Getting started programming with the Bridgemate ScoringProgramDataConnectorPipeClient

Introduction

This document describes how to use the ScoringProgramDataConnectorPipeClient's API calls to send and receive data to and from the Bridgemate Data Connector (BDC). To facilitate this BridgeSystems BV has written an application, the scoring program emulator (SPE), that uses these calls to create an event that can be fully tested, even with a live event. Apart from that this document explains how to install and use the Bridgemate Control Software version 5 (BCS 5) to test advanced scenarios.

The components

The test environment needs several components, these are explained below.

Bridgemate Control Software version 5 (BCS5)

BCS 5 is the intended successor of the current (v.4.x) Bridgemate Control Software that clubs all over the world use today to communicate with Bridgemates. It both supports event handling using .bws files and the data connector. This document only describes the latter option. BCS 5 supports the use of both the Bridgemate II and Bridgemate III. Brigemate Classic and Bridgemate Pro are not supported. BCS 5 supports the Bridgemate App as well.

Bridgemate Data Connector (BDC)

BDC is the new platform to exchange data between a scoring program and the Bridgemates, with BCS 5 as intermediary. Communication uses named pipes. This confines communication to a single computer. A HTTP version, enabling communication with cloud applications or over the internet, is under development, but is currently not production ready.

It is possible to communicate directly with BDC, so the two components below are not necessary, but they facilitate communication significantly. The Bridgemate Data Connector developers guide (pdf) describes how to write a communication layer yourself. It can be found at bridgesystems/Bridgemate-Data-Connector-Scoring-Program-Client: Public API client for the Bridgemate Data Connector. It is advisable to give this document at least a cursory inspection before using one of the components below, as it explains how it all works under the hood.

ScoringProgramDataConnectorPipeClient

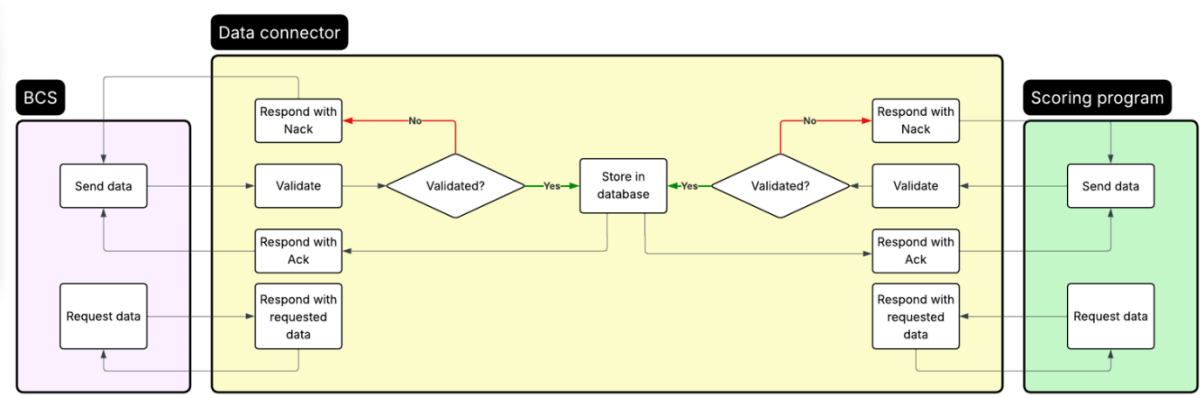
The ScoringProgramDataConnectorPipeClient (DCC) relieves the developer of the task to connect, disconnect and reconnect to BDC and it takes care of serialization and deserialization of the data sent to and received from it. It is written in .Net Standard 2.0, a platform where many other programming platforms should be able to interface with.

Scoringprogram emulator

The scoring program emulator (SPE) emulates a scoring program: it can use predefined data, customised data and data created in its UI to send a full-fledged event to BDC. After launch data can be read from and sent to BDC. For a full testing environment BCS 5 must be installed on the

computer. This will enable visual feedback for data that was sent to BDC and it enables reading back data that was entered on the Bridgemate.

Overview of communication



The scoring program:

- Sends data to BDC.
- BDC validates this.
- Validated data is stored for BCS 5 to retrieve, invalid data is rejected.

BCS 5

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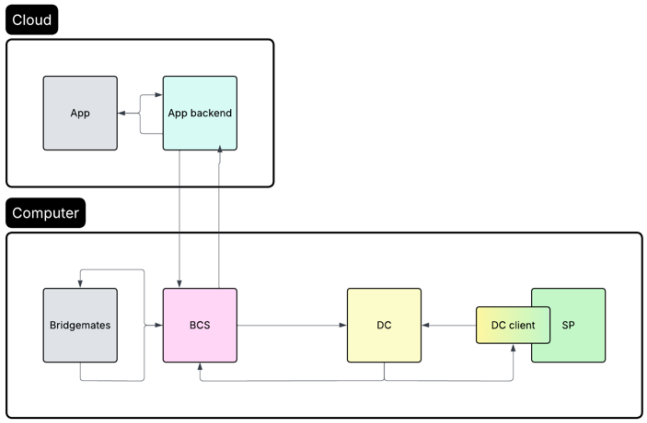
- BDC validates this.
- Validated data is stored for SP to retrieve; invalid data is rejected.

