Introduction

The Build Application[[1]](#footnote-1) tool allows the developer to quickly configure their build project with basic parameters. The tool automatically generates a **buildApp.4DSettings** XML project file in the *Settings* folder adjacent to the project or structure file and internally calls the BUILD APPLICATION[[2]](#footnote-2) command.

Basic aspects of your final application related to branding, setup, and security can be configured using the application builder. However, as shown in the table below, the dialog exposes only a subset of options that is available in 4D.

| **Version** | **Key** | **Tool** | **Command** |
| --- | --- | --- | --- |
|  | BuildApplicationName | ✓ | ✓ |
|  | ServerIconMacPath |  | ✓ |
|  | ServerIconWinPath |  | ✓ |
|  | RuntimeVLIconMacPath |  | ✓ |
|  | RuntimeVLIconWinPath |  | ✓ |
|  | CommonVersion |  | ✓ |
|  | CommonCopyright |  | ✓ |
|  | CommonCreator |  | ✓ |
|  | CommonComment |  | ✓ |
|  | CommonCompanyName |  | ✓ |
|  | CommonFileDescription |  | ✓ |
|  | CommonInternalName |  | ✓ |
|  | CommonLegalTrademark |  | ✓ |
|  | CommonPrivateBuild |  | ✓ |
|  | CommonSpecialBuild |  | ✓ |
|  | RuntimeVLVersion |  | ✓ |
|  | RuntimeVLCopyright |  | ✓ |
|  | RuntimeVLCreator |  | ✓ |
|  | RuntimeVLComment |  | ✓ |
|  | RuntimeVLCompanyName |  | ✓ |
|  | RuntimeVLFileDescription |  | ✓ |
|  | RuntimeVLInternalName |  | ✓ |
|  | RuntimeVLLegalTrademark |  | ✓ |
|  | RuntimeVLPrivateBuild |  | ✓ |
|  | RuntimeVLSpecialBuild |  | ✓ |
|  | ServerVersion |  | ✓ |
|  | ServerCopyright |  | ✓ |
|  | ServerCreator |  | ✓ |
|  | ServerComment |  | ✓ |
|  | ServerCompanyName |  | ✓ |
|  | ServerFileDescription |  | ✓ |
|  | ServerInternalName |  | ✓ |
|  | ServerLegalTrademark |  | ✓ |
|  | ServerPrivateBuild |  | ✓ |
|  | ServerSpecialBuild |  | ✓ |
|  | ClientVersion |  | ✓ |
|  | ClientCopyright |  | ✓ |
|  | ClientCreator |  | ✓ |
|  | ClientComment |  | ✓ |
|  | ClientCompanyName |  | ✓ |
|  | ClientFileDescription |  | ✓ |
|  | ClientInternalName |  | ✓ |
|  | ClientLegalTrademark |  | ✓ |
|  | ClientPrivateBuild |  | ✓ |
|  | ClientSpecialBuild |  | ✓ |
| v19 | ServerStructureFolderName[[3]](#footnote-3) | ✓ |  |
| v19 | ClientServerSystemFolderName[[4]](#footnote-4) | ✓ |  |
|  | BuildCompiled | ✓ | ✓ |
|  | BuildComponent | ✓ | ✓ |
|  | BuildApplicationSerialized | ✓ | ✓ |
|  | BuildCSUpgradeable | ✓ | ✓ |
|  | BuildServerApplication | ✓ | ✓ |
|  | BuildMacDestFolder | ✓ | ✓ |
|  | BuildWinDestFolder | ✓ | ✓ |
|  | ServerIncludeIt | ✓ | ✓ |
|  | ClientMacIncludeIt | ✓ | ✓ |
|  | ClientWinIncludeIt | ✓ | ✓ |
|  | RuntimeVLIncludeIt | ✓ | ✓ |
|  | ServerMacFolder | ✓ | ✓ |
|  | ServerWinFolder | ✓ | ✓ |
|  | ClientMacFolderToMac | ✓ | ✓ |
| *deprecated* | ClientWinFolderToMac | ✓ | ✓ |
|  | ClientWinFolderToWin | ✓ | ✓ |
| *deprecated* | ClientMacFolderToWin | ✓ | ✓ |
|  | RuntimeVLMacFolder | ✓ | ✓ |
|  | RuntimeVLWinFolder | ✓ | ✓ |
| *deprecated* | DataFilePath |  | ✓ |
|  | IPAddress |  | ✓ |
|  | PortNumber |  | ✓ |
| v18 | DatabaseToEmbedInClientMacFolder |  | ✓ |
| v18 | DatabaseToEmbedInClientWinFolder |  | ✓ |
| v20 | MacCompiledDatabaseToWinIncludeIt[[5]](#footnote-5) | ✓ | ✓ |
| v20 | MacCompiledDatabaseToWin[[6]](#footnote-6) | ✓ | ✓ |
|  | ArrayExcludedComponentName | ✓ | ✓ |
|  | ArrayExcludedPluginID | ✓ | ✓ |
|  | ArrayExcludedPluginName | ✓ | ✓ |
|  | IncludeAssociatedFolders | ✓ | ✓ |
| v20 | ArrayExcludedModuleName[[7]](#footnote-7) | ✓ | ✓ |
| v16 | LastDataPathLookup | ✓ | ✓ |
| v18 | ClientWinSingleInstance |  | ✓ |
| v20 | ShareLocalResourcesOnWindowsClient[[8]](#footnote-8) |  | ✓ |
| v20 | ClientUserPreferencesFolderByPath[[9]](#footnote-9) |  | ✓ |
|  | CurrentVers | ✓ | ✓ |
|  | RangeVersMin | ✓ | ✓ |
|  | RangeVersMax | ✓ | ✓ |
| v14 | StartElevated |  | ✓ |
| v20 | ServerDataCollection[[10]](#footnote-10) |  | ✓ |
|  | ArrayLicenseMac | ✓ | ✓ |
|  | ArrayLicenseWin | ✓ | ✓ |
|  | IsOEM |  | ✓ |
| *deprecated* | HardLink |  | ✓ |
| v14 | MacSignature | ✓ | ✓ |
| v14 | MacCertificate | ✓ | ✓ |
| v16 | ServerSelectionAllowed |  | ✓ |
| v19 | AdHocSign | ✓ | ✓ |
| v19 | PackProject |  | ✓ |
| v20 | HideDataExplorerMenuItem[[11]](#footnote-11) |  | ✓ |
| v20 | HideRuntimeExplorerMenuItem |  | ✓ |
| v20 | ServerEmbedsProjectDirectoryFile[[12]](#footnote-12) |  | ✓ |
| v20 | UseStandardZipFormat[[13]](#footnote-13) |  | ✓ |
| v20 | HideAdministrationMenuItem[[14]](#footnote-14) |  | ✓ |

