IBC User Guide

IMPORTANT

If you have previously been using IBController and are switching over to IBC, there are some differences that you need to be aware of: there is more information about this in the **Changes from IBController** section at the end of this document.

Make sure you read the information in the **Scope of this User Guide** section.

IBC can be used to start TWS running the demo account. However there are many ways in which the demo account differs from a live or a paper trading account, which may occasionally cause some inconvenience. In particular when you login to the demo account you are actually allocated a random account number, and when you log out this account may then be allocated to another user. Next time you log in to the demo account, you are unlikely to be allocated the same account as before, and even if you are given the same one, any settings you made last time round will have changed. IBC makes no attempt to avoid these situations: they are simply an inevitable by-product of using the demo system, which is not intended for any serious usage.

Note that in the remainder of this document, 'Unix' is used to refer to all Unix-derived operating systems, including Linux and macOS.

Introduction

Overview of IBC

IBC enables Interactive Brokers' Trader Workstation (TWS) and Gateway to be run in 'hands-free' mode, so that a user need not be present. This makes possible the deployment of unattended automated trading systems.

IBC loads TWS or the Gateway and then 'listens' for various events (such as the display of dialogs) that would normally require user intervention. It can then automatically take appropriate action on the user's behalf. For example, as well as automating the TWS and Gateway login by filling the login dialog with your credentials, it can also deal with TWS's autologoff dialog so that it can keep TWS running continuously.

Here are some of the things IBC does for you:

- starts TWS or the Gateway

- logs you into TWS or Gateway

- clicks the YES button if the "Accept incoming connection?" dialog is displayed

- clicks the Close button if the Tip of the Day dialog appears

- dismisses the dialog that warns of a new TWS version upon startup

- responds to TWS's 'Exit Session Setting' to prevent autologoff, enabling TWS to be kept running indefinitely

- shuts down TWS tidily at a specified day of the week and time.

IBC also responds to certain commands sent to it by another program, for example to tell TWS/Gateway to shut itself down cleanly.

Scope of this User Guide

This User Guide is intended to help you get started with IBC.

Acknowledgement

This User Guide has been produced using the Pandoc document conversion system to produce the PDF from the markdown source.

Getting Started

Checklist

Here is a summary of the steps you need to perform to get IBC up and running properly.

1. Install the offline version of Interactive Brokers Trader Workstation (see *Interactive Brokers Trader Workstation* in the *Prerequisites* section), and make sure that it uses the English language setting.

   Please note that you MUST download the OFFLINE version of TWS, not the self-updating version: IBC DOES NOT WORK with the self-updating version of TWS.

2. Download the appropriate IBC distribution ZIP file for your operating system (see the *Where to get IBC* section).

3. Install IBC (see the *Installing IBC* section). Please note that if you already have an existing IBC installation, it's wise to rename its folder before installing the new version in case you need to revert to it later.

4. Create an encrypted folder called `IBC` in your personal filestore (see *Protecting the Password* in the *Password Security* section).

5. Copy the configuration file (called `config.ini`) from the IBC installation folder to the encrypted folder created in step 5.

6. Check that the correct major version number for TWS is set in the shell script files in the IBC installation folder: these files are `StartTWS.bat` and `StartGateway.bat` on Windows, `twsstart.sh` and `gatewaystart.sh` on Unix. To find the TWS major version number, first run TWS or the Gateway manually using the IB-provided icon, then click `Help > About Trader Workstation` or `Help > About IB Gateway`. In the displayed information you'll see a line similar to this:

   `Build 954.2a, Oct 30, 2015 4:07:54 PM`

Here the major version number is 954. Ignore the rest of the version number. Now open the script files with a text editor and ensure that the TWS_MAJOR_VRSN variable is set correctly.

7. At this stage, everything is set up to run IBC with its default settings, which will start TWS and log it into the IB demo user. It is worthwhile doing this just to check that everything works before customising it to suit your needs. To do this, run the relevant shell script (`StartTWS.bat` on Windows, `twsstart.sh` on Unix) from the IBC installation folder. If everything is satisfactory, shut down IBC by closing TWS in the usual way.

