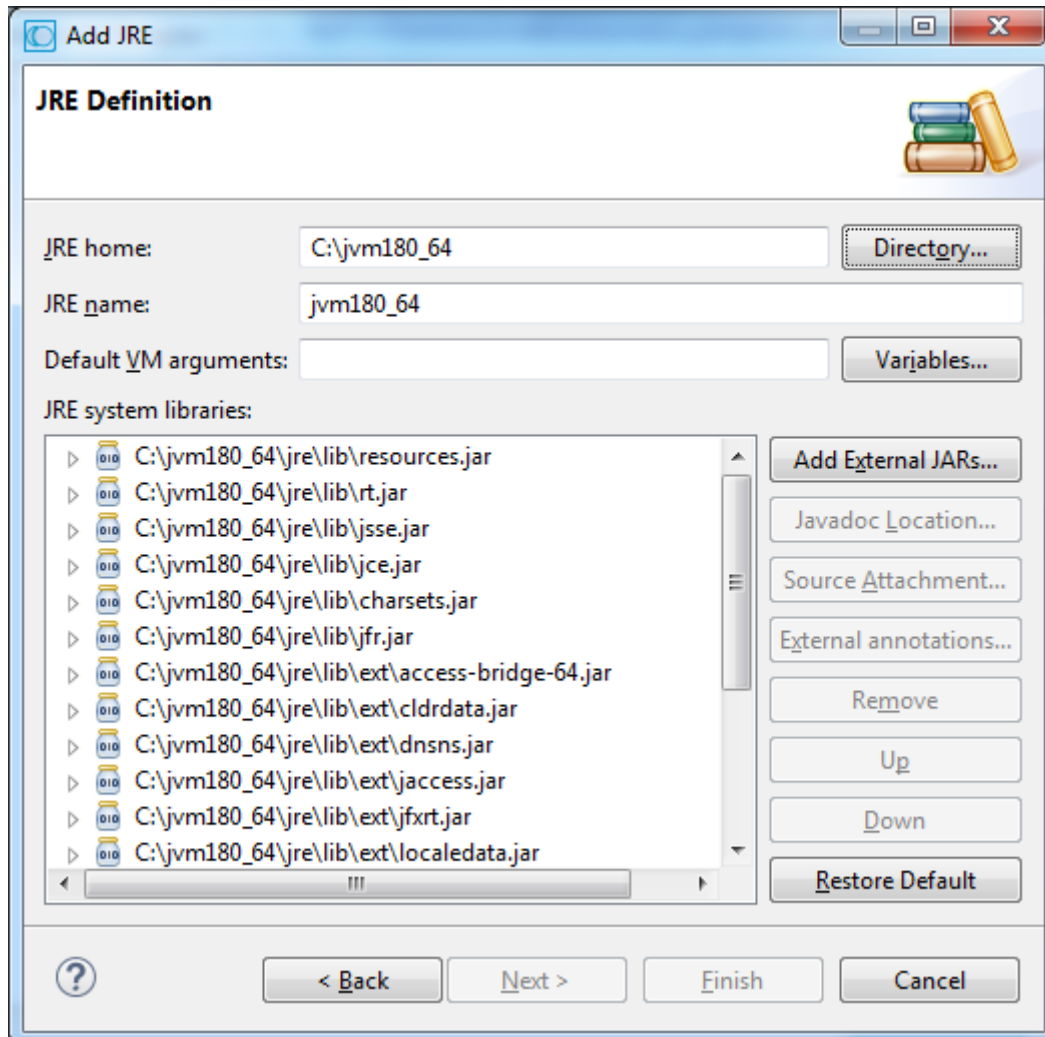


**Note:** Currently the ApplinX internal Tomcat cannot be used to create a web application and when selecting to use Tomcat, you are required to install an additional Tomcat 8.5 version.

- 8 Select a JRE or click **Installed JREs...** to add a new JRE. The **Preferences** dialog box is displayed.



- 9 Define the Runtime Environment (JRE) for the server: JSP server requires a full JDK and not only the JRE bundle. If you need to add a new JRE, click the **Add...** button.

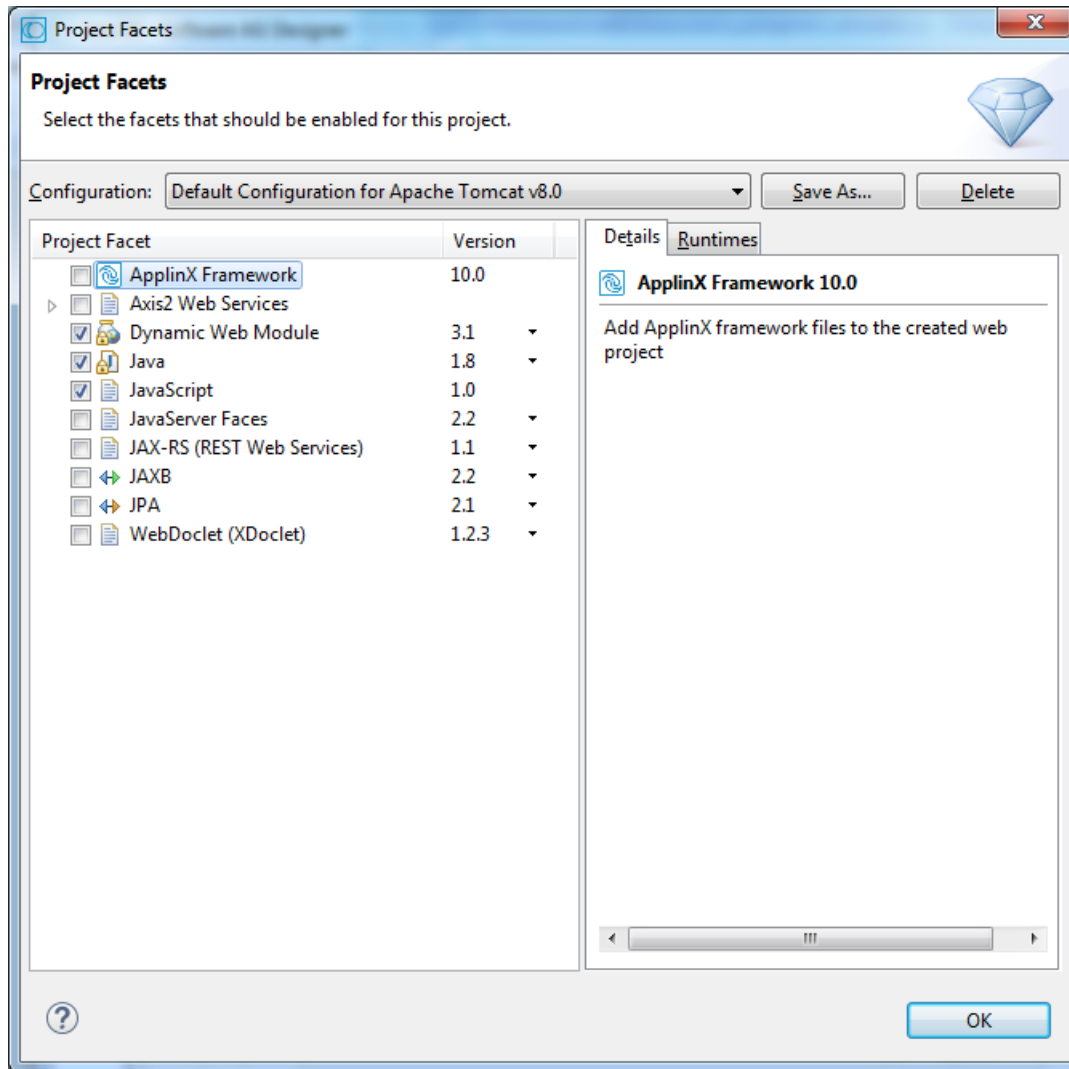


- 10 Assign a name to the new JRE.
- 11 Enter the JRE home directory (when necessary, click **Browse...** to locate the file).
- 12 Add VM arguments when required.
- 13 Click **OK** to return to the **New Server Runtime** dialog box. Select the newly created JRE. Click **OK**.
- 14 Click **Finish**. The **New Dynamic Web Project** dialog box is displayed.

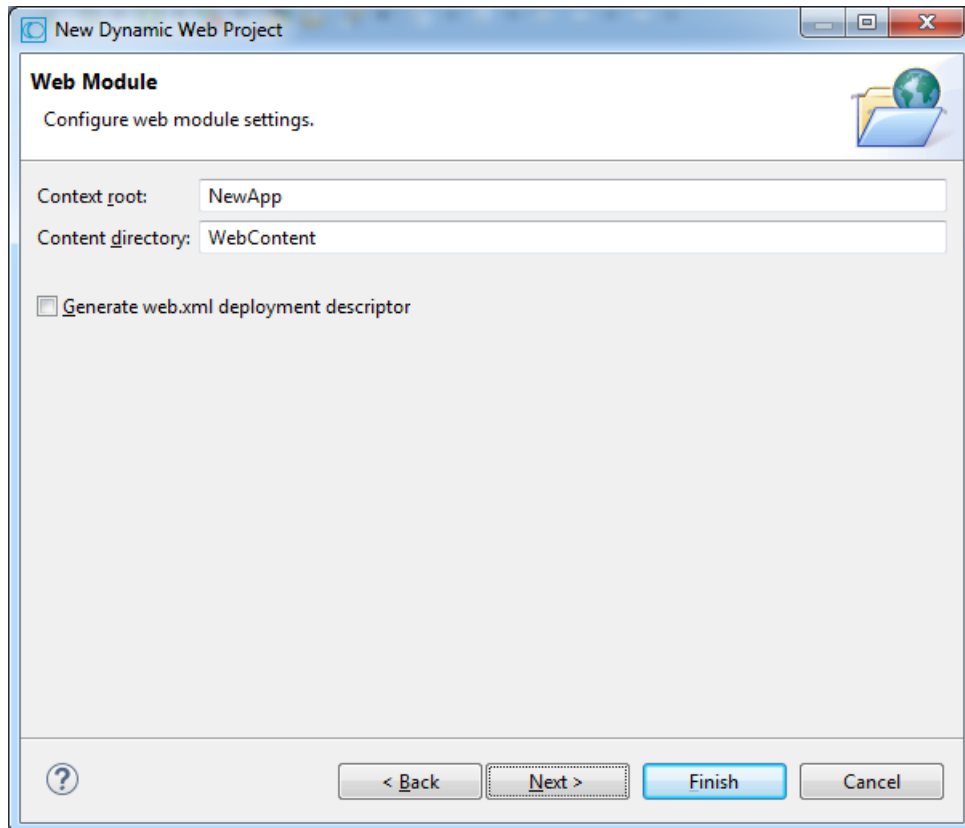
You have completed the configuration of the flexible project, the server (Tomcat) and the JDK.

- 15 Change the configuration to **Custom** and click **Modify**.

