Lycia Development Suite

Lycia Web Client Guide
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Lycia Suite

LyciaWeb Client

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Notices

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About this Guide

This manual is intended for use by developers who want to run 4GL applications using the Querix™ Ajax and HTML-based LyciaWeb Client™. This guide contains only details that are specific to the LyciaWeb web client. Information that is also relevant to other Querix clients, such as graphical settings, is contained in the Graphical Client Reference Guide. Details of Querix 4GL are contained in the volumes of the Querix 4GL Reference.

This guide describes the features and capabilities of LyciaWeb, the web client that is a part of the Lycia compiler suite.

This Guide is a work-in-progress one and does not reflect all of the latest changes to the Lycia DC .HTML or Lycia DC .NET

If you have any comments or ideas on this guide improvement, feel free to mail them to our technical writer.

What is LyciaWeb Client

LyciaWeb is a web client which combines Ajax and HTML5 technologies allowing to run 4GL applications in web environment.

Unlike other Lycia Graphical Clients, LyciaWeb does not need special software installation except for a web browser. Thus 4GL programs can be run on any computer which has an internet connection and a web browser without additional adjustments.

LyciaWeb can be used on all common operation system platforms, such as Windows, Linux, and Mac OS, it does not depend on the operating system installed on the client side.

LyciaWeb has been developed to ease the access to 4GL applications; this client has the simplest requirements of all Lycia GUI clients and can provide you with the access to 4GL applications within a few minutes. On the other hand, it retains most of the functionality and capabilities of desktop clients. You can use it to run 4GL applications referencing most of the common database systems including:

- Informix® (v4.1 or later)
- Oracle® (v8*i* or later)
- IBM DB2™ (v8.1 or later)
- Microsoft® SQL Server™ (v7 or later)
- Pervasive® (v8.5 or later)
- PostgreSQL
- MySQL
- Other RDBMSs via ODBC without Dynamic SQL translation

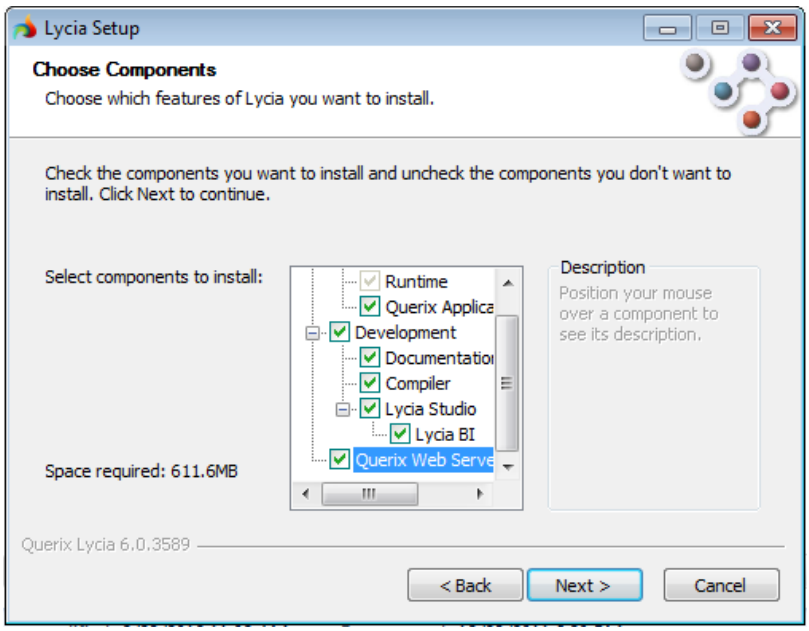
LyciaWeb can be used to run any 4GL application, which was previously compiled by Lycia II and deployed to the Application Server, provided that the Web Application Server is running on the same machine.