   Note that when you start IBC, information about the startup process is logged to a file to aid diagnosing any faults that may occurr. You will be notified of the log file name during the startup sequence.

8. Edit the configuration file (`config.ini`) in the encrypted `IBC` folder using a text editor such as Notepad. See *Configuring IBC* for further information.

9. If you did not install TWS and IBC in their default locations, and store the configuration file in the recommended location, you will have to edit the shell scripts in the IBC installation folder accordingly. They contain comments that will help you do this correctly.

10. If you intend to run API programs to connect with TWS, you will need to manually edit the API settings in TWS's Global Configuration Dialog.

Prerequisites

This section details the other software that is needed to run IBC.

Java Runtime

Both IBC and TWS/Gateway are Java programs, and therefore the Java Runtime needs to be accessible, but you don't have to do anything to ensure this.

The TWS installers for Windows and Linux include a hidden version of Java that Interactive Brokers have used for developing and testing TWS. This version also runs IBC perfectly, and the IBC scripts ensure that it is used.

This means that it is not necessary to ensure that Java is installed on your computer. It doesn't matter if it is already installed, but the IBC scripts won't use it. However the scripts do make provision for declaring specifically which Java installation is to be used in exceptional situations where necessary.

If you had previously installed Java for use with old versions of Tws, but do not need it for any other programs, then you might want to consider uninstalling it once you have finished setting up IBC.

Note for macOS users: the installer for the macOS version of TWS does not currently include the Java Runtime, so you will have to ensure that Java is installed.

Interactive Brokers Trader Workstation

Before running IBC, you will need to download and install the **offline** version of Trader Workstation from the Interactive Brokers website.

The location of the TWS dowloads page on IB's website varies from time to time, and from country to country. At the time of writing, on IB's US website (linked above) you need to click the `Trading` menu near the top of the page, then select `TWS Software`: currently a valid direct link is Tws Software.

IB provides two modes of operation for TWS:

- an online, or self-updating TWS that automatically receives updates as IB enhances it and fixes bugs. IBC **does not work** with the self- updating TWS, so **do not install the self-updating version for use with IBC**

- an offline or standalone TWS that, after download and installation, never changes (until you download and install another version): you **must** download and install this offline version for use with IBC.

Note that the TWS installation includes the code for both TWS and the Gateway: there is no need to do another download for the Gateway.

However, there are Gateway-specific downloads on IB's website. They contain the same code as the TWS downloads, but they install in a different place. You can install one of these, as well as or instead of the TWS installer. You can find these via the LOGIN dropdown in the title bar of IB's website.

When you run the script to load TWS, it will use the TWS installation if there is one, and if not it will use the Gateway installation if there is one. Similarly when you run the script to load the Gateway, it will use the Gateway installation if there is one, and if not it will use the TWS installation if there is one. (Needless to say, if neither a TWS download nor a Gateway download has been installed, the scripts will fail!)

It is safest to use the 'stable' offline version of TWS rather than the 'latest' version for live trading: the latter is more likely to have bugs.

IBC needs TWS to operate in English so that it can recognise the various dialogues that it interacts with. You can set TWS's language by starting it manually (ie without using IBC) and selecting the language on the initial login dialog. TWS will remember this language setting when you subsequently start it using IBC.

Note that you do not need an IB account to try out IBC, as you can use the IB demo account (username `edemo`, password `demouser`).

Where to get IBC

IBC is officially distributed as a ZIP file containing the compiled program and some additional files, detailed below. There are separate ZIP files for Windows, Linux and macOS.

The ZIP file for the latest version should be downloaded from Github. Earlier versions can also be downloaded from the same place if need be.