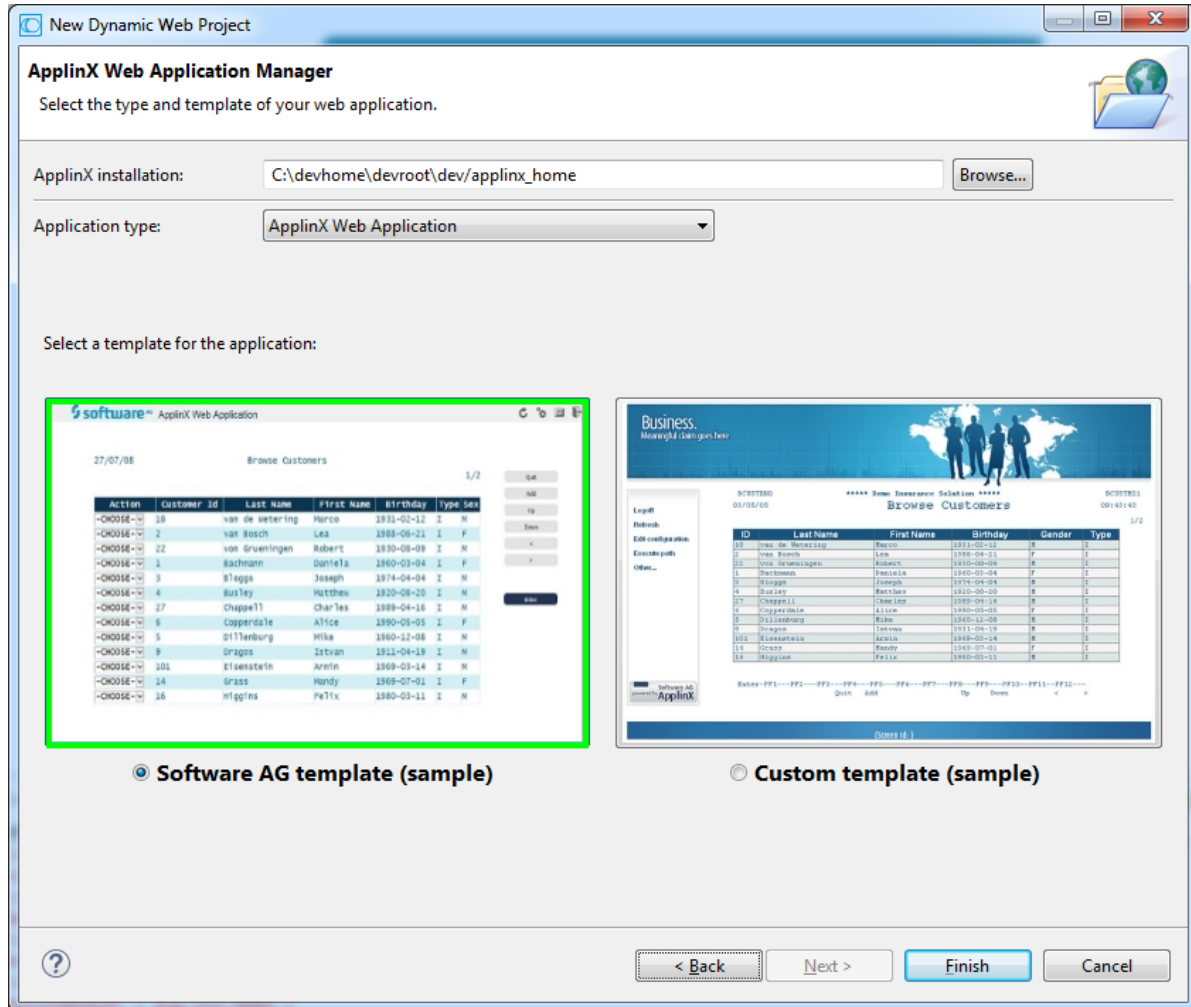
Select **ApplinX Framework**. Ensure that the **Dynamic Web Module** and **Java** check boxes are selected. Click **OK**.



- 16 Click **Next**.
- 17 Click **Next**.
- 18 You have completed the creation of a standard WAR file (Java Web Archive).



- 19 Click **Next**.
- 20 Select the type and template of your web application:



- 21 Ensure that in the **Project** menu, **Build Automatically** is selected.


To run the project, right-click on the project's folder in the **Project Explorer** view and select **Run As > Run on Server...**

The first time you run a project you are required to select a default server:

Select the server you configured.

Select the **Always use this server when running this project** check box. The next time you run the application, this dialog box will not be displayed. The server you selected will automatically be used.

Click **Finish** to continue. A browser window will be opened.

 **Note:** The browser type can be configured under **Windows > Preferences > General > Web Browser**. It is recommended to configure it to **Default system web browser**.

## Using the Javadoc as a reference within the code

When using the Javadoc you will have:

- Online usage of the Eclipse Javadoc for ApplinX API.
- Suggested argument names for the ApplinX API, instead of arg0, arg1, etc.

### ➤ To use Javadoc capabilities when developing your project

- 1 Right-click on the project node and select **Build Path > Configure Build Path....** The **Properties** dialog box is displayed.
- 2 In the **Libraries** tab, expand the **gxframework.jar** node, click on **Javadoc location** and then click on the **Edit...** button to determine the location of the Javadoc.
- 3 You can either enter the URL *http://localhost:2380/applinx-help* or browse and select the Javadoc location path <**Software AG installation**> > **ApplinX** > **Help** > **API**. Then click **OK**.
- 4 Click **OK** to close the **Properties** dialog box.

## Creating an ApplinX for JSP Web Application using JDK and Tomcat (no IDE)

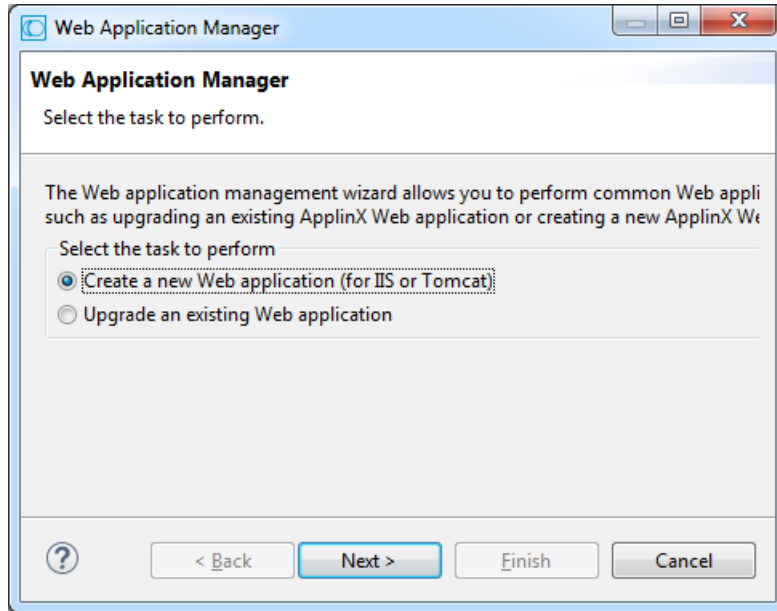


**Note:** This is not available when working with a SOA license.

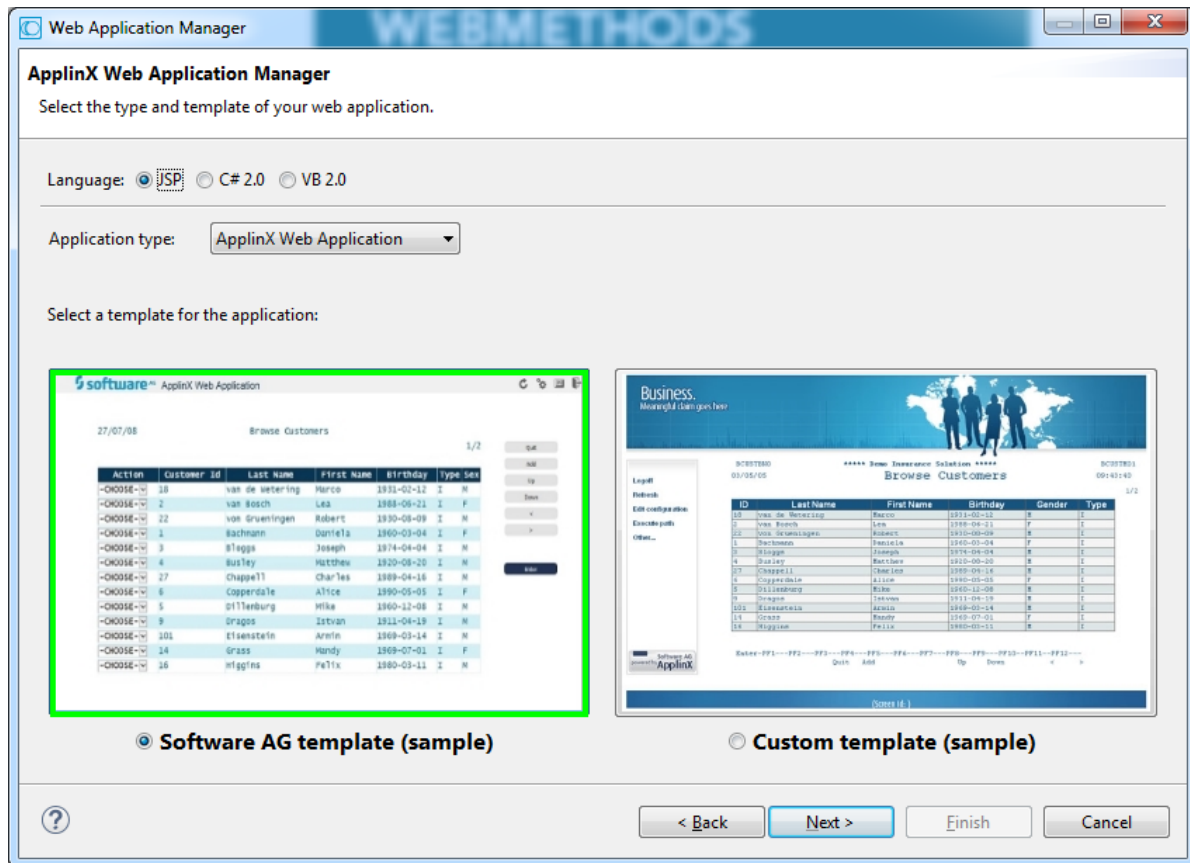
### ➤ To create a new JSP application without any IDE and with JDK

Refer to [ApplinX for JSP Web Application](#) in *Software Requirements*.

- 1 During the installation process, choose the option **ApplinX Framework for JSP**.
- 2 In the ApplinX Explorer, right-click on the relevant application and select **Web Application Manager....** The **Web Application Manager** wizard is displayed.

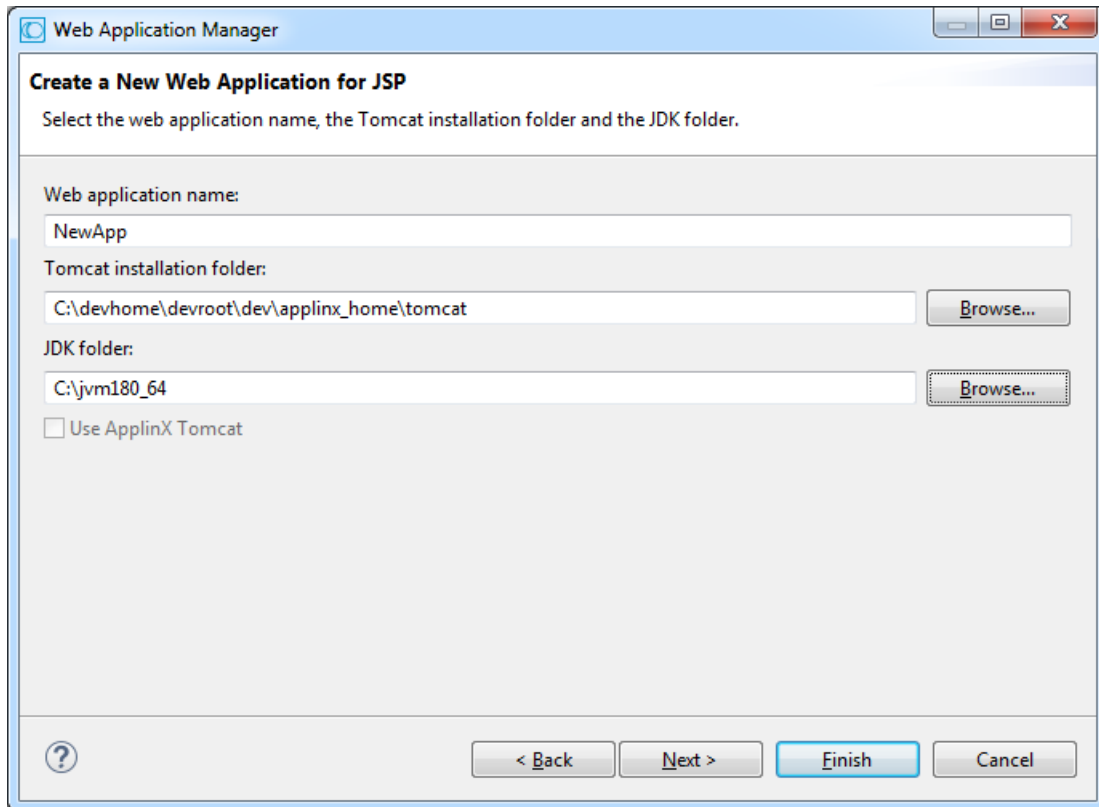


- 3 Ensure that **Create a new Web application (for IIS or Tomcat)** is selected. Click **Next**. The **Create a New Web Application** screen is displayed.





