Network Coordinator Report

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Abstract

This report summarizes the activities of the IVS Network Coordinator from the establishment of IVS to the end of 2000. It includes an assessment of the network performance in yielding usable data over an approximately 12 month period. The report forecasts activities planned for the year 2001.

1. Network Coordination Activities

The activities of the Network Coordinator fell primarily into two areas: monitoring the status of network station performance and developing station configuration files.

The main effort in network coordination was monitoring the performance of the stations. This was done primarily by monitoring the "ivs-ops" messages from the stations, correlator reports (both prepass and final), and analyst reports. There were virtually no analyst reports in this period. The various reports were checked. If any problems were reported, they were pursued with the station and cognizant experts. Because this information was reported on a per session basis, it was rather difficult to get a clear view of how any particular station was performing. Consequently, it was decided that a station performance data base that stores the information by station should be developed. This data base was started in the spring of 2000. Currently, it is maintained by hand as an Excel spreadsheet. A summary of the station performance is presented in a separate section below.

One of the goals for network coordination is to develop a data base of information about each site and its configuration. During 1999 an ASCII template of information was developed. Each station can fill it out to describe the equipment and environment of the station. So far about half the IVS Network Stations have completed the form. The completed forms can be viewed from the Station Configuration Files link on the IVS Coordinating Center web page.

2. Network Performance

The station performance data base contains a wealth of information about station performance and problems. It includes all reports of problems from correlator pre-passes, correlation reports, analysts, and stations as well as a history of inquiries made about resolving problems. It was started in May of 2000 and includes all information since then. There were no analysts reports except for occasional e-mails about problems processing certain sessions.

It was decided that the correlator reports formed the most reliable, albeit not the most timely basis, for monitoring station performance. (Within the data base, the issue of timely response is addressed by the station and correlator pre-pass reports.) The coverage of sessions in the correlator reports is somewhat spotty due to delays in processing sessions, the unevenness of the delays, and problems related to the start up of the Mark IV. As of early January 2001 the set of correlator reports in the data base covers many, but not all, of the sessions from November 1999 through December 2000. The data base includes 69 sessions with 388 station days (about 5.6 stations per session on average).

Any assessment of station performance is somewhat arbitrary, but the following approach was used. For each station in each session an estimate is made of how large the data loss was. Each station day was then assigned to one of the following categories: (A) No data loss (0% lost), (B) Slight Data Loss (1-6% lost), (C) Moderate Data Loss (7-20% lost), (D) Severe Data Loss (21-70% lost), and (F) Failed (71-100% lost). Again these categories are somewhat arbitrary. The divide between slight and moderate loss was set so that loss of one channel (7%) was considered moderate. Consequently, the slight category includes mostly some RFI, and short data losses, up to a little less than 90 minutes. The divide between moderate and severe was set so that loss of three channels (21%) would be severe. This means that the loss of two channels or gaps of up to about 5 hours would be considered moderate. Severe data loss includes loss of three channels or more, operation with a warm receiver, long data gaps, and other severe problems. Failure includes any cases where the data from the station is not useful geodetically. The definitions of these categories will probably undergo some refinements in the future.

Using the above criteria, the 388 stations days in the data base are distributed as follows: (A) No Data Loss, 48%, (B) Slight Data Loss, 25%, (C) Moderate Data Loss, 12%, (D) Severe Data Loss, 3%, and (F) Failure, 6%. In essence this means that 94% of the station days was usable, although this statistic ignores the fact that some usable days were significantly degraded. In the future reports, the cause of the data losses will be described as well.

3. Plans

During the year 2001, the plans for network coordination include: further use and development of the station performance data base including possibly making it accessible from the web, encouraging the remaining stations that have not submitted site configuration files to do so, development of a local site survey data base and the development of performance standards.

It was recognized in 2000 that it would be useful to develop a data base of site tie information, both for connecting VLBI stations to local monuments, but also between VLBI and other collocated techniques. This will be developed further next year.