The distribution ZIP file contains:

- License text

- A compiled JAR (named similar to `IBC.jar`), containing the compiled Java code for the IBC program
- A sample configuration file (named similar to `config.ini`)
- Top-level script files that run IBC to start TWS or the Gateway. These files are specific to the platform (ie Windows, Linux or macOS) to which the ZIP file relates
- A script file that can be used to tidily shut down TWS or Gateway from the same or another computer.
- A sample Windows Task Scheduler file (named similar to `Start TWS Live (daily).xml`), which can be used to automate starting TWS or Gateway on Windows systems (not present in the Linux and macOS ZIPs)
- A Scripts sub-folder containing sub-scripts used by the top-level scripts mentioned above
- A text file called `version` containing the IBC version number

Source code and build scripts are not included in the distribution ZIPs, as they are freely available from the IBC project page on Github.

Installing IBC

Installing IBC is just a matter of extracting the contents of the downloaded ZIP file to wherever you want to install it. You will make things easiest for yourself if you use the locations described in 'Default Paths' below, because that will minimise customising the configuration file and the shell scripts.

If you already have a previous IBC installation, it's wise to rename its folder (eg to `IBC.old`) so that you can easily refer back to any customisations you did for that version.

On Windows:

- create the folder where you want to install IBC, if it doesn't already exist. As noted above (see Default Paths) this is normally `C:\IBC` but it can be anywhere you like

- locate the downloaded ZIP file using File Explorer (Windows Explorer on Windows 7 and earlier). Windows treats ZIP files like an ordinary folder, so you can see its contents the same way as any other folder

- select all the files and folders and drag them into your installation folder

On Unix:

- unpack the ZIP file using a command similar to this:

```
sudo unzip ~/Downloads/IBCLinux-3.6.0.zip -d \
/opt/ibc
```

- now make sure all the script files are executable:

```
cd /opt/ibc
sudo chmod o+x *.sh */*.sh
```

Default Paths

Several script files are included in each IBC release. These script files (and these instructions) assume the default paths shown in the table below (where `<username>` represents your operating system user name, not your IB login id).

If you store any of these items in other locations, you will need to edit these script files to reflect this.

Platform	Item	Path
Windows	IB TWS program files	`C:\Jts`
	IBC program files	`C:\IBC`
	config.ini	`%HOMEDRIVE%%HOMEPATH%\Documents\IBC`
Unix	IB TWS program files	`/home/<username>/Jts`
	IBC program files	`/opt/ibc`
	config.ini	`/home/<username>/ibc`
macOS	IB TWS program files	`/home/<username>/Applications`
	IBC program files	`/opt/ibc`
	config.ini	`/home/<username>/ibc`

Note that you may be able to find third-party Linux packages that allow IBC and/or TWS to be installed using a Linux package manager such as `apt`: they may not use these paths. Consult your Linux package instructions for file locations.

Password Security

To login to TWS or IB Gateway, IBC needs to know your Interactive Brokers username and password. You should very carefully secure your IB account username and password to prevent unauthorised use by third parties. This section gives you guidance on how to achieve this.

The username and password are given to IBC in one of two ways:

- via the configuration `.ini` file: this is the preferred method because the configuration file can be protected by the operating system

- via the command line parameters when IBC is started: this method is strongly deprecated because command line information associated with a process is easily available outside the process (for example via Task Manager on Windows)

Protecting the Configuration File

To protect this sensitive information, the configuration file needs to be stored in a location where it will not be accessible to other users of the computer. The simplest way to achieve this is to store it within your personal filestore:

- on Windows this is your `Documents` folder (which is normally actually located at `C:\Users\<username>\Documents`). Note that this folder may also be addressed using environment variables like this:

  `%HOMEDRIVE%%HOMEPATH%\Documents`

- on Unix it is the `/home/<username>` directory.

You are advised to place the file in its own `IBC` folder within this location.

You should also consider encrypting the folder containing the configuration file. This will prevent another user with administrator privileges gaining access to the contents: even if they use their administrator privileges to give themselves access to the file, its contents will not be decrypted because they are not the user that encrypted it.

To encrypt the folder on Windows:

- right click the folder and select `Properties`

- click the `Advanced` button on the `General` tab

- set the checkbox labelled `Encrypt contents to secure data`

- finally, click the `OK` buttons to apply the changes.