- 4 Ensure that **JSP** is selected. Select the application type: **New application** to create a basic ApplinX web application with a web look and feel or **Emulation template** to create an ApplinX web application with a host look and feel.
- 5 Click **Next**. The **Create a New JSP Web Application** screen is displayed.



Enter a name for the web application. By default this is the name of the ApplinX application that you selected. Browse and select the folder where Tomcat is installed. Select the location of the JDK installation.

When you wish to use the ApplinX internal Tomcat, select the corresponding check box.

- 6 Click **Next**. The **Wizard Summary** screen is displayed.
- 7 Select whether to launch the browser when the process is completed.
- 8 Select whether to restart Tomcat. This is only relevant when Tomcat is activated from a batch file. The Framework Manager does not support restarting Tomcat when Tomcat runs as a Windows Service (in this case, you need to manually restart Tomcat).
- 9 Click **Finish**. A message will be displayed indicating whether the process succeeded or failed.



**Note:** Any change in the Java file requires recompilation of your new application. Changes in JSP files do not require recompilation. Furthermore, Tomcat requires reloading: `http://localhost:8080/manager/reload?path=/<YOUR_APP_NAME>`.

## Creating an ApplinX .NET Web Application using Visual Studio 2015 or 2017

---

### ➤ To create a new ApplinX web application using Visual Studio 2015 or 2017

- 1 Install J# 2.0 redistributable package.
- 2 Install .NET Framework 3.5 SP1.
- 3 Install Microsoft Visual Studio on your computer (install Visual Studio before installing ApplinX so that when installing ApplinX, the ApplinX web application templates will be added to the available Visual Studio New Web Sites).
- 4 Open Visual Studio.
- 5 In the **File** menu, select **New** and then **Web Site...** to create a new web site. The **New Web Site** dialog box is displayed.
- 6 Select to work either with .NET Framework 2.0 or 4.0.
- 7 Select the relevant ApplinX web application type (Visual C# or Visual Basic).
- 8 Define that *index.aspx* will be the start page (right-click on *index.aspx* and select **Set as Start Page**).
- 9 Run the web site
- 10 In the Framework Configuration Editor, define the connection parameters as follows:
  1. Click on the **Framework Configuration** link. The Configuration Editor will be displayed.
  2. In the **Session** node, enter the application name. By default, the application name is "InstantDemo". In the **Session** node, it is possible to edit and configure additional connection and project properties.
  3. Click **Save** to save your changes.
  4. Click **Close** to return to the web application.

## Creating an ApplinX .NET Web Application using .NET (no IDE)

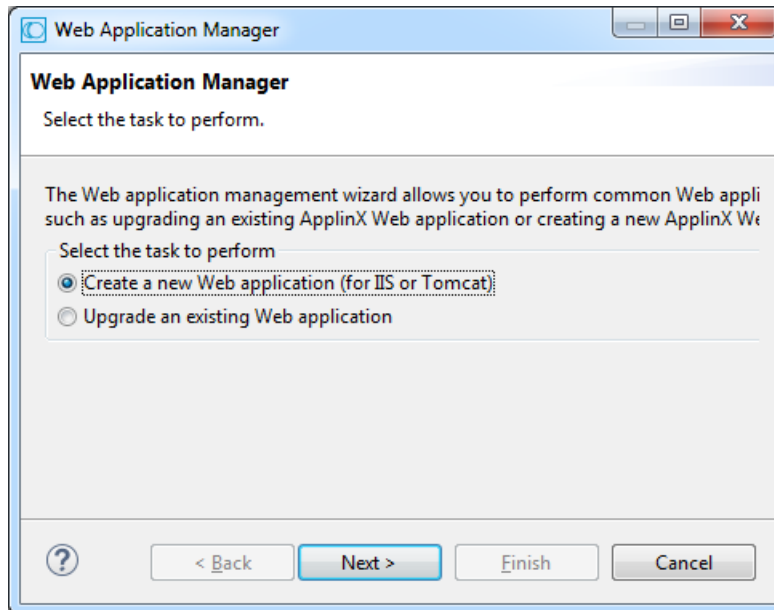
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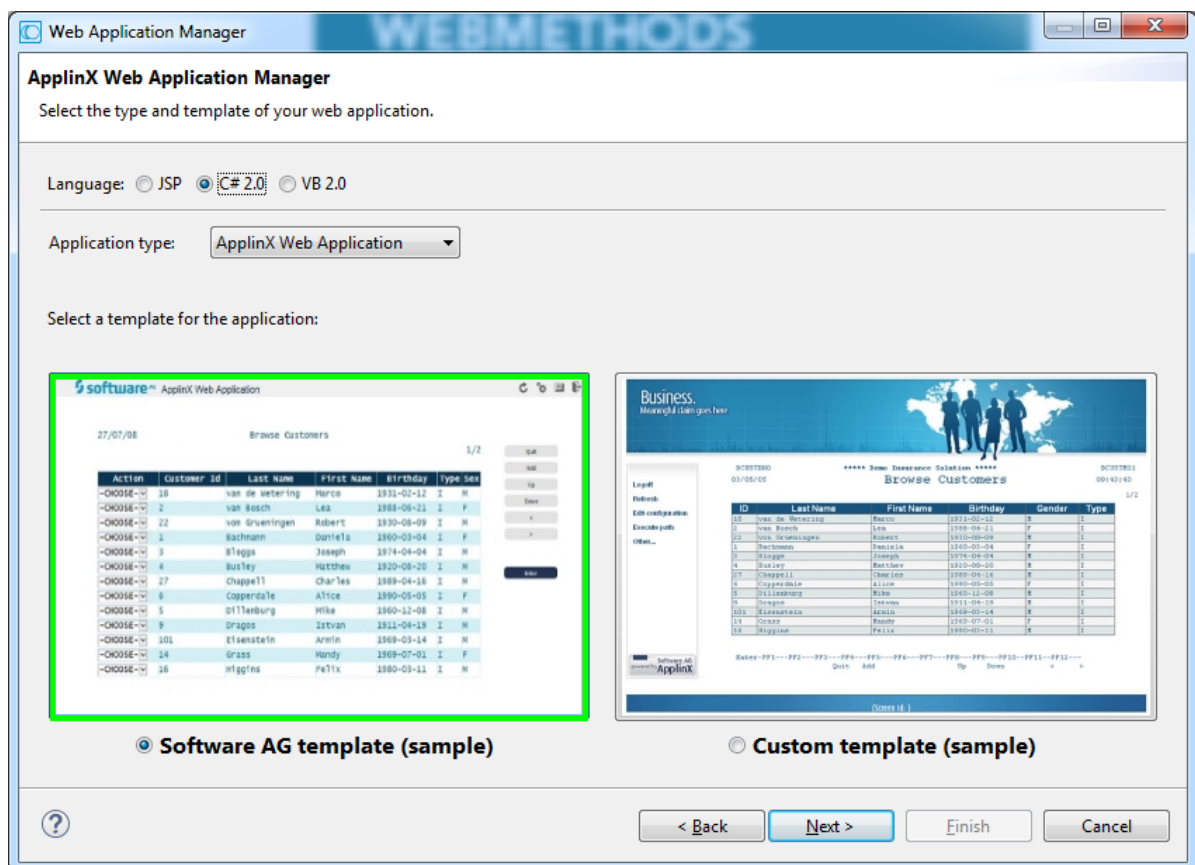
**Note:** This is not available when working with a SOA license.

### ➤ To create a new ASP.NET application without Visual Studio .NET with .NET SDK

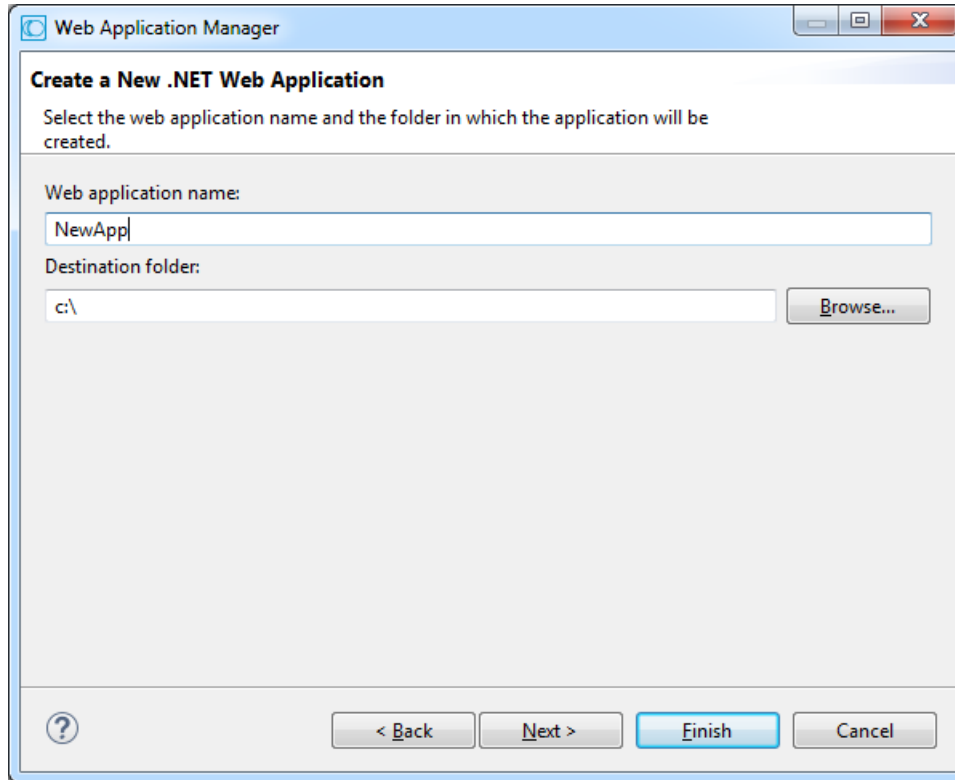
- 1 During ApplinX installation, select the ApplinX ASP.NET Web Framework C#/VB .NET option.
- 2 In the ApplinX Explorer, right-click on the relevant application and select **Web Application Manager...** The **Web Application Manager** wizard is displayed.



- 3 Ensure that **Create a new Web application (for IIS or Tomcat)** is selected. Click **Next**. The **Create a New Web Application** screen is displayed.



- 4 Ensure that **C# 2.0** or **VB 2.0** is selected. Select the application type: **New application** to create a basic ApplinX web application with a web look and feel or **Emulation template** to create an ApplinX web application with a host look and feel.
- 5 The **Create a New .NET Web Application** screen is displayed.



- 6 Enter a name for the web application. By default, this is the name of the ApplinX application that you selected. Browse and select the destination folder.
- 7 Click **Next**. The **Wizard Summary** screen is displayed.
- 8 Select whether to launch the browser when the process is completed.
- 9 Click **Finish**. A message will be displayed indicating whether the process succeeded or failed.



