



## **The new version 2.12 of BKG Ntrip Client (BNC)**

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A new version of the BKG Ntrip Client (BNC) has been released. Originally developed in cooperation of the Federal Agency for Cartography and Geodesy (BKG) and the Czech Technical University (CTU) with a focus on multi-stream real-time access to GPS observations, the software has once again been substantially extended. Promoting Open Standards as recommended by the Radio Technical Commission for Maritime Services (RTCM) remains the prime subject.

Beside its Graphical User Interface (GUI), the real-time software for Windows, Linux, Mac, and Linux platforms now comes with complete Command Line Interface (CLI) and considerable post processing functionality. RINEX Version 3 file editing & Quality Check (QC) with full support of Galileo, BeiDou, and SBAS – besides GPS and GLONASS – is part of the new features. Comparison of satellite orbit/clock files in SP3 format is another fresh ability of BNC.

Simultaneous multi-station Precise Point Positioning (PPP) for real-time displacement-monitoring of entire reference station networks is one more recent addition to BNC. Implemented RTCM messages for PPP (under development) comprise satellite orbit and clock corrections, code and phase observation biases, and the Vertical Total Electron Content (VTEC) of the ionosphere.

The well established, mature codebase is mostly written in C++ language. Its publication under GNU GPL is thought to be well-suited for test, validation and demonstration of new approaches in precise real-time satellite navigation when IP streaming is involved. The poster highlights BNC features which are new in version 2.12 and beneficial to IAG institutions and services such as IGS/RT-IGS and to the interested public in general.