DYALOG

The tool of thought for expert programming

Dyalog for Mac OS Installation and Configuration Guide

Version 14.1

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1 About This Document

This document covers the installation procedure and configuration options for Dyalog on Mac OS. It details the pre-requisites for installation and the environment variables that can be used to customise individual instances.

This document is only part of the full documentation set for Dyalog (available to download from http://docs.dyalog.com). In cases where the information given is different between this document and any of the others, this document should be regarded as the definitive source for Dyalog for Mac OS.

1.1 Audience

It is assumed that the reader has a basic knowledge of Mac OS and software terminology; no prior knowledge of Dyalog is required.

2 Introduction

Dyalog for Mac OS is a complete 64-bit Unicode implementation of Dyalog. It contains the same APL language engine as all other variants of Dyalog and is compatible with Dyalog running on other supported platforms – workspaces and component files can be copied between platforms or shared in real time on a network without needing to undergo conversion.

The development environment on the Mac is the Remote Integrated Development Environment (RIDE). The default Mac installation causes RIDE and the APL Engine to start simultaneously and appear to be a single integrated unit. However, the RIDE can also be used to connect to remote Dyalog engines running on any platform. For more information about the full functionality of RIDE as a remote development environment, see the *RIDE Reference Guide*.

3 Pre-requisites for Installation

This chapter details the conditions that must be met before installing Dyalog on the Mac OS operating system.

3.1 Hardware Requirements

The target Mac must have been introduced in 2010 or later.

To check the year of introduction of your Mac:

1. In the **Apple** (🍎) menu in the menu bar, select **About This Mac**.

   A window detailing the technical specifications is displayed.

2. Open the **Overview** tab.

   An overview of your Mac is displayed, including its model and when it was introduced, for example, "Mac mini (Early 2011)" or "MacBook Pro (Mid 2014)".

3.2 Operating System Requirements

The specific versions of the Mac OS operating system that Dyalog is supported on are detailed on http://www.dyalog.com/dyalog/current-platforms.htm.

To check the operating system on your Mac:

1. In the **Apple** (🍎) menu in the menu bar, select **About This Mac**.

   A window detailing the technical specifications is displayed.

2. Open the **Overview** tab.

   An overview of your Mac is displayed, including its operating system.

3.3 Hard Drive Requirements

There should be at least 0.5 GB of free capacity on the target Mac.

To check the free capacity of your hard drive:

1. In the **Apple** (🍎) menu in the menu bar, select **About this Mac**.

   A window detailing the technical specifications is displayed.

2. Open the **Storage** tab.

   The storage information for your hard drive is displayed.

3.4 Dyalog Versions Supported on Mac OS

Dyalog version 14.1 (64-bit Unicode edition) is the first release of Dyalog to be available for the Mac OS operating system.

4 Installing Dyalog

This chapter is concerned with new installations of Dyalog.

To install Dyalog:

1. Download **mac_64_<version>_unicode.dmg** from my.dyalog.com.
2. Double-click on the **mac_64_<version>_unicode.dmg** file.

   The licence agreement is displayed.
3. Click **Agree** if you accept the licence conditions.

   The **Dyalog Installer** window is displayed.
4. Drag the Dyalog logo (orange letter D) into the **Applications** directory.

   If you do not have administrator priviledges you will be asked to authenticate the change to the **Applications** directory by entering the administration **Username** and **Password**.
5. Close the **Dyalog Installer** window.

Dyalog is now installed and ready to use.

5 Verifying a Successful Installation

To verify that Dyalog has been successfully installed:

1. Open **Finder**.
2. In the **Go** menu in the **Finder** menu bar, select **Applications**.

   The **Applications** window is displayed.
3. In the **Applications** window, double-click on **Dyalog-<version>**.

   A Dyalog Session is started.

Starting a Dyalog Session adds the Dyalog icon to the dock. To keep the Dyalog icon in the dock permanently, right-click on the icon and select **Options > Keep in Dock** from the drop-down list that appears.

6 Configuration

Although no configuration is necessary and Dyalog can be used as soon as it has been installed, various configuration options are available so that Dyalog can be customised to meet personal preferences.