**Note:** When using the Application Manager on IIS 7.5 or 8.0, you need to convert your application from a virtual directory to a web application (in the IIS manager, right-click on your application and select **Convert to Application**).

## Upgrading an ApplinX .NET Web Application to Visual Studio 2015 or 2017

---

### ➤ To upgrade a project to Visual Studio 2015 or 2017

Ensure that you have J# 2.0 redistributable package Second edition installed.

- 1 In Visual Studio 2015 or 2017, open the web application by clicking **File > Open > WebSite...** and selecting the web application.
- 2 Determine whether you would like to work with .NET 2.0 or .NET 4.0.
- 3 In ApplinX Designer, upgrade your web application using the ApplinX Web Application Manager (refer to *Upgrading a .NET Web Application* in *Web Application Development*).
- 4 Define that *index.aspx* will be the start page (right-click on *index.aspx* and select **Set as Start Page**).
- 5 You can run the web site to ensure that it performs as expected.



# 13

## Installing ApplinX Demo Applications

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|  |    |
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| ■ Installing the Demo Web Application using Tomcat .....                     | 84 |
| ■ Installing the Demo Web Application (Other Java Application Servers) ..... | 85 |
| ■ Installing the Demo Web Application using Visual Studio .....              | 86 |

ApplinX provides several demo applications: Instant demo, Composite demo and SOA demo, based on a typical legacy Natural mainframe application. These applications contain typical legacy screens such as update screens, task screens, windows screens and more. The web applications of the demos contain various examples of common tasks needed to be performed in a typical web enabling/SOA application (in .NET or JSP). Such examples include external login page, path procedures, and tables combining a few screens to one.



**Note:** When working in Windows OS, by default the repository is loaded from the database provided with ApplinX. When working with Linux, the repository of the demo application is loaded from an external gxz file and therefore changes cannot be made to entities (read-only).

The Insurance applications (Instant, Composite and SOA) manage customer details and proposals of a fictitious insurance company. They store and display information about the current customers and their proposal details. The applications contain modules for updating, deleting, and displaying customer records and proposals. There are three Insurance based applications:

- The Instant demo application includes the entities required for an instant web application.
- The Composite demo application includes, in addition to the entities included in the instant demo, paths and procedures used in the composite web application.
- The Service Oriented Architecture (SOA) demo application includes the entities required to expose Procedure Clients and forms that have been generated.

The ApplinX web demo applications are distributed as part of the ApplinX installation. They contain many useful examples and code snippets, and therefore it is recommended to install them, browse through them and inspect their sources.

## Installing the Demo Web Application using the Software AG Designer

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Refer to [Creating an ApplinX Web Application using the Software AG Designer](#) and select the desired application type.

## Installing the Demo Web Application using Tomcat

---

### ➤ To install the demo web application

- 1 Right-click on the relevant application (make sure that it is one of the demo applications: Instant, Composite or SOA) and select **Web Application Manager...**
- 2 Ensure that **Create a new Web application** is selected. Click **Next**. The **Create a New Web Application** screen is displayed.



- 3 Ensure that **JSP** is selected as the language.
- 4 Select the relevant demo name as the **Application type**. Click **Next**.
- 5 Enter a name for the web application.
- 6 Browse and select the folder where Tomcat is installed.
- 7 Select the location of the JDK folder.
- 8 Click **Next**. The **Wizard Summary** screen is displayed.
- 9 Select whether to launch the browser when the process is completed.
- 10 Select whether to restart Tomcat.
- 11 Click **Finish**. A message will be displayed indicating whether the process succeeded or failed.

## Installing the Demo Web Application (Other Java Application Servers)

---

### ➤ To install the demo web application

- 1 Right-click on the relevant application (make sure that it is one of the demo applications: Instant, Composite or SOA) and select **Deployment Manager for J2EE...**
- 2 Select **ApplinX for JSP Web application** and click **Next**. The **Select ApplinX Web Application** screen is displayed.
- 3 Select **Project in other location**. Browse and select `<ApplinX installation>\ApplinX\new jsp\<demo application name>`.
- 4 Select **Include source files** to include the Java files as well as the compiled classes. Click **Next**. The **Select Package Parameters** screen is displayed.
- 5 Select the Java Application Server, the WAR file name and the destination folder where the output file will be placed.
- 6 Click **Next**. The **Select Target ApplinX Server** screen is displayed.
- 7 Select the name/IP address of the server, the port number and the ApplinX application name. Click **Finish**.
- 8 In the console area, it is possible to see whether the process succeeded or failed. The WAR file created should be placed in your web server directory.

## Installing the Demo Web Application using Visual Studio

---

### ➤ To install the sample application in Visual Studio

- 1 Open Visual Studio and open a **New Web Site**.
- 2 In the **New Web Site** dialog box make sure Visual C# is the selected language.
- 3 Choose one of the following templates:
  - ApplinX C# Composite Demo Application.
  - ApplinX C# Instant Demo Application.
  - ApplinX C# SOA Demo Application.
- 4 Right-click *index.aspx* and select **Set as Start Page**.
- 5 Click **Start** to run the project.

# 14

## Working with the Demo Applications

---

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| ■ The Composite Demo ..... | 96  |
| ■ The SOA Demo .....       | 102 |

## The Instant Demo

---

- [template.jsp/template.master](#)
- Screen Name: Login
- Screen Name: InsuranceMenu
- Screen Name: BrowseCustomers



**Note:** When using a replay file, it is possible to navigate from one screen to the next by pressing ENTER in each web screen. Clicking on buttons which execute paths will work only if the replay file contains the relevant path navigation recorded and the session screen is in the relevant starting point to execute the path. If this is not the case, the path will fail and the user will receive an error from the web application.

When using transformations it is important to notice the order in which the transformations appear in the screen editor (**Transformations** tab). Transformations can change the way ApplinX perceives a host screen. If, for example, the first transformation hides a certain text on the screen and the second transformation searches for that text pattern in order to replace it with a link then the second transformation will never find a match for that pattern since it has been removed by the first transformation. So always keep in mind, the order of the transformations in the screen editor will be the order in which they will be executed.

### **template.jsp/template.master**

Refer to *Customizing the Default Template* in the *Web Application Development* documentation for a detailed explanation on how to change the default template.

- The host keys relevant for this screen are displayed on the left of the screen. This is defined in the *template.jsp/template.master* (.NET web apps) file in the host key control. The host key control displays all the host keys for the current host screen. It is possible to define whether they should appear horizontally or vertically, in the form of buttons, links or a pre-defined template (see "gx:GXHostKeysControl" in .NET web apps or "gx:hostKeys" tag in JSP applications). The default host key style is defined in the *css/styles\_instant.css* style sheet in the "gx\_hky" class.
- The Page footer section contains links that perform various actions such as logging off, refreshing the page, submitting a terminal key and so on. These links can be defined in the *template.jsp/template.master* file (look for "pgfooter" control in the instant demo app).

**Screen Name: Login****Host Screen**

```
13:32:54      TID   14      -DEMOCO-      User      30.12.08
                                     ULGO
----- COM-PLETE  System Logon -----

      For hints on how to change your password, please read:
      http://daemfwiki.eur.ad.sag/twiki/bin/view/GismfPub/MfGenFaqPswd

User ID .....: 
Password .....: _____
New password .....: _____
Group (RACF) .....: _____

Session reconnect...: X

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
Cont          End
```

## Screen in Web Application



**Note:** The sections that are referred to below can be found in the *Designing and Developing an Application* documentation.

- Identify the screen using the "-DEMOCO-" and "COM-LETE System Logon" texts. Refer to *Define Identifiers*.
- Map the **Message**, **UserID**, **Password** and **Reconnect** fields. Refer to *Map Fields*.
- The "HideTextTODeI" transformation hides text in a defined area. Refer to *Transforming a Text Pattern to Text* and select the "Hide" option.

```
New password .....:
Group (RACF) .....:
Session reconnect...:
```

- The "RemoveDots" transformation removes dots followed by a colon ("...:"). Refer to *Transforming a Text Pattern to Text*.
- The "HideInputField" transformation hides input fields in a defined area. Refer to *Transforming an Input Field to a Text Field* and select the "Hide" option.
- The "HideText" transformation hides text in different areas in the screen. Refer to *Transforming a Text Pattern to Text* and select the "Hide" option.

- The "DashesToLine" transformation changes all the dashes in the screen to lines. Refer to *Transforming a Repeating Characters Pattern to a Line*.
- The "AddLoginButton" transformation adds a button used to login. Clicking on this button executes the "login" path procedure. Refer to *Transforming a Text Pattern to a Button*.

The "login" path procedure receives the user ID and password as inputs.

## Screen Name: InsuranceMenu

### Host Screen

```
DEMO          ***** Demo Insurance Solution *****          DEMOM1
01/01/09      - Main Menu -                                     12:53:36

Code Description
-----

CU  Customer

PR  Proposal

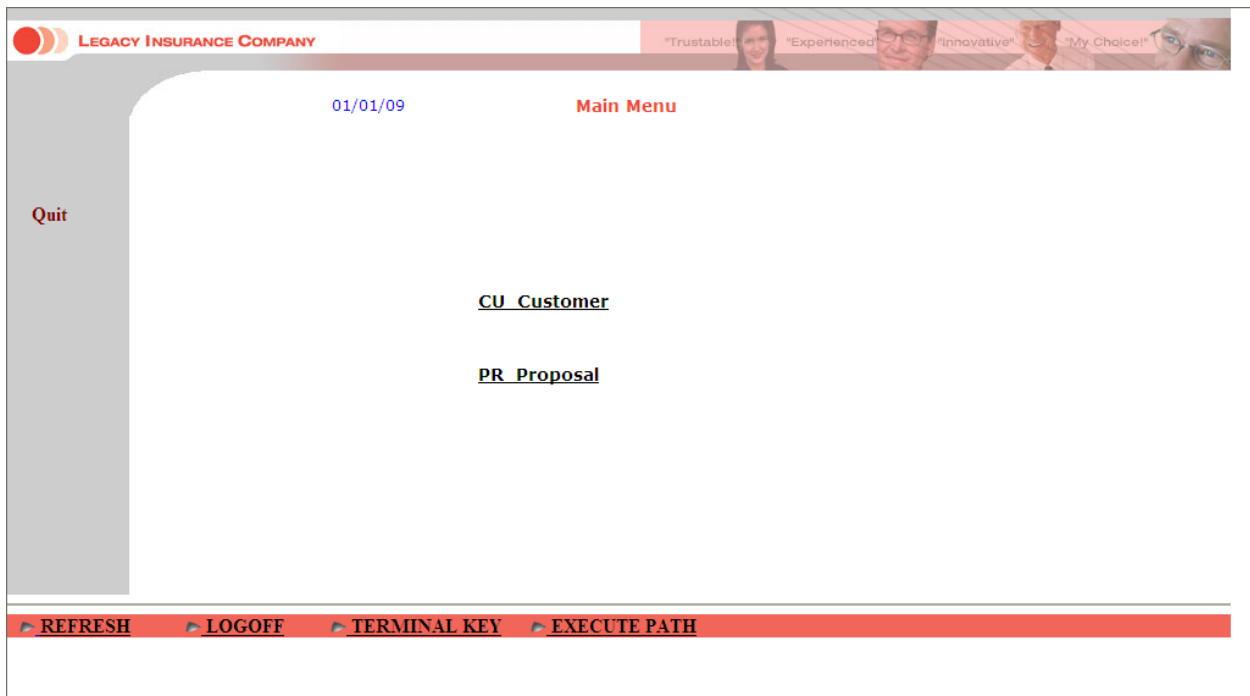
-----


Code:   

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
Quit
```



## Screen in Web Application



 **Note:** The sections that are referred to below can be found in the *Designing and Developing an Application* documentation.