BDC validates data:

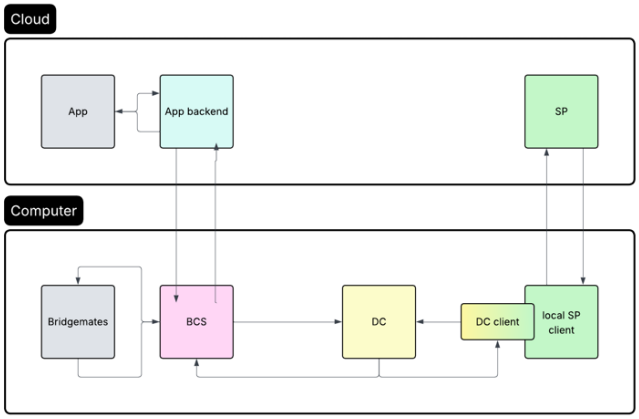
- By storing movement data and player data that SP has sent when it initialized an event.
- All subsequent data coming from SP and BCS 5 is validated against this data. For instance: results must reflect the table, round and competing pairs that correspond with the board number for the result. Other example: the player number for a participation must reflect the player number for a previously sent batch of player data that includes the players' names.

Overview of all communication channels



Because communication with BDC is implemented using named pipes the scoring program, BDC and BCS 5 must be located on the same computer. Cloud communication is only applied for data exchange with the Bridgemate App.

Communication using a cloud-based scoring program



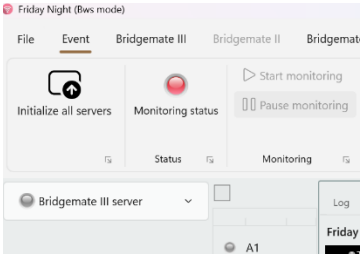
Currently, when the scoring program lives in the cloud, a local scoring program client must be created that takes care of communication with the cloud application.

Installing the components step by step

BCS 5 and BDC

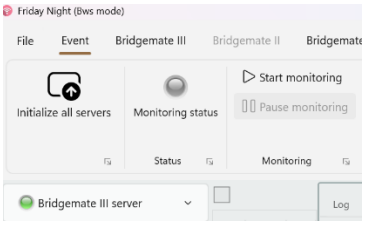
Installation of BCS 5 is necessary as its installer also installs the data connector.

- Download BCS 5 from public2.bridgesystems.nl - /BCS/BCS.Net/
  Check regularly if a relevant new version is available. Make sure to install the MS Access 2010 engine driver as well. The installer will also install the Bridgemate Data Connector and configures it to start when the user logs on to his account.
- Add the '-d' start-up parameter to the shortcut to BCS 5 on the desktop. This will enable its debug mode.
- Attach at least one Bridgemate server to the computer, preferably two: both for Bridgemate II and III. But testing without Bridgemates is possible.
- Run BCS and load a .bws file from the “File” menu. This will give an impression on how BCS 5’s UI works. Mind that the .bws file must be created using MS-Access 2000 (.mdb) format. MS-Access ’97, used by ACBL Score, is not compatible.
- Optionally, to test input from the Bridgemates take the following steps:



Note that the LED for the monitoring status is red, indicating that no data can be read from the Bridgemates. Likewise, the LED before the Bridgemate server is grey, indicating that the server is not synchronized with the data in the .bws file. Click the “Initialize all

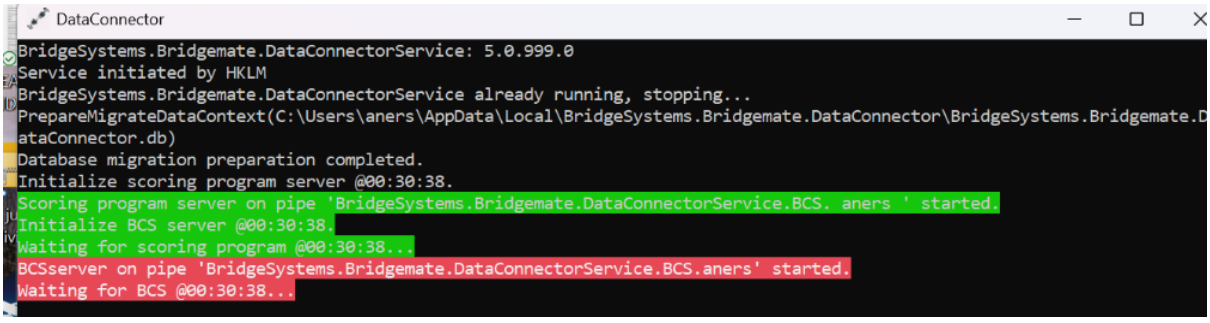
servers" button two times. This will upload the data from the .bws file to the attached Bridgemate servers.



Note that the monitoring LED turns grey, indicating that the Bridgemate servers are synchronized, but that data reading is paused. The LED before the Bridgemate server has become green if the upload of data was successful.
Click the "Start monitoring" button. The monitoring LED turns green and becomes yellow when data is exchanged. Player registrations and results entered on the Bridgemates will now be processed by BCS.