Using LyciaWeb

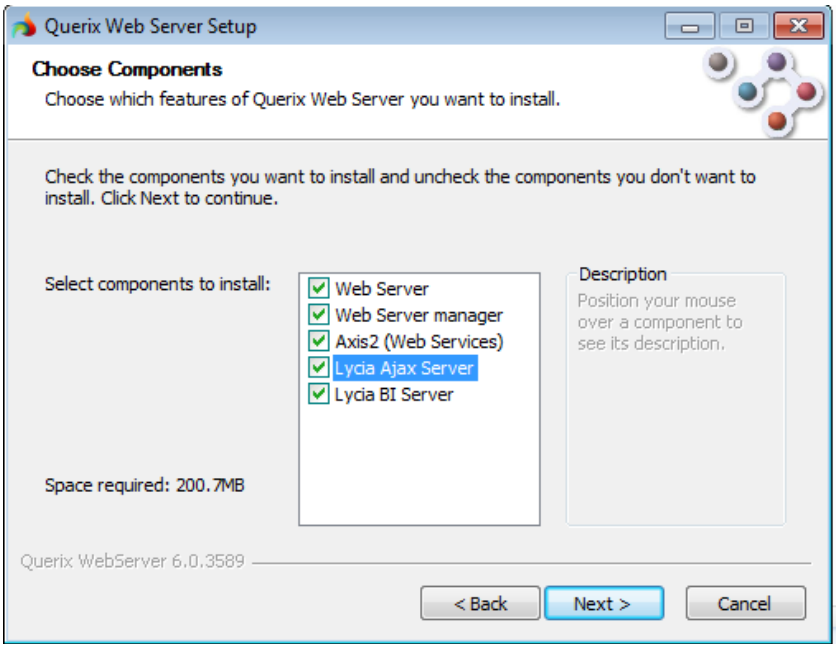
Installation

All the components necessary for LyciaWeb running are included to the Lycia Development Suite package and installed by default, unless the other is specified in the installation settings. For LyciaWeb to be installed successfully the following must be ensured:

1. In the general installation module selection dialog the Web Server module much be ticked off:



2. In the Web Server Installation dialog LyciaWeb module must be ticked off:

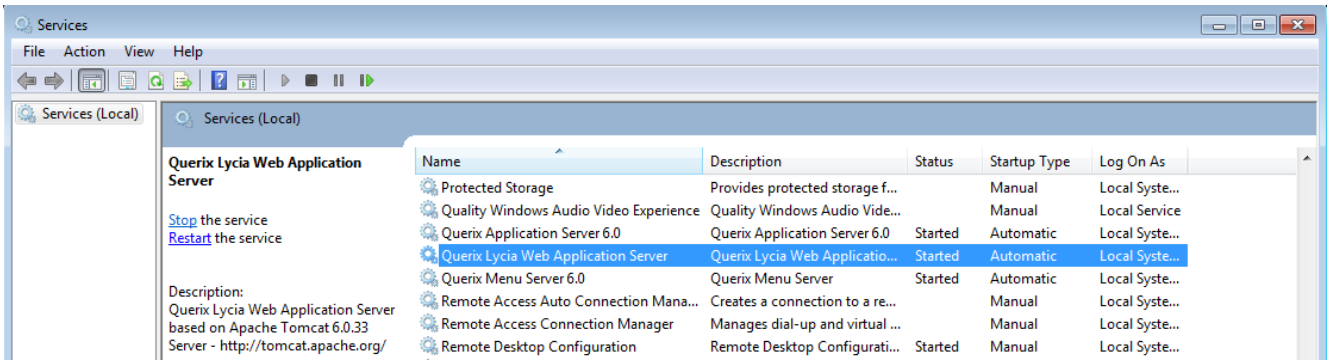


For more information about the process of Lycia installation see "Lycia Getting Started" guide. LyciaWeb required the Web Application Server to be installed together with Lycia as well.

Running LyciaWeb

Before LyciaWeb can be used, web application service must be run. Web application server is installed together with LyciaStudio, it starts automatically after the installation and, later, at each computer launch. LyciaWeb Application Server is based on Apache Tomcat service.

Querix web application server does not prevent you from having other web servers such as Tomcat, WebSphere, etc, and running them at the same time. However, if there is another version of Apache Tomcat service running on the computer, it is possible, that you will have to start the Querix LyciaWeb Application Server manually from the Services menu:



After Lycia installation you can check whether LyciaWeb was installed and whether it is running using the web application server management page. Go to http://localhost:9090 and then click 'Tomcat Manager' link. The default login is "admin" the default password is "admin". You can change the login and password later, check the Apache Tomcat documents to find out how it is done. On this page you will see all the applications installed on the Web Application server. Scroll down to see LyciaWeb. If it is running, it should have "true" value in the Running column. If it is not running, you can try to launch it using the Start link on the right:

Applications				
Path	**Display Name**	**Running**	**Sessions**	**Commands**
/	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/LyciaAjax	Lycia Ajax Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 120 minutes

Running 4GL Applications with LyciaWeb

There are several ways to run applications with LyciaWeb:

- Open the connect dialog in the browser — can be done from any machine even without Lycia instance.
- Enter the address of the application to the browser address page — can be done from any machine even without Lycia instance.
- Run LyciaWeb from within LyciaStudio — requires Lycia Development Suite installed.