- Identify the screen using the "DEMO" and "DEMOM" texts. Refer to *Define Identifiers*.
- Map the **Code**, **Time** and **Message** fields. Refer to *Map Fields*.
- The "CleanMenuScreen" transformation hides text in a number of defined areas in the screen. Refer to *Transforming a Text Pattern to Text* and select the "Hide" option.
- The "AllGroup" screen group includes all the screens that include in row 1, column 23 the content "\*\*\*\*\*Demo Insurance Solution\*\*\*\*\*". The "AllGroup" screen group includes various transformations:
  - Removing the first line in the screen (the "RemoveFirstLine" transformation). Refer to *Transforming a Text Pattern to Text* and select the "Hide" option.
  - Formatting the screen name (the "FormatScreenNameHeader" transformation).
  - Removing dots that are followed by a colon "...:" (the "RemoveDots" transformation). Refer to *Transforming a Text Pattern to Text*.
  - Hiding the time that appears in the top right corner (the "HideText" transformation). Refer to *Transforming a Text Pattern to Text* and select the "Hide" option.
- The "MenusGroup" screen group includes all screens that include text: "code", and text "menu". This screen group includes a transformation which transforms menus to links (the "MenuToLinks" transformation). Refer to *Transforming a Menu to Hyperlinks*.

- Associate the "AllGroup" and "MenusGroup" screen groups to this screen.
- Refer to the template section above to see how to implement placing the host keys on the left of the screen, and placing buttons in the footer.

## Screen Name: BrowseCustomers

## Host Screen

| BCUSTEN0  |             | ***** Demo Insurance Solution ***** |           |            |      | BCUSTM01 |
|---|-------------|-------------------------------------|-----------|------------|------|----------|
| 13/07/08  |             | - Browse Customers -                |           |            |      | 14:40:25 |
|   |             |                                     |           |            |      | 1/2      |
| A   | Customer ID | Lastname                            | Firstname | Birthday   | Sex  | Type     |
| 18  |             | van de Wetering                     | Marco     | 1931-02-12 | M    | I        |
| 2   |             | van Bosch                           | Lea       | 1988-06-21 | F    | I        |
| 22  |             | von Grueningen                      | Robert    | 1930-08-09 | M    | I        |
| 1   |             | Bachmann                            | Daniela   | 1960-03-04 | F    | I        |
| 3   |             | Bloggs                              | Joseph    | 1974-04-04 | M    | I        |
| 4   |             | Busley                              | Matthew   | 1920-08-20 | M    | I        |
| 27  |             | Chappell                            | Charles   | 1989-04-16 | M    | I        |
| 6   |             | Copperdale                          | Alice     | 1990-05-05 | F    | I        |
| 5   |             | Dillenburg                          | Mike      | 1960-12-08 | M    | I        |
| 9   |             | Dragos                              | Istvan    | 1911-04-19 | M    | I        |
| 101   |             | Eisenstein                          | Armin     | 1969-03-14 | M    | I        |
| 14  |             | Grass                               | Mandy     | 1969-07-01 | F    | I        |
| 16  |             | Higgins                             | Felix     | 1980-03-11 | M    | I        |
| Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12--- |             |                                     |           |            |      |          |
|   |             | Quit                                | Add       | Up         | Down | < >      |

## Screen in Web Application

04/01/09 **Browse Customers** 1/2

ID: Lastname: Firstname:

A Customer Birthday Sex Type

|          |                 |         |            |   |   |
|----------|-----------------|---------|------------|---|---|
| .CHOOSE- | van de Wetering | Marco   | 1931-02-12 | M | I |
| .CHOOSE- | van Bosch       | Lea     | 1988-06-21 | F | I |
| .CHOOSE- | von Grueningen  | Robert  | 1930-08-09 | M | I |
| .CHOOSE- | Bachmann        | Daniela | 1960-03-04 | F | I |
| .CHOOSE- | Bloggs          | Joseph  | 1974-04-04 | M | I |
| .CHOOSE- | Busley          | Matthew | 1920-08-20 | M | I |
| .CHOOSE- | Chappell        | Charles | 1989-04-16 | M | I |
| .CHOOSE- | Copperdale      | Alice   | 1990-05-05 | F | I |
| .CHOOSE- | Dillenburg      | Mike    | 1960-12-08 | M | I |
| .CHOOSE- | Dragos          | Istvan  | 1911-04-19 | M | I |
| .CHOOSE- | Eisenstein      | Armin   | 1969-03-14 | M | I |
| .CHOOSE- | Grass           | Mandy   | 1969-07-01 | F | I |
| .CHOOSE- | Higgins         | Felix   | 1980-03-11 | M | I |

REFRESH LOGOFF TERMINAL KEY EXECUTE PATH

- Identify the screen using the "BCUSTBN0" and "BCUSTBN1" texts. Refer to *Define Identifiers* in the *Designing and Developing an Application* documentation.
- Refer to the Fields tab to see the mapped fields.
- Refer to the template section above to see how to implement placing the host keys on the left of the screen, and placing buttons in the footer.

## The Composite Demo

- [template.jsp/template.master](#)
- Screen Name: Login
- Screen Name: Browse Proposals
- Screen Name: ModifyProposal1
- Screen Name: BrowseCustomers1



**Note:** When using a replay file, it is possible to navigate from one screen to the next by pressing ENTER in each web screen. Clicking on buttons which execute paths will work only if the replay file contains the relevant path navigation recorded and the session screen is in the relevant starting point to execute the path. If this is not the case, the path will fail and the user will receive an error from the web application.

## **template.jsp/template.master**

Refer to *Customizing the Default Template* in the *Web Application Development* documentation for a detailed explanation on how to change the default template.

### **JSP**

In this template we use these panels (that can be overridden by specific pages):

- **CssPanel**: holds the css links (has a default in the template).
- **JSPanel**: holds the JavaScript code and JavaScript file references.
- **HeaderImagePanel**: by design, an image in the top-right corner changes according to the data.
- **MenuPanel**: holds the menu that is included in the pages. In some specific pages it is empty, therefore the menu is not displayed.
- **GXPagePlaceHolder**: holds the data for the page.

### **.NET**

In this template we use these panels (that can be overridden by specific pages):

- **CssPanel**: holds the css links (has a default in the template).
- **JSPanel**: holds the JavaScript code and JavaScript file references.
- **HeaderImagePanel**: by design, an image in the top-right corner changes according to the data.
- **MenuPanel**: holds the menu that is included in the pages. In some specific pages it is empty, therefore the menu is not displayed.
- **GXPagePlaceHolder**: holds the data for the page.

## Screen Name: Login

LEGACY INSURANCE COMPANY

"Trustable!" "Experienced" "Innovative" "My Choice!"

Login

Please Enter your UserName and Password:

User ID:  Password:

LOGIN AUTOLOGIN ☐ Work online

When not connected to the Software AG network, the demo application will run in offline mode (using a pre-recorded GCT file). In this mode, some of the web application functionality may not perform as it would in the actual online Web Application.

After logging in, use the ENTER key to proceed from one screen to another. Refer to the "**ApplinX Demo Applications**" chapter in the documentation to learn more about the different tasks implemented in each page

Refresh | Logoff

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INTRANET

## Tasks

Refer to the following sections in the *Web Application Development* documentation:

- *Building an External Login Page*
- *Controlling the Connection Properties from Code*

## Screen Name: Browse Proposals

**LEGACY INSURANCE COMPANY** "Trustable" "Experienced" "Innovative" "My Choice!"

Select Proposal

Search by: Proposal ID:  OR Status:  **SEARCH**

| Status   | Proposal ID | Product | Start Date | Policy Holder Name  | Total Premium |
|----------|-------------|---------|------------|---------------------|---------------|
| RECEIVED | 1           | HOUSE   | 2004-05-01 | von Gruening, Rober | 36.30         |
| REQUEST  | 2           | HOUSE   | 2004-02-03 | Kantor, Edgar       | 176.04        |
| ACTIVE   | 3           | HOUSE   | 2003-11-02 | van Bosch, Lea      | 56.91         |
| IN-USE   | 4           | HOUSE   | 2004-08-01 | Chappell, Charles   | 58.91         |
| RECEIVED | 5           | HOUSE   | 2001-01-01 | Rowling, Keith      | 20.38         |
| RECEIVED | 6           | HOUSE   | 1980-10-01 | Rowling, Keith      | 213.26        |
| IN-USE   | 7           | HOUSE   | 2000-01-01 | Dragos, Istvan      | 17.22         |
| ACTIVE   | 8           | HOUSE   | 2003-04-01 | Krasnenko, Wladimir | 161.61        |
| REQUEST  | 9           | HOUSE   | 1992-02-01 | Grass, Mandy        | 293.53        |
| RECEIVED | 10          | HOUSE   | 2004-02-01 | Squirtle, Connor    | 68.68         |
| ACTIVE   | 11          | HOUSE   | 1989-10-01 | Higgins, Felix      | 127.85        |
| REQUEST  | 12          | HOUSE   | 2005-04-01 | Miller, John        | 198.03        |
| REQUEST  | 13          | HOUSE   | 2005-05-05 | Orlikowski, Adam    | 3.00          |

Refresh | Logoff

INTRANET

## Tasks

Refer to the following sections in the *Web Application Development* documentation:

- *Activating an Application Map from a Menu*
- *Creating Designed Web Pages*
- *Creating a Button / Hyperlink for Submitting a Host Key*
- *Using Web Application Controls in Generated Pages*
- *Exporting Data to an MS Office Application (Excel, Word)*
- *Adding the Sorting Capability to a Screen-Based Table*
- *Creating a Page with a Table*

## Screen Name: ModifyProposal1

**LEGACY INSURANCE COMPANY** "Trustable!" "Experienced" "Innovative" "My Choice!"

**Detail view proposal**

**Proposals**  
**Customers**  
**Log Out**

**Proposal ID: 3**

**Main Data** **Collection** **Object Data** **Risk Data**

Status Code:  Total Premium:

Product Code:  ☐ External Calc

Begin Date:  Creator:

Maturity Date:  Creation Date:

Expiration Date:

Origin Code:  Policy Holder ID:  Policy Holder Name:

Agent ID:  Agent Name:

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[Refresh](#) | [Logoff](#) **INTRANET**

### Tasks

Refer to the following sections in the *Web Application Development* documentation:

- *Collecting Data from Multiple Host Screens*
- *Creating a Button / Hyperlink for Executing a Path Procedure*
- *Updating Data in Multiple Host Screens*
- *Activating an Application Map from a Menu*
- *Creating Designed Web Pages*
- *Creating a Button / Hyperlink for Submitting a Host Key*
- *Using Web Application Controls in Generated Pages*
- *Map Fields* (identify dynamic fields by their leading label)



## Screen Name: BrowseCustomers1

**LEGACY INSURANCE COMPANY** "Trustable" "Experienced" "Innovative" "My Choice"

**Customer account**

**Proposals**

**Customers**

**Log Out**

Customer ID:

Last Name:

First Name:  **SEARCH**

| Customer ID | Last name      | First name | Birthday   | Gender | Type | City                    | Street              |
|-------------|----------------|------------|------------|--------|------|-------------------------|---------------------|
| 22          | von Grueningen | Robert     | 1930-08-09 | M      | I    | Berlin, 10117, D        | 10 Unter d. Linden  |
| 27          | Chappell       | Charles    | 1989-04-16 | M      | I    | London, S6C 3T2, GB     | 12 Cromwell Street  |
| 3           | Bloggs         | Joseph     | 1974-04-04 | M      | I    | Manchester, M24 4AD, GB | 123 Deansgate       |
| 4           | Busley         | Matthew    | 1920-08-20 | M      | I    | Manchester, AF3 D3C, GB | 97 Trafford Lane    |
| 5           | Dillenburg     | Mike       | 1960-12-08 | M      | I    | New York, NY 10771, USA | 8023 Broadway       |
| 6           | Copperdale     | Alice      | 1990-05-05 | F      | I    | Toronto, M3J 1P3, CAN   | 603 W 22nd Street   |
| 66          | Moreaux        | Mireille   | 1957-23-03 | F      | I    | Paris, 75001, F         | 122A Champs Elysees |
| 7           | Priester       | Patrick    | 1980-03-22 | M      | I    | Darmstadt, 64297, D     | 12 Uhlandstr.       |
| 8           | Kubrey         | Stanley    | 1928-07-26 | M      | I    | Weierstadt, 64331, D    | 24 Mainzer Str.     |
| 9           | Dragos         | Istvan     | 1911-04-19 | M      | I    | Budapest, 1071, H       | 171 Balaton Street  |

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[Refresh](#) | [Logoff](#)

**INTRANET**

## Tasks

Refer to the following sections in the *Web Application Development* documentation:

- *Activating an Application Map from a Menu*
- *Creating Designed Web Pages*
- *Collecting Data from Multiple Host Screens*
- *Creating a Button / Hyperlink for Submitting a Host Key*
- *Using Web Application Controls in Generated Pages*
- *Adding the Sorting Capability to a Screen-Based Table*
- *Exporting Data to an MS Office Application (Excel, Word)*
- *Customizing the Table's Display*

## The SOA Demo

---

.NET and JSP implementation can be done in many ways. This demo includes examples of one way to implement the tasks. For example, in one of the tasks below, we demonstrate how to display data collected by the procedure client. To do this we use the framework. In .NET, this can also be implemented using .NET datagrid.