Encrypting a folder on Unix is more involved, and you should refer to the documentation for your distribution.

Configuring IBC

IBC must be supplied with a configuration file. A specimen file called config.ini is included in the distribution ZIPs. You will need to edit this file to include your IB username and password, and to ensure that IBC behaves in the way that best suits your needs.

You should copy the supplied file from the IBC installation folder into the secure location described above before editing it, so that you have a clean copy to revert to if need be.

The sample `config.ini` file contains detailed comments on the meaning of each configuration property. Many of these have sensible defaults, or are only needed in special situations, so to help you get started quickly, here is a list of the settings that you are most likely to need to change:

Setting	Notes
IbLoginID	You must set this to your IB username
Password	You must set this to your IB password
TradingMode	For TWS 955 and later, you must set this to `paper` if you have supplied the username and password for your live account but actually want to use your paper account. Otherwise you can omit the setting entirely or set it to `live`
IbDir	You only need to set this if you want TWS to store its settings in a different folder from the one it's installed in
AcceptIncomingConnectionAction	It is safest to set this to `reject` and to explicitly configure TWS to specify which IP addresses are allowed to connnect to the API
IbAutoClosedown	Set this to `no` to prevent TWS's daily

Setting	Notes
ClosedownAt	auto closedown Set this if you want to keep TWS running until a specified time of day on a particular day of the week, or to specify a time when Gateway should be shut down every day (a daily shutdown time for TWS can be specified through TWS's own configuration dialog.

There are two ways that IBC can locate your edited `config.ini` file.

- the simplest way is to tell it where to find the file in the script that starts IBC. In this way, you can give the configuration file any name you like. This is the recommended approach, and the supplied scripts follow this approach. If you want change the filename from config.ini, or if you store it somewhere other than the default location, you'll have to edit the start script to declare its new name and location.

- if you do not specify a configuration file name, IBC will expect to find a file named `IBC.<username>.ini` in the current working directory. In this case, `<username>` is your username on your computer (not your IB account username). This method is deprecated, because it is likely to result in the `.ini` file being in an insecure location.

Starting IBC

The normal way to start IBC is by use of a shell script. These can be identified by the `.bat` (Windows) or `.sh` (Unix) extensions. Scripts to start TWS and Gateway are included in the distribution ZIPs, and due to their complexity you are strongly advised to use them, rather than try to create your own.

Windows users can execute a shell script in a number of ways, including:

- Double-click the filename in Windows Explorer
- Create a shortcut to it on your Start menu, desktop or taskbar
- Create a scheduled task to run it automatically at the required times (see below for more information about using scheduled tasks)

If you used the default locations to install IBC and TWS, and to store your config.ini file, you should not need to edit the shell scripts. If you do need to change them, they are commented to help you.

Other Topics

Scheduled Tasks (Windows only)

On Windows you can start IBC automatically using the Task Scheduler to run StartTWS.bat or StartGateway.bat.

If you do this, you should make sure that the machine is already logged on before the scheduled task runs. Otherwise the task will still run, but you won't be able to see and interact with TWS, even if you subsequently log on.

Remember also to change the task settings to prevent Windows automatically ending it after a certain time.

Also you can use the `IbAutoClosedown=no` setting in the IBC configuration file to disable TWS's autologoff feature, and the `ClosedownAt=` setting to specify when IBC will shut down TWS.

In this way you can start IBC automatically on Sunday evening or Monday morning, keep it running all week and then close down tidily on Friday evening or Saturday morning.

The Windows Task Scheduler has many powerful features, and some of these can be used to provide even better control. For example, you can run the task periodically (say every 10 minutes) during the week so that if TWS crashes or is manually shut down, it will automatically be restarted. If you also set up your computer to log on automatically when it starts, this will ensure TWS is restarted after a power outage. (Information about how to make your computer log on automatically is easily available on the internet: but make sure you understand the security implications of autologon to Windows).