Opening a Connection Dialog

To run LyciaWeb connect dialog, open a web browser and enter the following to the address line:

http://WEBAPP_SRV_ADDR:WEBAPP_PORT/LyciaWeb

where WEBAPP_SRV_ADDR is the address of the web application server, if it is installed on the local machine, this will be "localhost", if it needs to be accessed remotely, this can be the IP of the machine where it is running. The default port is 9090, which is also indicated during the installation. Therefore, in case the default settings are not changed, the following line will give the access to the LyciaWeb environment on your local machine:

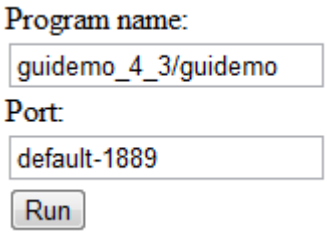
http://localhost:9090/LyciaWeb

It is possible to run LyciaWeb distantly, not having Lycia and web server installed to your computer. In this case, you must have the access to the web application server installed on another computer. For example, the address may be as follows:

http://10.35.57.131:8082/LyciaWeb/

Launching an Application

If the connection to web application server is established correctly, the Web Browser will open LyciaWeb page. This page contains fields in which the port and the application name are to be entered.



The program name includes the path to the program executable file on the Application Server. The default port is defined automatically, but you can change it in the Port field, if needed.

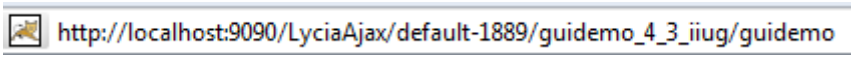
Application Server Port Name

Currently LyciaWeb supports only the non secure port. The port name should be specified in the 'Port' filed. The port name differs by default on Linux/UNIX systems and on Windows systems. The port name is specified in the $APPSERVER_DIR/*listener.xml* file in the 'name' tag. This means that LyciaWeb uses not the port number but the port name.

Using the Application URL

When you use the connect dialog, after you click Run button, the browser navigates you to the page of the application and in the URL field of the browser you can see the address of the application. This includes the address of the LyciaWeb connect dialog followed by the port and the path to the application executable file.

You can also run the application directly by inputting the application address directly into the URL field of the browser skipping the connect dialog stage. The application address may look as the following:



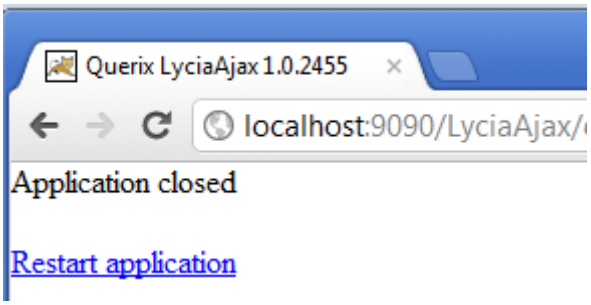
Launching LyciaWeb from Within LyciaStudio

In LyciaStudio select the program from the 4GL Project view and click  Run with LyciaWeb toolbar button. You can also right click the program and select **Run As... -> Run with LyciaWeb** option from the context menu.

Application Layout

The applications run by LyciaWeb look similar to those run by desktop clients. The application starts in the same browser tab in which LyciaWeb main page was opened

When you exit the application, the following message appears in the browser tab:



Now, you can close the tab or change the address and return to the LyciaWeb main page or run a new application. If you refresh the web page with the application, the current application instance will be terminated and the application will be relaunched. So after refreshing, you will get to the start point of the application, if there were some unsaved data at the moment of refreshing, they will be lost.

Program Control Keys

Web interface does not change program control. All the keys and actions specified in the application source code are available and active. However, if the program control contains a combination of keys which corresponds with the browser hot keys, it is possible that these keys will affect the browser, not the application. To be on the safe side, assign the key combinations to form widgets and click the widgets with the mouse cursor instead of pressing the key combination on the keyboard. This way any key combination will work as expected in by the program and they will not be confused with the browser hotkeys.