During a Dyalog Session, the **Preferences** dialog box can be accessed from the **Session** window. For details of the configurations available through the **Preferences** dialog box, see the *Dyalog for Mac OS User Guide*.

In addition to configuring Dyalog, the APL385 font can be installed along with a locale-specific keyboard. This enables Dyalog glyphs to be entered in other applications (for example, email).

6.1 Customising the Dyalog Session

Dyalog is customised using environment variables. These can be specified in the **$HOME/.dyalog/dyalog.config** file (which is created the first time that Dyalog is run and contains comments describing the format required) or in a shell, but cannot be set from within a Session.

Example

To set MAXWS to default to a value of 1 GiB, open **$HOME/.dyalog/dyalog.config** in your preferred text editor and add the following:

```
export MAXWS=1G
```

This sets the value of the environment variable permanently. Some environment variables already have values set in the **dyalog.config** file; these should be changed rather than adding new entries with the same name.

Environment variable names must be specified entirely in upper case.

For a complete list of the environment variables that can be used to configure Dyalog, see Appendix *B*.

6.2 Installing the APL385 Unicode Font

When Dyalog is installed, the APL385 font that is used to display the APL glyphs correctly is embedded in the Session. To use this font in other applications (for example, email) it needs to be installed.

To install the APL385 Unicode font:

1. Download the APL385 Unicode font from http://www.dyalog.com/apl-font-keyboard.htm.
2. Open **Finder**.

3. In the **Go** menu in the **Finder** menu bar, select **Computer**.
   The **System** directory is displayed.
4. Double-click your hard disk icon.
   The **Disk** directory is displayed.
5. Double-click the **Library** icon.
   The **Library** directory is displayed.
6. Double-click the **Fonts** icon.
   The **Fonts** directory is displayed.
7. Copy the **Apl385.ttf** file into the **Fonts** directory (this requires administration rights).
8. Exit the **Fonts** directory.

6.3 Installing New Keyboard Key Mapping for APL Glyphs

The default keyboard that is installed with Dyalog for use in a Session is shown in Appendix *A*. For information on customising this keyboard, see the *Dyalog for Mac OS User Guide*.

To completely replace the default keyboard with a locale-specific keyboard in the Session or to enter Dyalog glyphs in other applications (for example, email), the requisite keyboard key mappings need to be installed and enabled.

To install the keyboard key mappings for Dyalog glyphs:

1. Download and unzip the **DyalogAlt.zip** file specific to your locale from http://www.dyalog.com/apl-font-keyboard.htm.

   This zip file contains the **DyalogAlt.keylayout** and **DyalogAlt.icns** files specific to the selected locale. A separate locale-specific **mac_keyboard.pdf** file can also be downloaded from this location – this contains images of the key mappings enabled with the **DyalogAlt.keylayout** and **DyalogAlt.icns** files.

   If your locale does not have files on this webpage, please contact support@dyalog.com.

2. Open **Finder**.
3. In the **Go** menu in the **Finder** menu bar, select **Computer**.
   The **System** directory is displayed.
4. Double-click your hard disk icon.
   The **Disk** directory is displayed.
5. Double-click the **Library** icon.
   The **Library** directory is displayed.
6. Double-click the **Keyboard Layouts** icon.
   The **Keyboard Layouts** directory is displayed.
7. Copy the **DyalogAlt.keylayout** and **DyalogAlt.icns** files into the **Keyboard Layouts** directory (this requires administration rights).

To enable the keyboard key mappings for Dyalog glyphs:

1. Open **System Preferences**.
   The **System Preferences** window is displayed.
2. Double-click the **Keyboard** icon.
   The **Keyboard** window is displayed.
3. Open the **Keyboard** tab.
4. Check **Show Keyboard & Character Viewers in menu bar**.
   The current keyboard selection is displayed in the menu bar.
5. Open the **Input Sources** tab.
6. Click **+**.
   The available keyboards to include are listed.
7. Select *Others* from the list on the left-hand side.
   The list on the right-hand side is updated to show the available keyboards.
8. Select **Dyalog Alt <locale>** from the list on the right-hand side and click **Add**.
   The list on the left-hand side is updated to show the enabled keyboard layouts.
9. Open the **Shortcuts** tab.
10. Select *Input Sources* from the list on the left-hand side.
    The list on the right-hand side is updated to show the shortcuts that can be configured; these move between the enabled keyboards.
11. Set the shortcuts for the two options (**Select the previous input source** and **Select next source in Input menu**). If Spotlight is not enabled, then the default values of ⌘ + **Space** and ⌘ + ⌥ + **Space** can be used; if Spotlight is enabled then they must be changed. Setting these values provides a simple means of switching between all enabled keyboards.

