Conventions for mount point naming of real time GNSS observation data streams

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Background

An increasing number of GNSS observing stations across the globe required a revision of observation file naming within the IGS. With the introduction of the RINEX 3 file format for multi constellation observation files, a new concept of file names was discussed. Following this concept, its implementation and a corresponding time schedule were agreed at the IGS Workshop 2014 in Pasadena. Today, an increasing number of IGS stations provide RINEX 3 observations and use the new long file names.

The distribution of real time GNSS observations is realized by so called Ntrip casters. The IGS Real Time Service (RTS) operates a number of those casters across the world. The user connects to a mount point at the caster to receive the data stream. The casters source table provides additional information on the data stream, such as station name, data stream format, list of provided RTCM message types, list of provided constellations, approximate station coordinates or station provider (Figure 1, http://software.rtcm-ntrip.org/wiki/STR).

```
STR;CAS14;Casey;RTCM
3.2;1006(10),1008(10),1019(30),1020(30),1033(10),1074(1),1084(1),1094(1)
,1114(1),1124(1),1230(10);2;GPS+GLO+GAL+BDS+QZS;IGS;ATA;-
66.28;110.52;0;0;TRIMBLE NETR9;none;B;N;2000;auscors.ga.gov.au:
2101/CAS14(1)
```

Figure 1: Source table entry for real time data stream of the IGS station Casey, Antarctica operated by Geoscience Australia. (Caster: http://www.igs-ip.net). The present mount point name is CAS14.

In general, the selection of mount point names is open. At present, 5 character long mount point names for data streams are common within the IGS. This is also true for some regional GNSS networks, such as the European EUREF casters (e.g. http://euref-ip.net) or the experimental caster of the SIRGAS-RT project (http://200.3.123.65:2101). The present 5 character mount point names comprise of the 4 character station identifier of the old RINEX 2 file naming schema and an additional single number to distinguish different data streams of the same station (e.g. data streams in RTCM and RAW formats).

Purpose of the proposal and requirements

The presented proposal suggests a mount point naming schema for observation data streams to be used in IGS RT service.

The proposal of mount point names should meet following requirements:

- The mount point naming convention should promote unique mount point names on different worldwide distributed casters.

- A mount point name should be static over time. A name change would cause problems at the user side.
- There is no need to include content of the source table fields into the mount point name. This is especially true for the data type which is streamed (raw data, rtcm data etc.).

Proposal

In order to meet the first requirement we suggest using the first 9 characters of the RINEXv3 file names. With the widely used long filenames within IGS, this also connects real time data streams and offline RINEX files.

For the station WTZR in Germany, the 9 character code would read as WTZR00DEU.

In order to distinguish different formats of the same station (e.g. RAW, RTCM etc.) a number has to be added:

WTZR00DEU0

WTZR00DEU1

…

There is no need to define what number has to be used for a specific data stream. This information is part of the caster source table and can be used for filtering and search. Nevertheless, it is recommended to use "0" for the best RTCM3 data stream (e.g. RTCM3 MSM4 or RTCM3 MSM7). This ensures, that clients can always expect an appropriate RTCM3 data stream at this mount point. Although RTCM3 is aimed as the standard format within IGS RTS, RTCM2 can be provided alternatively in the rare cases of RTCM3 unavailability.

Format changes, such as RTCM MSM4 to MSM7 or vice versa should not cause changes of the mount point names.

Mount point names should be defined by station providers. Relaying caster always have to use the same mount point name. The level of relays can be given in the source table. In the following example, the (1) in last column of the source table shows that euref-ip caster is the level one caster for ALME0 data stream:

```
STR;ALME0;Almeria;RTCM
3.0;1004(1),1006(10),1007(10),1013(10);2;GPS;EUREF;ESP;36.85;357.54;0;0;
TRIMBLE NETRS;none;B;N;4000;ergnss-ip.ign.es:2101/ALME0(1)
```

Figure 2: Source table entry for real time data stream of the station Almeria, Spain. This station is part of the European Permanent Network (EPN). The real time stream is available from euref-ip.net caster, which pulls that stream from ergnss-ip.ign.es caster and acts as the first level relay for this station.

Consequently, a further relay of the data stream would cause a (2) in the last column of the source table. The caster hosting this data stream for the first time omits this information.

Implementation

During the implementation process, renaming of mount points is needed for large parts of the IGS RT network. In order to reduce negative impacts on the user side, the old mount point names should stay active in parallel with the new names for a reasonable period of time. After implementation of the new mount point names, the users will be informed by the IGS RT data centers about the new

naming conventions and should be encouraged to use them. As soon as the majority of users have switched to the new mount point, the old alias mount point can be removed.

Regional GNSS networks of the IAG subcommission 1.3, such as EUREF or SIRGAS) are encouraged to participate in the review process of this proposal. It would be appreciated if their RT data centers adopt the same mount point naming conventions in order to ensure a unique naming scheme.