TFCompanion Server Startup Guide

Listening addresses and command line parameters

This guide covers the Data, Modbus TCP, Calculation, and TCP PLC server modes started by BootstrapServer. The optional --bind-ip parameter selects a specific address on the server PC and retains that address when a listener restarts. Existing commands keep their previous address selection when the option is omitted.

Server modes at a glance

Server	Listening ports	Binding without --bind-ip
Data	PORT and PORT + 1	All local interfaces
Modbus TCP	PORT; 0 selects 502	Address resolved from the PC hostname
Calculation	PORT; 0 selects 500	Address resolved from the PC hostname
TCP PLC	PORT; 0 selects 500	Legacy positional listening address, if supplied; otherwise the PC hostname address

Using the launch scripts

Run commands from the TFCompanion installation directory so the relative library paths resolve correctly. The updated runTFCServer.bat, runTFServer.bat, and runTFCDataServer.bat forward the complete argument list to the same server entry point. The examples use runTFCServer; the same parameter forms work with the other two scripts.

Replace USER and PASSWORD with a valid TFCompanion profile and password. Quote each argument that contains spaces. Server startup remains subject to the existing profile, registration, and license checks. Brackets in syntax examples mean optional parameters; do not type the brackets.

```
runTFCServer -help
```

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Selecting the listening address

```
...existing server parameters... --bind-ip LOCAL_IP
```

Append --bind-ip exactly once, followed by a numeric IPv4 or IPv6 address assigned to an active adapter on this PC. For example, use 192.168.1.155 for the selected Ethernet adapter or 127.0.0.1 for local testing. Hostnames, wildcard addresses such as 0.0.0.0 and ::, multicast addresses, and addresses belonging to another PC are rejected.

This option selects an existing local address; it does not assign an address to Windows. Use a static address or DHCP reservation on the selected adapter for a stable endpoint. The option is supplied on each process launch and is not saved to a TFCompanion profile.

Data server

The Data server accepts data on the base port and provides asynchronous results on the next port. An explicit listening IP applies to both sockets. Without --bind-ip, both sockets retain their existing all-interface binding.

```
runTFCServer USER PASSWORD PORT [--bind-ip LOCAL_IP]
```

Parameter	Meaning
PORT	Required base TCP port. Choose 1 through 65534; the results port is PORT + 1. There is no zero-to-default conversion for this server.
LOCAL_IP	Optional local listening address for both ports.

```
runTFCServer USER PASSWORD 8188 --bind-ip 192.168.1.155
```

This command listens on 192.168.1.155:8188 and 192.168.1.155:8189. Omitting --bind-ip allows connections through any local interface. The historical fourth positional value false also selects Data mode; the shorter three-parameter form above is recommended.

Both ports must be available. If starting the results socket fails after the data socket has started, the new data socket is closed and startup fails. Restarts of either socket reuse the configured address.

Modbus TCP server

The Modbus TCP server accepts Modbus requests on one listening socket. The positional true value selects this server mode.

```
runTFCServer USER PASSWORD PORT true [CHANNELS] ^
  [--bind-ip LOCAL_IP]
```

Parameter	Meaning
PORT	Required TCP port. Use 0 for the default port 502.
true	Required selector for Modbus mode.
CHANNELS	Optional number of sensor channels. Omitted or 0 uses the default of 2.
LOCAL_IP	Optional local listening address.

```
runTFCServer USER PASSWORD 0 true 1 --bind-ip 192.168.1.155
```

This command selects one sensor channel and listens on 192.168.1.155:502. Without the new option, the server continues to resolve the PC hostname when constructing its listener. That automatic selection can change after network configuration changes and a listener restart.

The ^ character in a multiline example is the Windows command continuation character. You may instead type the entire command on one line without ^.