You can now use the Dyalog keyboard in applications other than Dyalog whenever the Dyalog keyboard is selected in the menu bar.

7 Uninstalling Dyalog

To uninstall Dyalog:

1. Open **Finder**.
2. In the **Go** menu in the **Finder** menu bar, select **Applications**.

   The **Applications** window is displayed.
3. Drag the **Dyalog-<version>** icon from the **Applications** window into the Trash.

Dyalog is now uninstalled.

Although Dyalog has been uninstalled, some directories/files might remain in the **Home** directory.

Appendix A Default Keyboard

The keyboard key mappings shown in figure *1* are enabled whenever a Dyalog Session is started.

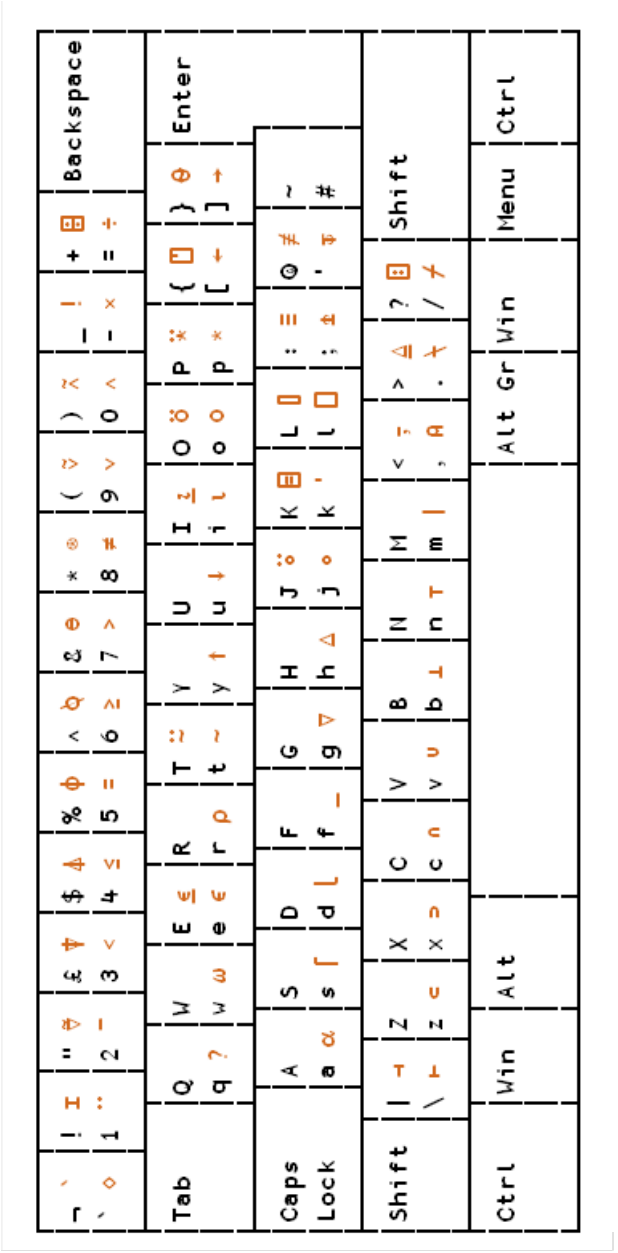

***Figure 1**. The default Session keyboard key mappings (shown on a UK keyboard).*

To access the glyphs in the lower right quadrant, press ` followed by the appropriate key.

To access the glyphs in the upper right quadrant, press ` followed by the **SHIFT** key with the appropriate key.

Appendix B Environment Variables

This appendix details the environment variables that can be used to customise Dyalog (for information on how to use them, see Section *6.1*).