The following lists the different typical tasks that we have demonstrated in the SOA application included with the ApplinX installation. Next to each task, the entities involved with this task are detailed. This enables you to further explore the configuration of each of these entities.

1. Identify and define host screens in the ApplinX repository. Refer to *Screens* in the *Designing and Developing an Application* documentation.
  - INS\_Browse\_Customers
  - INS\_Customer\_Details\_1
  - INS\_Customer\_Details\_2
  - INS\_Customer\_Details\_3
  - DEMOCO\_Login
  - DEMOCO\_Menu
  - DEMOCO\_Splash
  - E\_Environment
  - INS\_Menu
2. Create a connection pool with a connection information set (for offline use). Refer to *Connection Pools* and *Connection Information Sets* in the *Designing and Developing an Application* documentation.
  - a. Set the pool size as required.
  - b. Set a connection information set when required (SOADemo includes connection information sets that allow the application to run in offline mode).
  - c. Set navigation rules:
    - i. Create an initialization path for the pool that initializes each new connection in the pool. This path should finish in the "Initial screen", otherwise the initialization will fail.
    - ii. Set the initial screen a connection should wait on.
    - iii. Create and set a recycle path to recycle connections in the pool.
    - iv. Create and set a termination path for properly terminating a connection in the pool. For more information see *Defining a Termination Path* in the *Designing and Developing an Application* documentation.

As you may have noticed, the SOADemo repository contains three connection pools. This is for the sole reason of enabling the application to retrieve results in offline environments (that do not have connectivity to Software AG's network). All three pools share the same setting (pool size and navigation settings), but differ in their connection information sets. To enable offline execution of the application, each procedure has been executed with its own replay file (set in its connection information set), whereas, online execution requires no replay file at all.

3. Collect data from multiple screens. Refer to *Collecting Data from Multiple Host Screens* in the *Web Application Development* documentation.
  - a. Create a path procedure which collects table data (refer to the *Browse\_All\_Customers* path procedure). Refer to *Creating a Path Procedure* in the *Designing and Developing an Application* documentation.
    - i. Assign a connection pool to start from the relevant screen.
    - ii. Create a While loop that checks if an "End of data" message appears on the screen, marking the table's end.
    - iii. For every table instance: Collect the tabular host screen data and page down for the next instance.
  - b. Create a path procedure which collect data from multiple screens (refer to the *GetCustomer-ByID* path procedure). Refer to *Creating a Path Procedure* in the *Designing and Developing an Application* documentation.
    - i. Assign a connection pool to start from the relevant screen.
    - ii. Add an input to allow the user to specify which customer details they wish to retrieve.
    - iii. Navigate to the Details screens and map host fields to the procedures' output.
  - c. Assign procedures to procedure groups. Refer to *Assigning a Procedure to a Procedure Group* in the *Designing and Developing an Application* documentation.
  - d. Generate a procedure client from the procedure group (refer to *DemoINS* procedure group in the demo repository). Refer to *Procedure Clients* in the *Designing and Developing an Application* documentation.
4. Bind web controls to procedure response (output). Refer to *Binding Procedure Outputs to an ApplinX Framework Based Web Page* in the *Designing and Developing an Application* documentation.
  - a. For each procedure, create a JSP/ASPX page with controls which match the procedure output.
  - b. Fill the form (using `gx_fillForm`).



# 15

## Self-Training and Movies

A self-training, basic tutorial of ApplinX and accompanying movies can be found on the Software AG Empower website at <https://empower.softwareag.com>. After entering your user name and password, navigate to the ApplinX documentation and click the PDF icon.

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ApplinX








|  | VERSION             | OPERATING SYSTEM      | LANGUAGE | VIEW |
|--|---------------------|-----------------------|----------|------|
|  | 10.1 (October 2017) | Windows               | English  |      |
|  | 10.1 (October 2017) | Linux, Unix, Mac OS X | English  |      |
|  | 10.0 (April 2017)   | Windows               | English  |      |
|  | 10.0 (April 2017)   | Linux, Unix, Mac OS X | English  |      |

In the ApplinX documentation page, choose **Product Documentation > Self-Training**.







**ApplinX 10.1**

Legal notices are located at <http://documentation.softwareag.com/legal/>.

**System Requirements, Installation, and Upgrade**

-  Release Notes
-  Readmes
-  Software AG System Requirements
-  Software AG Installer and Update Manager
-  Installing Software AG Products
-  Upgrading Software AG Products
-  Supported Upgrade Paths for Software AG Products

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# 16

## First Steps - Starting your ApplinX Components

---

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## Starting your ApplinX Server

---

The ApplinX server can be started either as a Windows service or using a batch file. ApplinX can also run under a Java Application Server (for further details, refer to the relevant topics in *Deploying with ApplinX* in the *Designing and Developing an Application* documentation).

See also Managing the ApplinX Server in the *Administration* section.

### Windows Service

In the installation process, it is possible to define that ApplinX server runs as a Windows system service, started and stopped via **Start > Settings > Control Panel > Administrative Tools > Services**. By default, the service is automatically run when starting the computer.

### Batch Files

ApplinX Server can be run using batch command files, located in the *<ApplinX installation>/bin* folder:

|                     |                            |
|---------------------|----------------------------|
| <i>startup.bat</i>  | Starts the ApplinX server. |
| <i>shutdown.bat</i> | Stops the ApplinX server.  |

### Linux Environments

In the ApplinX installation directory, you can find the following shell scripts:

|                    |                            |
|--------------------|----------------------------|
| <i>startup.sh</i>  | Starts the ApplinX server. |
| <i>shutdown.sh</i> | Stops the ApplinX server.  |

## Starting the ApplinX Server Administrator

---

- [Starting the Server Administrator](#)
- [Logging On](#)



- [Main Screen](#)

## Starting the Server Administrator

From the **Start** menu, select **Software AG > Administration > ApplinX Administration <version number>**.

Alternatively, you can run the Administrator from a remote PC (for example: on a Microsoft Windows operating system) and connect to the server using TCP/IP.

## Logging On

Once you start the ApplinX Administrator, the **Logon** screen is displayed. When this is the first time you are logging on, by default, "Administrator" will be displayed in the **User name** field. Type the server address (IPv4 and IPv6 address formats are supported) and port. When it is not the first time you are logging on, the Administrator will automatically try to connect to the last server it connected to.

You may have to set a new password when connecting for the first time.

## Main Screen

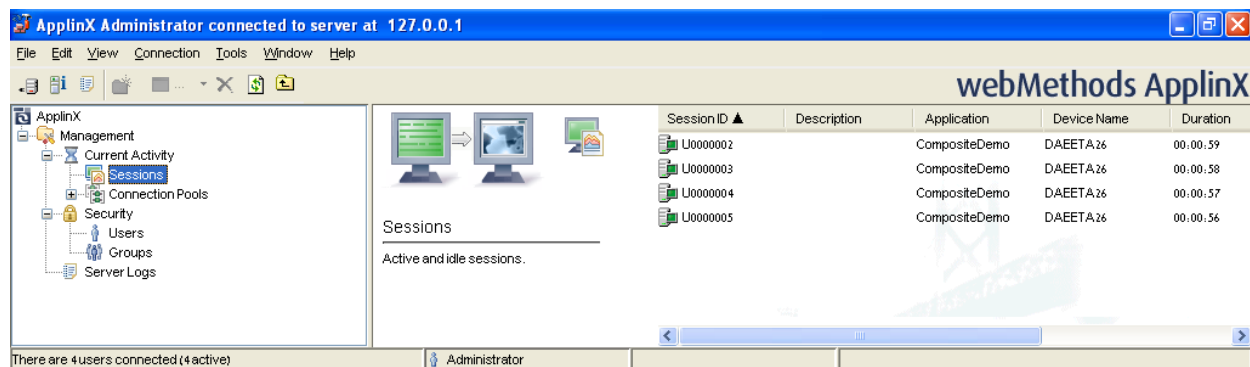
The screen consists of four parts:

- Title bar, menu bar and toolbar.
- ApplinX Explorer pane.
- Main view: The main view corresponds to the selected node/entity/session in the ApplinX Explorer.
- Status bar: The status bar displays information according to the object selected in the main view. The status bar may include information such as: the user name, application name, the number of users connected, indication of file tracing/replaying or the host address.

Operations, features and applications that the logged-in user is not authorized to use will be disabled or are invisible.

- [ApplinX Explorer](#)
- [Toolbar](#)

### ■ Menu Bar






## ApplinX Explorer

Enables viewing and controlling users' activity, maintaining the server's configuration, viewing runtime information about connection pools, sessions, server logs, define hosts and design and configure applications.

| Node             | Description   |
|------------------|---|
| ApplinX          | The root node.  |
| Management       | Includes managerial functions.  |
| Current Activity | Controls the sessions connected to the server, the server activity and the connection pools. The <b>Current Activity</b> node is unavailable when the ApplinX Administrator is not connected to the server. |
| Sessions         | Lists the currently connected sessions.   |
| Connection Pools | Provides runtime information regarding the connection pools.  |
| Security         | Holds the definitions of the users, their permissions and roles, and the user groups.   |
| Server Logs      | Lists the server logs.  |

## Toolbar

| Icon | Description            |
|------|------------------------|
|      | Disconnect from Server |
|      | Connect to Server      |
|      | Server Information...  |
|      | Server Log             |
|      | New Folder             |
|      | New User               |
|      | New Group              |

| Icon  | Description  |
|---|--------------|
|  | Delete       |
|  | Refresh      |
|  | Up One Level |

### Menu Bar

| Menu              | Item               | Description   |
|-------------------|--------------------|---|
| <b>File</b>       | New                | Creates a new user or group.  |
|                   | Open               | Opens the selected item.  |
|                   | Delete             | Deletes the selected item.  |
|                   | Properties         | Opens the properties of the selected item.  |
|                   | Exit               | Exits the Administrator.  |
| <b>Edit</b>       | Select All         | Selects all entities displayed in the main view.  |
|                   | Invert Selection   | Selects all entities that were not selected, and deselects entities that were selected. |
| <b>View</b>       | ApplinX Explorer   | Hides/shows the ApplinX Explorer tree area of the screen.                               |
|                   | Summary            | Hides/shows the summary area of the screen.   |
|                   | Server Log         | Displays the server log.  |
|                   | Refresh            | Refreshes the main view to match the data stored on the server.                         |
| <b>Connection</b> | Connect/Disconnect | Connects and disconnects the Administrator from the server.                             |
|                   | Cancel Session     | Displays the <b>View Session</b> window of the selected session.                        |
| <b>Tools</b>      | Server Info        | Displays the <b>Server Information</b> dialog box.                                      |
|                   | User Information   | Displays the <b>User Information</b> dialog box.  |

## Starting the ApplinX Designer (Software AG Designer)

- [Introduction](#)
- [Logging On](#)
- [Adding a New Server Connection](#)

■ Designer Layout

## Introduction

From the **Start** menu, select **All Programs > Software AG > Tools > Software AG Designer <version number>**.