- Check that the data connector is indeed running in task manager:

- Now restart BCS 5 and switch to data connector mode on the Tools tab. In this mode you cannot load any .bws files anymore.
  Close BCS 5.
- Find the BDC folder where BCS 5 is installed and create a shortcut to BridgeSystems.Bridgemate.DataConnectorService.exe in this folder on the desktop.
- Add the -c start-up parameter to it. This will have it open with a console window.
- Double click the icon. You should see this:



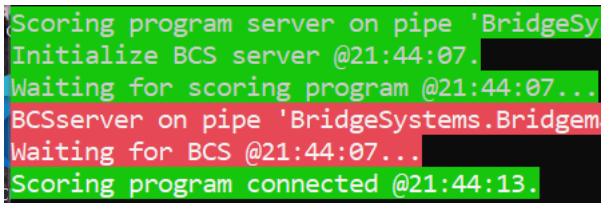
Note that the console tells us that the data connector was already running. Using this shortcut is just for debugging purposes. The end user will not need it.
Also note that when you now close the console window the data connector is indeed closed and will not work until you double click the icon again or log off and log on to your Windows account.

DDC and SPE

- Download the scoring program emulator from [bridgesystems/Bridgemate-Data-Connector-Scoring-Program-Client: Public API client for the Bridgemate Data]

Connector. It is a Visual Studio 2022 project. By checking its code you can get an impression on how communication with BDC should be programmed.

- Run the scoring program emulator and press the “Connect” button on its respective tab. The data connector console should reflect a successful connection attempt:



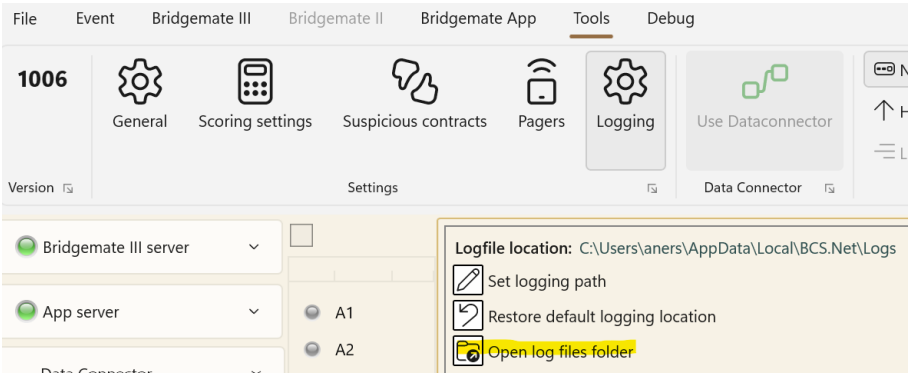
- You can double check that communication is up and running by clicking the "Ping" button.
- The scoring program emulator should explain itself. Take special note of that all buttons have a tooltip describing to which command they are bound.

Debugging features in BCS 5

BCS 5 comes with some debugging features, which may be useful. Mind that these features only become available when BCS 5 is started with the -d parameter.

The log files

The log files can be examined from the “Tools” tab:



Switching to .bws mode

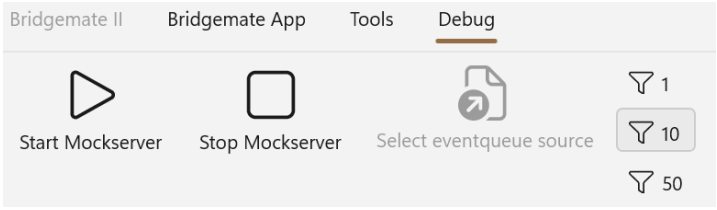
When BCS 5 is launched from SPE it will run in data connector mode. The background is goldenrod. BCS 5 can be made to run in .bws mode by deselecting the “Use Dataconnector” button on the Tools tab. In this mode BCS 5 is fully compatible with BCS 4. The background is slate grey.
Note that there are also buttons to set the data communication method to something other than “named pipes”. This will not work.

Using an existing .bws file as data source.

A .bws file that was used in a live event can be used as the source of a debugging session. This will emulate most of the actions that happened in this event,

- Prepare a .bws file without the data that will be added from the .bws file that will serve as the data source. This can be done by copying it and emptying the ReceivedData and/or the PlayerNumbers table.

- Put BCS 5 in .bws mode.
- Open the empty copy from the File menu.
- Initialize the Bridgemate servers by clicking the “Initialize all servers” button.
- Go to the “Debug” tab:



Click “Start Mockserver”. After a few seconds the “Select evenqueue source” button becomes enabled. Use it to select a .bws file that has data in its ReceivedData and/or PlayerNumbers table.
The “1”, “10”, and “50” filters determine the approximate number of eventqueuitems (player registrations, results) that will be delivered on each polling cycle. The exact number is randomized, so be aware that repeated testing can give different outcomes on the same data.
On the “Event” tab click “Start monitoring”.
First the contents of the PlayerNumbers table is delivered, after that the results.