Graphical Settings

Applications run by LyciaWeb have graphical settings specified in the application source code or theme file. The theme file can be modified by Lycia Theme Designer (See 'Graphic Client reference' guide for more details). Currently, Theme Designer cannot be invoked from LyciaWeb, therefore, the web client can use only the themes created and edited earlier.

Passing Parameters and Using Flags

There are cases when you may need to pass one or more parameters to a program, or run a program with flags. In the case of the desktop clients, the parameters are added after the program name in the connection dialog and are separated by whitespaces. The same goes for flags.

In case of LyciaWeb you cannot include the parameters into the connection dialog fields. You need to add the parameters and flags directly to the end of the program URI.

Database Flags

The most common reason to use flags is to change or specify the database against which the program should be run. Flag -d is used for this purpose followed by the database type keyword (i.e. informix, oracle, sserver, odbc, db2).

LyciaWeb uses the settings in the inet.env file located on the %App_Server%/etc/inet.env. This file is used by all GUI clients. For LyciaWeb to be able to run a program which communicated with a database, this file must include the LYCIA_DB_DRIVER variable with the value of the corresponding database type. This variable is described in details in the Lycia Developers Guide and in Lycia Getting Started document. If the database driver is set in this file, -d flag is necessary only if you want to run the program against a different database type.

If LyciaWeb is launched from within the LyciaStudio, this variable can be absent from the configuration file, because at the moment of launching the database driver is passed from the LyciaStudio. However, to be able to run clients independently from LyciaStudio, this variable must be set, or the -d flag must be used when launching a program.

To set -d flag for LyciaWeb applications and to set the database driver, to the program launching path should include the following syntax:

```
<program_name>?params=<parameter>
```

For example, to run a program against Oracle database, you can use the following line address in the URL field of the browser:

```
http://localhost:9090/LyciaWeb/default-1889/testconn?params=-d%20oracle
```

Here the parameter is the same as you pass to the programs when running LyciaDesktop or any other desktop client. In our case the parameter is "-d oracle". However, any browser will replace the white spaces with %20 symbols.

Multiple Parameters

To pass several flags or parameters to a program, you should use the same syntax and add the parameters separated by whitespaces or by "%20" symbols. For example:

```
http://localhost:9090/LyciaWeb/default-1889/my_prog?params=-
d%20informix%20John%20500
```

The example above passes -d flag with the "informix" value to the program together with another two parameters: "John" and "500".

Restrictions in Functionality

Due to the fact that LyciaWeb is not a desktop client, but a web client, it has some limitations regarding 4GL functionality and form widgets:

- LyciaWeb cannot execute DDE functions, because there is no way a web application can affect other applications installed on the machine. For that same reason the built-in functions winshellexec() and winshelexecwait() cannot be used in applications run in LyciaWeb. They will be ignored, if present in the source code.
- The Browser widget will not function correctly and will not display the requested page, if the specified web site passes the X-Frame-Options in the header. If the DENY value is specified, any attempts to load the page in a frame fail, thus the browser widget will remain empty. If the SAMEORIGIN value is used, the browser widget will still display a web page, if this page is on the same site where the LyciaWeb application runs.
- The Browser widget, by default, will not display a site`s inner page with the ability to run scripts and submit forms. This is made for the security reasons as it may get information about sensitive data in 4GL application. To enable that back user may need to add TRUSTED class name into browser widget. On doing this the security restrictions will be disabled provided that there is no prohibition for opening the page in IFRAME tag on the site itself. Under this condition it can only be opened via additional reverse proxy because the Browser widget simply uses the IFRAME tag for running the page needed and does not depend on the browser version installed on the machine.
- The browsing a local machine from the Internet zone is forbidden in all modern browsers. This includes linking to files on your hard drive, on mapped network drives, and accessible via Uniform Naming Convention (UNC) paths. So if your form has an event which is aimed, for example, at opening the content of the C drive, it will not be processed and a corresponding message will be displayed.

MDI Mode

LyciaWeb does not have the MDI mode proper. When an application with MDI mode is run in a web browser, each application launched from within it will be opened in a separate web browser window and they will not be closed when the MDI application is closed.

There are also some peculiarities regarding the launched programs:

- In the exec_program() function that is used to launch child programs the application host parameter should contain the web server port number and the http or https protocol indication besides the host address. The port argument should contain the port name and not the port number. E.g.:

```
CALL exec_program("hello_app", "http://localhost:9090",
                  "default-1889","SYSTEM")
```

- The exec_local() function that is used to call non 4GL applications will not work for the reasons described in the section above.