IMPORTANT Note that Microsoft have made changes to the Task Scheduler for Windows 10. Because of this, it is advisable to set up your Scheduled Task differently on Windows 10: see the next section *Running under Task Scheduler on Windows 10.*

IMPORTANT Make sure you use the /INLINE argument to StartTWS.bat or StartGateway.bat when starting IBC from Task Scheduler. Otherwise IBC will start and run correctly, but Task Scheduler will not be aware of it: in particular Task Scheduler will not show the task as running. This prevents correct operation of Task Scheduler features such as killing the task after a specified elapsed time. The reason for this is that as far as Task Scheduler is concerned, the task is simply the command processor process that it creates to run the .bat file, and does not include processes created by it.

A sample scheduled task is included in the IBC distribution ZIP, called `Start TWS Live (daily).xml`. You can import this into your Task Scheduler if you are running Windows 7, Windows 8 or Windows 8.1 (see below for further information about running on Windows 10). After importing it, you will need to enable it and change the user account it runs under. This task starts TWS daily at 05:55, and assumes that TWS is set to auto-logoff at 05:52, so the IBC configuration file must include `IbAutoClosedown=yes`.

Running under Task Scheduler on Windows 10

Microsoft have made significant changes to the Task Scheduler in Windows 10. Although the management user interface is pretty much the same as in earlier Windows versions, there are important changes in some of the 'under the hood' operation.

The net effect of these changes is that it is no longer a good idea to start IBC under Task Scheduler by running a command file. It will only work correctly if the command given to Task Scheduler directly runs IBC.

To set this up, first run IBC manually (using StartTWS.bat or StartGateway.bat), and open the log file in Notepad or any other text editor: if using Notepad, make sure that 'Word Wrap' on the

Format menu is not checked). Now create your scheduled task (it's easiest to import the sample included in the IBC download zip file), and open the start action editor. Find the line in the log file that reads: 'Starting IBC with this command:', then select and copy the first part of the following line (up to but not including `-cp`), and paste it into the `Program/script:` field of the action editor. Then select and copy the remainder of the line in the log file (starting at `-cp`), and paste it into the `Add arguments (optional):` field of the action editor. You can now run this scheduled task in the normal way.

Note that running IBC from Task Scheduler via a direct command in this way means that there is no permanent IBC log file. Any output from IBC appears in the window that Java creates to host the Java console output, but there is no way to capture this to a file (note that normal redirection operators `>` and `>>` cannot be used in a command in a scheduled task). If you've made sure that your IBC installation operates correctly before setting up your scheduled task, this should not be too much of a problem.

Multiple IBC Instances

You may want to run more than one instance of TWS or the Gateway on the same computer, perhaps simultaneously. Here are some reasons you might want to do this:

- you want to run both your live and paper-trading IB accounts. This is especially true if you want to get market data from both accounts, as IB will only allow this if both TWS instances are on the same computer (unless you don't try to run them at the same time)

- you have multiple logins for your live IB account, and want to run TWS for both, perhaps at the same time

- you trade on behalf of others, perhaps your family, friends or clients, who each have their own accounts, but you want to run TWS instances for all these accounts on one powerful computer

- you want to trade in different regions at different times

- you want to test a new version of TWS in your paper trading account at the same time as using your live account in a previous version

When TWS runs, it stores a large number of settings in a folder structure (these settings may also be stored in IB's servers, but this may not be a useful option if you want to use multiple TWS instances). By default, TWS stores this settings folder structure in the TWS installation folder. For each username, it creates a separate folder structure. Note however that there are some files that TWS creates while running that are not separated by username in this way, and only one instance of TWS can access them at a time. So you can run multiple TWS instances with no problem provided each instance is logged in to a different username, AND you don't try to run them at the same time.

However, by using the `IbDir` setting in the IBC configuration file, you can tell TWS to store its settings whereever you like. So to have multiple IBC instances operating simultaneously, you need to create a separate configuration file for each instance with a different setting for `IbDir`. Note that you do not need to copy the TWS .jar files themselves - you can load TWS from the same installation folder for each instance.