Printing to the command line interface

The CLI class included with the demo project implements [ASCII escape code](https://en.wikipedia.org/wiki/ANSI_escape_code) sequences to print coloured messages to the console. The *Terminal* app on macOS supports this feature by default. On Windows, it may need to be activated by editing the registry.

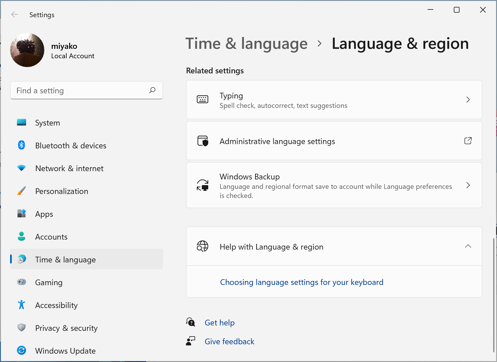
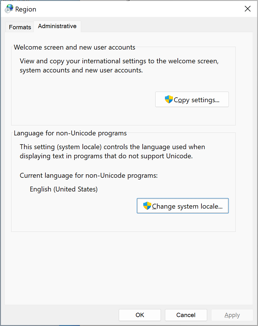
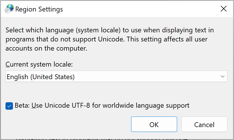
Key: HKEY\_CURRENT\_USER\Console\VirtualTerminalLevel

Type: DWORD

Value: 00000001

For historic compatibility reasons, the Windows Command Prompt ([CMD.EXE](https://learn.microsoft.com/en-us/windows-server/administration/windows-commands/cmd)) is a non-Unicode application. You can switch it to Unicode in Settings.