Calculation server

The Calculation server accepts calculation requests through its dedicated TCP listener. The case-sensitive -Calc selector is followed by the listening port.

```
runTFCServer USER PASSWORD -Calc PORT [--bind-ip LOCAL_IP]
```

Parameter	Meaning
-Calc	Required selector for Calculation mode.
PORT	Required TCP port. Use 0 for the default port 500.
LOCAL_IP	Optional local listening address.

```
runTFCServer USER PASSWORD -Calc 500 --bind-ip 192.168.1.155
```

The calculation listener retains the selected IP across recovery attempts. If the address is unavailable during a restart, the monitor continues retrying that address. The matching CalculationServer.jar must be available in the library directory, or its classes must already be on the launch classpath.

TCP PLC server

This server listens for incoming TCP PLC requests and can also initiate an outgoing connection to an FPGA or data server. LOCAL_IP controls the incoming listener. REMOTE_IP and REMOTE_PORT control the separate outgoing connection.

```
runTFCServer USER PASSWORD PORT CONNECT CHANNELS ^
  REMOTE_IP REMOTE_PORT [--bind-ip LOCAL_IP]
```

Parameter	Meaning
PORT	Required listening port. Use 0 for the default port 500.
CONNECT	true initiates the remote connection at startup; false skips it.
CHANNELS	Required positional placeholder. Currently ignored in PLC mode.
REMOTE_IP	Required remote FPGA or data server address; unused at startup when CONNECT is false.
REMOTE_PORT	Required remote port; unused at startup when CONNECT is false.
LOCAL_IP	Optional local address for the incoming listener.

```
runTFCServer USER PASSWORD 0 false 1 192.168.1.88 7 ^
  --bind-ip 192.168.1.155
```

This command listens on 192.168.1.155:500 without initiating the remote connection. Change false to true to connect to 192.168.1.88:7 at startup.

The legacy eight-parameter form remains supported: USER PASSWORD PORT CONNECT CHANNELS REMOTE_IP REMOTE_PORT LOCAL_IP. Use either that positional listening address or --bind-ip. Supplying both is rejected. The legacy positional form retains its existing address-resolution behavior.

Address changes and recovery

With --bind-ip, the numeric address is retained for the life of the server process. Adding or removing other adapters does not select a replacement address. Each listener creation checks that the configured address still belongs to an active local adapter; the server never falls back to a different adapter when this check fails.

Disconnecting the selected adapter can interrupt existing client connections. The server cannot communicate through an adapter that is unavailable. Modbus, Calculation, and TCP PLC monitors retry the same configured address when their listeners report a failure. Data server socket restarts also reuse the configured address. Client reconnection and the timing of Windows socket failure detection remain separate from address selection.

To use a different listening IP, stop the server process and launch it again with the new option. Configure clients to use that same address and the appropriate port. Running Calculation and TCP PLC servers simultaneously on the same address requires different ports because both default to 500.

Startup errors and diagnostics

Symptom	Action
Invalid server listening configuration	Check option placement, duplication, numeric address format, and assignment to an active local adapter. These option errors stop startup with exit code 1.
Address or port already in use	Choose a free port or stop the application already using it. For Data mode, check both the base port and the next port.
Server starts but a client cannot connect	Confirm the selected adapter address, client target, network route, and Windows firewall access for the listening ports.
Listener failure after an adapter change	Restore the configured adapter and address. Inspect the socket error and subsequent listening messages; do not expect a different adapter to be selected.

The listener libraries create Modbus, Calculation, and TCP PLC sockets asynchronously. A general startup message alone does not prove that the socket is bound. Check the log entry containing the actual listening socket address and port, or inspect Windows listening sockets. Socket errors after startup are logged and handled by the existing listener monitors.

```
netstat -ano | findstr LISTENING
```

Installing the update

Rebuild and distribute TFCompanion with the updated server handlers, BootstrapServer, and the new ServerListenAddress class. Install the updated launch scripts together with that build. Adding the option to a script used with an older TFCompanion build is not supported.

Use the matching server dependencies from the normal release build. No source changes to Modbus.jar, TCPServer_PLC.jar, or CalculationServer.jar are required for address selection. The scripts include library\CalculationServer.jar on the classpath; supply that dependency when using Calculation mode.

Before customer deployment, confirm the chosen address and ports on the target PC and verify a connection from the actual Modbus, calculation, PLC, or Data client. The option does not change the communication protocol or measurement settings.