Because you now have different configuration files, you also need different scripts to run each instance (or you could have a single script and pass the configuration file details as a parameter). And you

need to ensure that the different instances don't try to write their log files to the same folder (because otherwise they might try to log to the same file, and one instance would fail).

As a concrete example, let's take the first scenario described above: you want to run both your live and paper trading accounts. So:

- install TWS into the default location (`C:\Jts` on Windows)

- create two new folders `C:\JtsLive` and `C:\JtsPaper` to store the settings

- create two IBC configuration files called `IBCLive.ini` and `IBCPaper.ini`

- set the IbDir option in them to point to the relevant folder, ie `IbDir=C:\\JtsLive` and `IbDir=C:\\JtsPaper`, and set the `IbLoginId` and `IbPassword` to the live or paper account values as appropriate

- create two start scripts (by copying `StartTWS.bat`) called `StartTWSLive.bat` and `StartTWSPaper.bat`

- change the `set IBC_INI=...` line in each script file to refer to the relevant configuration file

- change the `set LOG_PATH=...` line in each script file to refer to different folders, for example `set LOG_PATH=%IBC_PATH%\LiveLogs` and `set LOG_PATH=%IBC_PATH%\PaperLogs`

- now you can run the new scripts, and each will start a separate instance of TWS connected to a different account, with its settings stored in separate folders.

Using different TWS versions simultaneously

To use more than one version of TWS (for example for testing a new version with your paper-trading account while also using a previous version for your live account), you just need to install the required versions in the normal way. Version 952 and later of TWS have installers that automatically place the relevant files in separate folders named according to the version number.

Then follow the advice in the previous section and ensure that each script file has the correct value for the `TWS_MAJOR_VRSN` variable.

Any Questions?

If you need assistance with running IBC, or have any queries or suggestions for improvement, you should join the IBC User Group at:

https://groups.io/g/IBC.

If you're convinced you've found a bug in IBC, please report it via either the IBC User Group or the GitHub Issue Tracker at:

https://github.com/IbcAlpha/IBC/issues.

Please provide as much evidence as you can, especially the versions of IBC and TWS/Gateway you're using and a full description of the incorrect behaviour you're seeing.

Changes from IBController

Although IBC has been forked from the original IBController project, it is not identical and there are several important differences that you'll need to take account of if you're switching from IBController to IBC.

Here are the main differences between IBC and IBController:

1. The program file is now called IBC.jar.

2. Changes to the settings file:

   - in IBC, the configuration settings were held in a file called `IBController.ini` by default, whereas the equivalent file in IBC is called `config.ini`

   - the setting previously called `ForceTwsApiPort` has been renamed `OverrideTwsApiPort`

   - the `AcceptIncomingConnectionAction` setting previously had a default of `accept`. This default has now changed to `manual`, which means that the user must now explicitly configure IBC to automatically accept API connections from unknown computers.

   - the settings `PasswordEncrypted` and `FIXPasswordEncrypted` have been removed, as has the facility to 'encrypt' these passwords.

   - the `IbControllerPort` setting has been renamed to `CommandServerPort`, and its default value is 0 (zero), which is taken to mean 'do not start the command server'

   - the `IbControlFrom` setting has been renamed to `ControlFrom`

   - the `IbBindAddress` setting has been renamed to `BindAddress`

3. Changes to top-level script names:

   On Windows:

   ```
   IBControllerStart.bat              ->   StartTWS.bat
   IBControllerGatewayStart.bat       ->   StartGateway.bat
   IBControllerStop.bat               ->   Stop.bat
   ```

   On Linux:

   ```
   IBControllerStart.sh               ->   twsstart.sh
   IBControllerGatewayStart.bat       ->   gatewaystart.sh
   ```

   On macOS:

   ```
   IBControllerStart-OSX.sh           ->   twsstartmacos.sh
   IBControllerGatewayStart-OSX.bat   ->   gatewaystartmacos.sh
   ```