Alternatively, you can run the Designer from a remote PC (for example: on a Microsoft Windows operating system) and connect to the server using TCP/IP. When running the Designer from a remote PC, some Designer features may not work, for example opening the file system.

The first time you start the Designer, a Welcome page will be displayed. From this page you can access the ApplinX perspective and the help contents. If you close the Welcome page, and you would like to display the ApplinX perspective, go to **Window > Open Perspective > Other** and select **ApplinX**.

If you are not yet familiar with Eclipse, see the Eclipse online help at <http://www.eclipse.org/documentation/>, or start the Software AG Designer and then choose **Help > Help Contents**. General information on Eclipse can then be found under *Workbench User Guide*. When working with the Software AG Designer, the online help also provides help for the currently installed Software AG products; this can be found under *Software AG Designer Guides*.

## Logging On

Once the Designer is displayed, you will see the available list of servers. Double-click on a server or select **Connect** from the right-click context menu. When this is the first time you are logging on, by default, "Administrator" will be displayed in the **User name** field. When it is not the first time you are logging on, ApplinX Designer will automatically try to connect to the last server it connected to.

You can select to remember the user password in the **Login** dialog box. Once this is selected, the **Login** dialog box is not shown again. To require entering a password and displaying the **Login** dialog box, change the **Remember passwords** check box in **Window > Preferences > Software AG > ApplinX**.



**Note:** The first time the **Remember password** check box is selected, an Eclipse Secure Storage message is displayed. This message offers remembering an internal Eclipse password using a hint, but this is not applicable to the ApplinX server password, therefore click **No**.

## Adding a New Server Connection

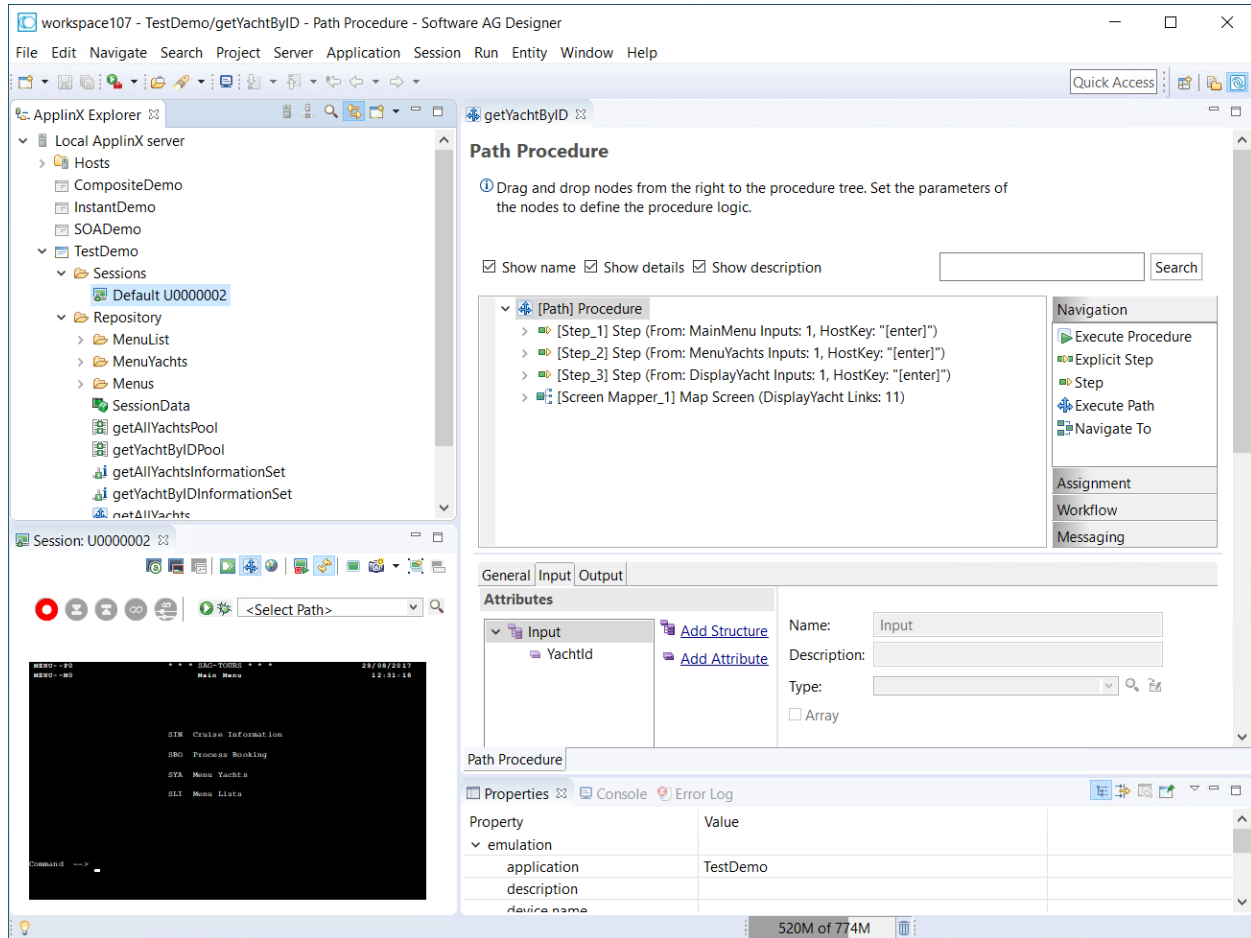
Additional connections to servers can be added. To add an additional server connection, in the **Server** menu, select **Add ApplinX Server Connection...** The wizard is displayed. Enter the name of the server, the relevant address (IPv4 and IPv6 address formats are supported) and port. Also determine whether the connection will be a secured connection.

For more information see *Configuring the Server* in the *Administration* documentation.

## Designer Layout

- [ApplinX-related Menu Bar Commands](#)
- [ApplinX Explorer](#)
- [Editor](#)
- [Application Map](#)
- [Properties](#)
- [Console](#)
- [Error Log](#)
- [Status Bar](#)

By default the layout is as displayed below, but as possible in Eclipse, the layout can be changed.



## ApplinX-related Menu Bar Commands

Detailed below are the ApplinX-related commands that are included in the menu bar.























| Menu    | Item                         | Description  |
|---------|------------------------------|--|
| File    | New > ApplinX Application... | Creates a new ApplinX application.   |
|         | New > ApplinX Host...        | Creates a new ApplinX host.  |
|         | New > Entity                 | Creates a new entity from the list of entities.                                      |
|         | New > Session                | Creates a new display session or printer session (according to the selected option). |
|         | Import....                   | Enables importing ApplinX entities or importing/replacing an ApplinX application.    |
|         | Export...                    | Enables exporting ApplinX entities or application.                                   |
| Session | Duplicate Session Definition | Creates another session with the same definitions as the selected session.           |
|         | Connect                      | Connects to the host using the selected session definitions.                         |
|         | Disconnect                   | Disconnects the session from the host.   |

| Menu               | Item  | Description   |
|--------------------|---|---|
|                    | Open HTTP Session   | Opens the session as an instant web application. The session is displayed by default in the Editor area of Eclipse. It is possible to display the session in your system's browser by changing the web browser definitions in Eclipse ( <b>Window &gt; Preferences &gt; General &gt; Web Browser</b> ). This is convenient for checking transformations. This is only available when you have a web enablement license. |
| <b>Entity</b>      | Show WSDL   | Displays the WSDL in the Editor area.   |
|                    | Copy WSDL URL   | Copies the WSDL URL to the Clipboard.   |
|                    | Open HTML Preview   | Displays an HTML preview of the screen. Useful to preview transformations that are used in this screen.   |
|                    | Generate > JSP Page from Screen...                        | Generates a JSP page from the current screen.   |
|                    | Generate > JSP Page from Screen Group...                  | Generates a JSP page from the current screen group.   |
|                    | Generate > Procedure Client...                            | Generates a Procedure Client from a procedure group.  |
|                    | Generate > JSP Page from Procedure...                     | Generates a JSP page from a procedure.  |
|                    | Convert > Screen to Screen Group                          | Converts a screen to a screen group.  |
|                    | Convert > Screen Group to Screen                          | Converts a screen group to a screen.  |
|                    | Convert > Path / Path Wrapper to Path Procedure           | Converts a path to a path procedure.  |
| <b>Application</b> | Open Application  | Opens the application.  |
|                    | Close Application   | Closes the application.   |
|                    | Reload Application  | Reloads the repository.   |
|                    | Import Predefined Transformations                         | Imports into the application a list of predefined transformations.  |
|                    | Import Host Screen Maps                                   | Opens a wizard which enables importing screen maps.   |
|                    | Show Application Map                                      | Displays the Application Map view.  |
|                    | Automatically Identify Screens/Steps using Trace Files... | Opens a wizard which enables to automatically identify screens.   |
|                    | Extract Business Process Activities                       | Opens a wizard which enables to extract business activities from trace files.   |
|                    | Web Application Manager...                                | Initiates the Web Application Manager wizard which enables creating a web application.  |
|                    | Deployment Manager for J2EE...                            | Initiates the Deployment Manager wizard which enables deploying.  |
|                    | Open in File System                                       | Opens the file system and allows viewing the files in the relevant folder.  |
| <b>Server</b>      | Add ApplinX Server Connection...                          | Adds an additional server connection.   |
|                    | Connect to Server   | Connects to the server.   |




| Menu | Item                   | Description   |
|------|------------------------|---|
|      | Disconnect from Server | Disconnects from the server.  |
|      | Reload                 | Reloads the server configuration, i.e. the configuration of all applications connected to the server. |
|      | Show Web Services      | Displays a list of the available web services.  |

## ApplinX Explorer

The ApplinX Explorer is comprised of the ApplinX Explorer toolbar and the ApplinX Explorer tree.

| ApplinX Explorer Toolbar  |  |
|---|--|
|    | Adds a new server connection.  |
|    | Connects to the selected server.                                     |
|    | Disconnects from the selected server.                                |
|    | Enables finding an entity.   |
|    | Enables creating new entities in the currently selected application. |
| ApplinX Explorer Tree   |  |
|   | Local ApplinX server   |
|  | Hosts  |
|  | <Host name>  |
|  | <Application name>   |
|  | Session (disconnected)   |
|  | Session (connected)  |
|  | Printer Session  |
|  | Repository   |
|  | Screen   |
|  | Screen Group   |
|  | Transformation   |
|  | Connection Pool  |
|  | Connection Information Set   |
|  | Procedure Group  |
|  | Flow Procedure   |
|  | Path Procedure   |
|  | Program Procedure  |



| ApplinX Explorer Toolbar  |                      |
|---|----------------------|
|  | Data Structure       |
|  | Database Connection  |
|  | External Web Service |

## Editor

The various entity editors are displayed in the editor area: Screen, Screen Group, Transformation, Connection Pool, Connection Information Set, Path Procedure, Procedure Group, Flow Procedure, Program Procedure, Data Structure, Database Connection and External Web Service. This area also displays the HTML preview of a screen, the list of all relevant web services and a specific WSDL.

## Application Map

The **Application Map** view displays application screens through which the user has navigated. Refer to *Application Map* in the *Designing and Developing an Application* documentation for further details.