Time & language / Language & region / Administrative language

Some tips on printing to the CLI:

Print CR to move the cursor position to the start of line. This allows you to print over existing text.

Print LF to start a new line.

Print % twice to print the percent sign.

Port number

By default, the server application is published over TCP port number 19813 (hexadecimal 0x4D65). It uses the same port number to broadcast the UDP datagram “4D Server II”[[15]](#footnote-15). One can discover services available on the local subnet by listening for this signal.

The build key [CS.PortNumber](https://doc.4d.com/4Dv20/4D/20/PortNumber.300-6335762.en.html) has the effect of modifying the EnginedServer.xml file created inside the *Database* folder of the client application. More specifically it adds a colon symbol followed by the port number to the **server\_path** attribute (the domain or IP address is optional). This allows the client to connect to a server that is published over an alternative port number. The build key only has effect on the client. It does not alter the port number on the server side. To also change the port number of the server, one must modify the **publication\_port** attribute in the **settings.4DSettings** XML file inside the *Sources* folder.

The port number is one of the few pieces of information that originates outside the build settings XML project file. The \_SettingsXmlParser class included with the demo project implements a function to locate the settings file related to the specified project and changes its server port number.

SDI mode

Another critical piece of information missing in the build settings XML project file is the preference to run the application in SDI mode on Windows. Unlike the port number mentioned above, the user settings take precedence over structure settings for with regards to the **sdi\_application** attribute. The \_SettingsXmlParser class included with the demo project implements a function to determine the effective mode. If the attribute does not exist in user settings, the structure settings is respected. Only an explicit “false” value should cancel structure settings. For that reason, the function return value is Variant, which can be True, False or Null.

1. See [Build Application](https://developer.4d.com/docs/Desktop/building/) in the official documentation. [↑](#footnote-ref-1)
2. See [BUILD APPLICATION](https://doc.4d.com/4Dv20/4D/20.1/BUILD-APPLICATION.301-6480422.en.html) in the official documentation. [↑](#footnote-ref-2)
3. See [Multiple instances of merged server applications on the same machine](https://blog.4d.com/multiple-instances-of-merged-server-applications-on-the-same-machine/) on the official blog. [↑](#footnote-ref-3)
4. See [Multiple servers, one shared local resources](https://blog.4d.com/multiple-servers-one-shared-local-resources/) on the official blog. [↑](#footnote-ref-4)
5. See [Build a custom remote connection dialog](https://blog.4d.com/build-a-custom-remote-connection-dialog/) on the official blog. [↑](#footnote-ref-5)
6. See [Simplified cross-platform client/server application building on Windows](https://blog.4d.com/simplified-cross-platform-client-server-application-building-on-windows/) on the official blog. [↑](#footnote-ref-6)
7. See [Reduce your 4D apps’ size with these new features](https://blog.4d.com/reduce-your-4d-apps-size-with-these-new-features/) on the official blog. [↑](#footnote-ref-7)
8. See [Share Local Resources Between Users with Windows Remote Desktop Services](https://blog.4d.com/share-local-resources-between-users-with-windows-remote-desktop-services/) on the official blog. [↑](#footnote-ref-8)
9. See [Use duplicated merged client applications](https://blog.4d.com/use-duplicated-merged-client-applications/) on the official blog. [↑](#footnote-ref-9)
10. See [Data Collection Insights](https://blog.4d.com/data-collection-insights/) on the official blog. [↑](#footnote-ref-10)
11. See [Disabling explorers on merged servers](https://blog.4d.com/disabling-explorers-on-merged-servers/) on the official blog. [↑](#footnote-ref-11)
12. See [Directory file management in merged server projects](https://blog.4d.com/directory-file-management-in-merged-server-projects/) on the official blog. [↑](#footnote-ref-12)
13. See [Secure your app’s resources with a new algorithm](https://blog.4d.com/secure-your-apps-resources-with-a-new-algorithm/) on the official blog. [↑](#footnote-ref-13)
14. See [Integrate your Own Administration Window for 4D Server](https://blog.4d.com/integrate-your-own-administration-window-for-4d-server/) on the official blog. [↑](#footnote-ref-14)
15. See [UDP Commands, Overview](https://doc.4d.com/4Dv20/4D/20/UDP-Commands-Overview.300-6341248.en.html) in the documentation. [↑](#footnote-ref-15)