When an environment variable defines a byte size, the value must consist of an integer optionally followed immediately by a single character denoting the units to be used. If no units are specified, then KiB is assumed.

Valid values for units are:
K (KiB), M (MiB) and G (GiB) (for completeness, T (TiB), P (PiB) and E (EiB) can also be specified)

Table 1. *Environment variables that can be used to configure Dyalog on Mac OS*

VARIABLE NAME	DESCRIPTION
APL_TEXTINAPLCORE	Whether the "Interesting Information" section is included in aplcore files (for more information, see the *Dyalog for Mac OS User Guide*). Valid values are: • 0 – the "Interesting Information" section is not included • 1 – the "Interesting Information" section is included Default = 1
DEFAULT_DIV	Value of `⎕DIV` in a clear workspace. Default = 0 (can be 0 or 1)
DEFAULT_IO	Value of `⎕IO` in a clear workspace. Default = 1 (can be 0 or 1)
DEFAULT_ML	Value of `⎕ML` in a clear workspace. Default = 1 (can be 0, 1, 2 or 3)
DEFAULT_PP	Value of `⎕PP` in a clear workspace. Default = 10 (must be integer in range 1 to 34)
DEFAULT_PW	Value of `⎕PW` in a clear workspace. Default = 79 (must be integer in range 42 to 32767)
DEFAULT_RL	Value of `⎕RL` in a clear workspace. Default = 16807 (must be integer in range 0 to `¯2+2*31`)
DEFAULT_RTL	Value of `⎕RTL` in a clear workspace. Default = 0 (must be integer in range 0 to 32767)
DEFAULT_WX	Value of `⎕WX` in a clear workspace. Default = 3 (can be 0, 1 or 3)

DYALOG	The directory in which Dyalog is installed. This is referred to throughout the documentation as **[DYALOG]**.
ERRORONEXTERNAL EXCEPTION	How the interpreter should behave when an exception occurs in a call to an external DLL. Valid values are: • 0 – terminate with a system error • 1 – generate an EXTERNAL DLL EXCEPTION error (91) – this is trappable. Default = 0 This should only be used (set to 1) in development, not during production.
HISTORY_SIZE	The size of the buffer used to store previously-entered (input) lines in the Session. Default = 10
INPUT_SIZE	The size of the buffer used to store marked lines (lines awaiting execution) in the Session. Default = 10
LOG_FILE	Full path and name of the log file in which the Session log is recorded. Default = **$HOME/default.dlf**
LOG_FILE_INUSE	Whether the Session log is saved in a Session log file and loaded the next time a Session is started. Valid values are: • 0 – the Session log is not saved • 1 – the Session log is saved in a Session log file and loaded the next time a Session is started Default = 1
LOG_SIZE	The size of the Session log's buffer. Default = 800
MAXWS	The workspace size (amount of memory allocated to the workspace) when a new Dyalog Session is started. Must be an integer greater than 4 MiB. Default = 64M
SALT	The location of the **SALT** directory (for more information, see the *SALT Reference Guide*). Default = **[DYALOG]/SALT**
SESSION_FILE	Full path and name of the file containing the ⎕SE object that is loaded when a new Dyalog Session is started. This file defines the appearance and behaviour of the Dyalog Session together with any functions/variables stored in the ⎕SE namespace. Default = **[DYALOG]/default.dse**

TRACE_ON_ERROR	Whether the **Trace** window is automatically displayed when execution of a defined function is suspended with an error. Valid values are: • 0 – Do not display the **Trace** window when execution of a defined function is suspended with an error • 1 – Display the **Trace** window when execution of a defined function is suspended with an error Default = 1
UCMDCACHEFILE	Full path and name of the user command cache file (for more information, see the *User Commands Reference Guide*). Default = **$HOME/.dyalog /UserCommand20.cache**
WSEXT	The workspace filename extension, defined as a colon-separated string of one or more extensions, including any **.** character that separates the filename from the extension. Used by WSPATH and when saving a workspace that does not have an explicitly-specified extension. Default = **:.dws:.DWS**
WSPATH	The workspace path. A list of directories that are searched by the `)LOAD`, `)COPY` and `)LIB` system commands in the order specified. Multiple directories are separated by the **:** character.