## Properties

This area displays basic details regarding the object selected in the ApplinX Explorer tree. For example, when selecting the Server, the **Properties** area displays a number of parameters such as the server address, port, state and version. Another example is when selecting the Repository, or a folder within the repository, the **Properties** area displays parameters such as the application name, a detailed list of all the entities, and the number of each type of entity.

## Console

This area displays the console messages.

## Error Log

This area displays the error log.

### Status Bar

|                           |   |
|---------------------------|---|
| Online/Offline indication | Name of GCT trace file/application name.                          |
| Screen name               | UNKNOWN when the screen has not been identified.                  |
| Cursor position           | Row and column, and position in the host.                         |
| Mouse position            | Row and column, and position in the host.                         |
| Selection start           | Starting position of the currently selected area (in host units). |

# 17

## First Steps - Unit Test

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| ■ Creating your First Unit Test ..... | 121 |



**Note:** The functionality described here was formerly delivered with the Software AG product Natural Screen Tester. This product has now been integrated into ApplinX.

## Before you Begin

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Make sure you have the following:

- License for ApplinX
- Software AG Designer
- Local or remote Natural application to test

See [Prerequisites](#) for complete list of system prerequisites.

## Glossary of Terms

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### Assertion

An assertion encapsulates some testable logic specified about a target under test. This can be an attribute-value pair, for example `"firstName": "John"`, or a true-false statement inserted in a program where the developer always expects a certain condition, for example `"endOfList": "true"`. Assertions are stored in the generated JSON file.

### Configuration File

Each test project has a configuration file in JSON format. This contains default values for the packages contained in the test project, for example `"hostApplication": "my_Mainframe"`.

### Host

The host containing the application you want to test.

### Input

Field identified as input field when the path procedure is recorded, for example User ID. Inputs are stored in the generated JSON file.

### JSON File

In ApplinX, a JSON file (JavaScript Object Notation) is generated by the Generate Unit Test wizard from the test project. It contains inputs and assertions for the unit test as attribute-value pairs. You can copy a generated JSON file and change the inputs and assertions. The unit test is then run multiple times, once for each JSON file.

### Path Procedure

A path procedure corresponds to an individual function, for example LoginFlow or GetUserById. It is the result of the recorded screen flow. From a recorded path procedure you can generate a unit test.

## Unit Test

A unit test is generated from a recorded screen flow, for example LoginFlow. A unit test is generated as a path procedure to a new test project or added to an existing test project. The unit test is run from the Java file that is generated in the test project.

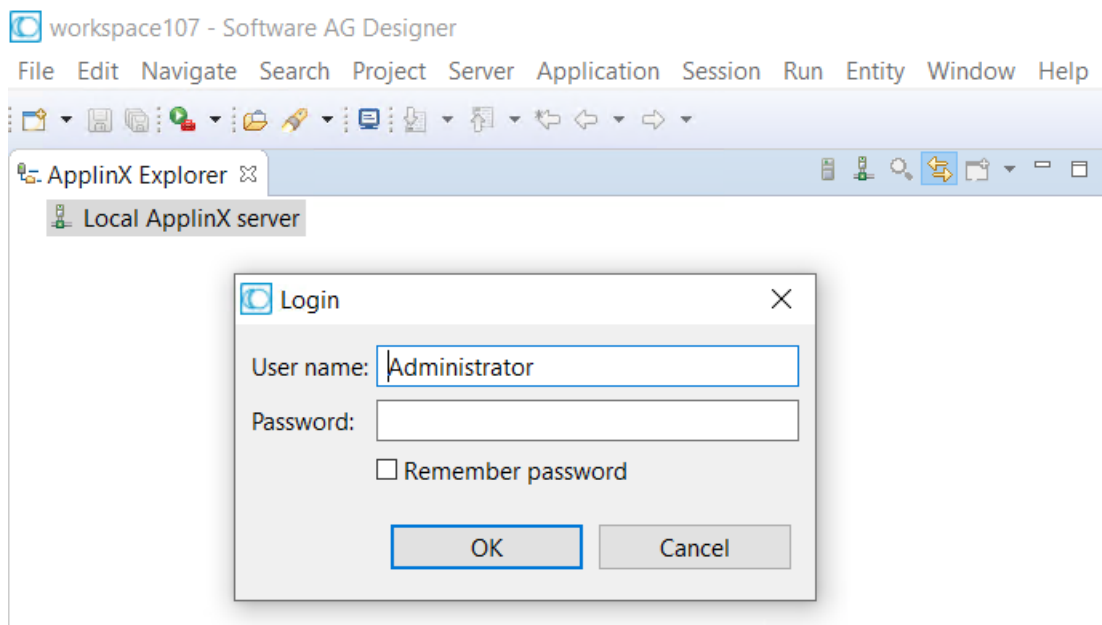
## Creating your First Unit Test

- [Step 1: Create a New ApplinX Application](#)
- [Step 2: Identify Screens and Fields for your Path Procedure](#)
- [Step 3: Record your Path Procedure](#)
- [Step 4: Generate a Unit Test](#)
- [Step 5: Run the Unit Test](#)

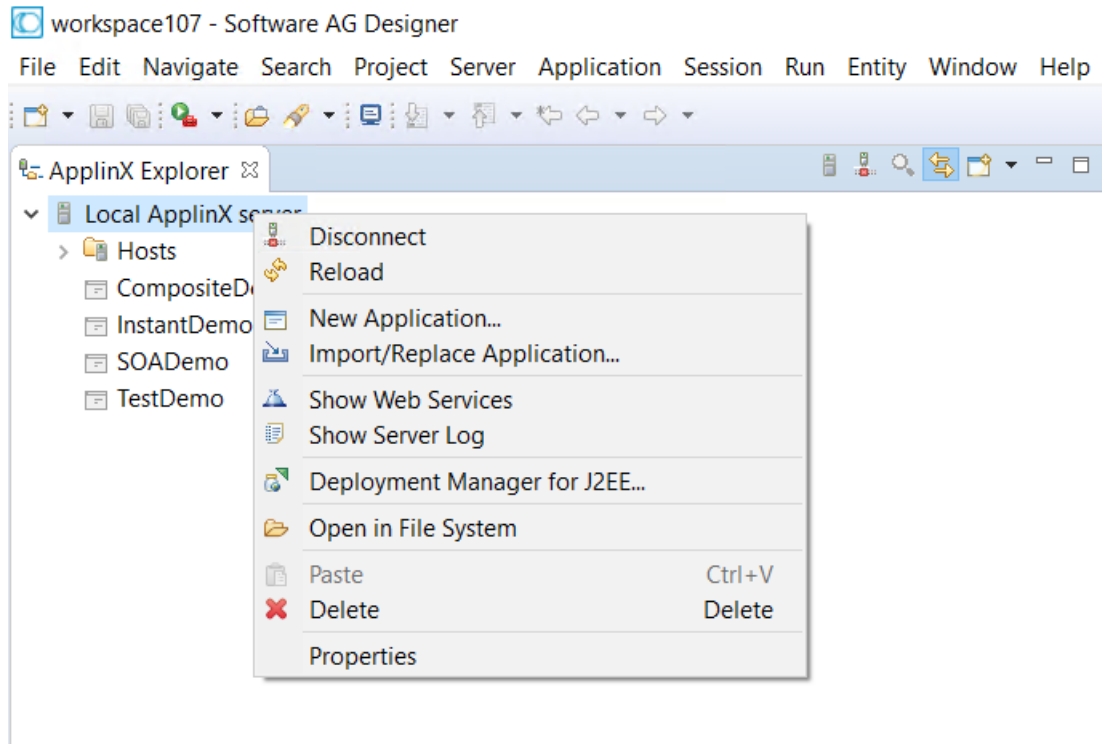
### Step 1: Create a New ApplinX Application

#### » To create a new ApplinX application

- 1 From the Software AG Designer, open the ApplinX development environment.
- 2 Connect to the ApplinX server by double clicking the server icon. A new dialog for credentials is opened.



- 3 In the ApplinX perspective, create a new ApplinX application. Select **Local ApplinX server**, and from the context menu choose **New Application**.



- 4 Enter a name for your new project, a description and specify the initialization mode. Press **Next**. See *Application Configuration Parameters* in the *ApplinX Reference Guide*.
- 5 Under **General ApplinX Application Information**, specify your Natural host.

## Step 2: Identify Screens and Fields for your Path Procedure

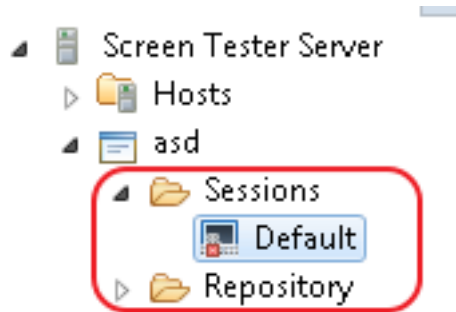
### ➤ To identify screens and fields





- See Screens in the *Designing and Developing a Test Case* documentation.

## Step 3: Record your Path Procedure

### ➤ To record your path procedure

- 1 Under the **Sessions** folder, double-click the **Default** session to start the green screen host session of the ApplinX application. During this session you record the screen flow of the path procedure.

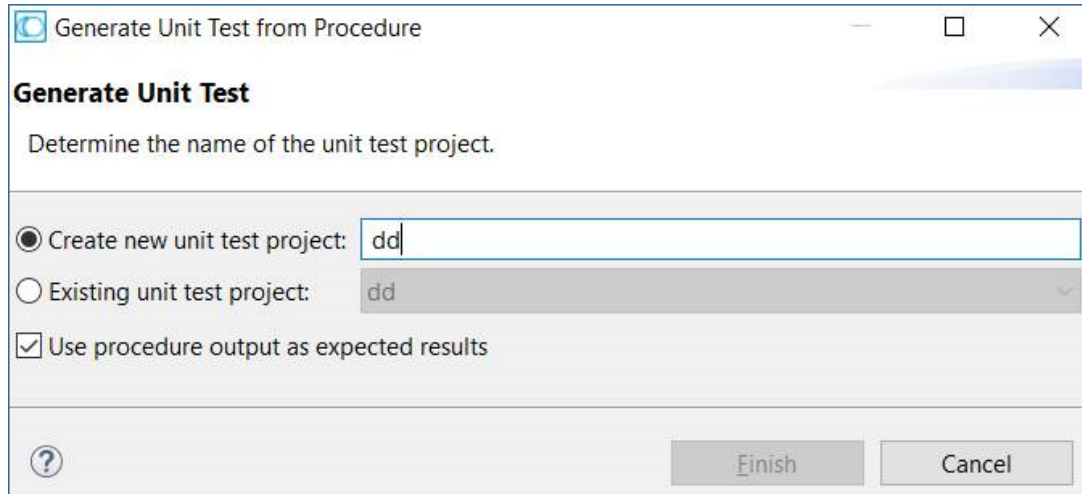


- 2 Record the screen flow that covers the path procedure. 
- 3 During recording, mark the fields you want to include as inputs for your path procedure. 
- 4 During recording, mark the fields you want to include as assertions for your path procedure. 
- 5 Stop the recording. 
- 6 In the **Define Path Procedure Name** screen, enter a name, description and folder where the path procedure will be stored.

#### Step 4: Generate a Unit Test

##### > To generate a unit test

- 1 Review the path procedure to make sure the inputs and outputs were recorded correctly. You can also edit or add logic to the recorded path procedure to make it more general or specific to suit your needs.
- 2 Select the path procedure and choose **Generate Unit Test**.



The following artifacts are generated:

- Java project that includes a Java file containing the executable path procedure
- JSON configuration file
- JSON file containing inputs and assertions
- required binary files that are included in the Java project

See *Working with JSON Files* and *Managing Test Data* under *Designing and Developing an Application*.

## Step 5: Run the Unit Test

### > To run the unit test

- From the Java perspective, select the generated Java file. From the context menu choose **Run as > JUnit Test**.