Hot Keys Non-Supported

As LyciaWeb is a web client, it much depends on the limitations of a web browser an application is opened in. Among these restrictions are some hot-key combinations, that should not be used within the 4GL code.

The table below contains a number of available hot-key combinations, identifying whether they are supported or not by the most widely used browser types for the applications which LyciaWeb delivers to them.

The conventional signs used in the table have the following meaning:

- X NOT supported
- ✓ supported

Hot-Key Combinations	Google Chrome (v 22 or later)	Internet Explorer (v 10 or later)	Mozilla Firefox (v 15 or later)
ALT - A	✓	X	✓
ALT - C	✓	X	✓
ALT - E	✓	X	✓
ALT - F	✓	X	✓
ALT - H	✓	X	✓
ALT - T	✓	X	✓
ALT - V	✓	X	✓
ALT - X	✓	X	✓
ALT - Z	✓	X	✓
ALT - ENTER	✓	X	✓
ALT - SPACE	X	X	X
ALT - F4	✓	X	✓
CTRL - 0 (zero)	✓	X	✓
CTRL - +	✓	X	✓
CTRL - - (Numeric pad only)	✓	X	✓
CTRL - N	X	✓	✓
CTRL - O (letter)	✓	X	✓
CTRL - P	✓	X	✓
CTRL - T	X	✓	✓
CTRL - W	X	✓	✓
CTRL - Menu	✓	X	X
CTRL - F4	✓	X	X
CTRL - ALT - 3	X	✓	✓
CTRL - ALT - 8	X	✓	✓
CTRL - ALT - Arrows	X	X	X
CTRL - ALT - DELETE	X	X	X
CTRL - ALT - MENU	✓	X	X
CTRL - ALT - F12	X	X	X
CTRL - ALT - SHIFT - 2 (Numeric pad only)	✓	X	X
CTRL - ALT - SHIFT - 4 (Numeric pad only)	✓	X	X
CTRL - ALT - SHIFT - 6 (Numeric pad only)	✓	X	X
CTRL - ALT - SHIFT - 8	✓	X	X

(Numeric pad only)			
CTRL - ALT - SHIFT - MENU	✓	X	X
CTRL - SHIFT - +	✓	X	✓
CTRL - SHIFT - - (Numeric pad only)	✓	X	✓
CTRL - SHIFT - N	X	✓	✓
CTRL - SHIFT - T	X	✓	✓
CTRL - SHIFT -W	X	✓	✓
CTRL - SHIFT - MENU	✓	X	X
MENU	X	X	X
SHIFT - MENU	✓	X	X
SHIFT - CTRL	✓	X	X
WINDOWS	X	X	X

Appendix: Known Web Browser Issues

Since LyciaWeb is a web client, it is dependent on the web browser which is used to run it. Some browsers may have conflicts or contradictions with the workflow of a 4GL program. Mainly this may touch the keys which may correspond to browser hotkeys and some other issues. This appendix lists all the issues found in various web browsers which may affect the execution of 4GL programs. These are genuine browser bugs or features which hinder some 4GL functionality and cannot be fixed by Querix or do not have a workaround. The list is not complete, it is being updated regularly.

Images

Images if **TIFF format** will not be displayed in all browsers except Safari and Internet Explorer 9. So, thought Lycia 4GL supports usage of TIFF images and displays them using the desktop client, the web client will not be able to do it due to the web browsers limitations.

Images in **SVG format** will not be displayed in Internet Explorer version 8 and below. Later browser versions will display this format with certain restrictions. For more information see Internet Explorer documentation.

Application Speed

If you are using **Google Chrome** and have **ESET NOD32 Antivirus™** installed on the same machine, the speed of the browser itself and thus of the 4GL applications running in it will be considerably slower. The browser ping may be up to 500ms. To fix it: double click on ESET and then press F5 key and after that all what was written Advanced setup... -> Antivirus and antispyware -> Web access protection -> HTTP, HTTPS and uncheck "Enable HTTP checking".

Locale Settings

Web browsers are not influenced by the system locale settings. So even if you have the Format of dates and numeric values set in your system the application run in Web client will not have access to these settings. To set the values you need either to specify the correct environment variables in the inet.env file, or set the browser locate directly in the web browser settings.