



EVALSO, an enabling communication infrastructure for Astronomy



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Abstract: EVALSO (Enabling Virtual Access to Latin-American Southern Observatories) is an international consortium of nine astronomical organisations, and research network operators, part-funded under the European Commission FP7, to create and exploit high-speed bandwidth connections to South American observatories. The poster, after describing the genesis of the project and the selection and construction of the communication infrastructure, analyses the application aspects and the possibilities that the new infrastructure can open within the astronomical and education community, special attention is given to German reality where two of the project members, RUB and ESO, are located.

Objectives: For very obvious reasons, Observatories tend to be built in remote areas where high capacity communication infrastructures are not normally available or easily accessible. This is the case for the ESO Paranal and the Cerro Armazones Observatories, located in the Atacama Desert, in the Northern region of Chile. To fully exploit such remote sites high capacity links, i.e., bandwidth Gigabit-per-second (Gbps), are necessary.

Main tasks:

- Link upgrade. The creation of the high bandwidth communication infrastructure to connect the Observatories with the home institutions.
- Fast data access. Drastic improvement of the time needed for making the data available from the moment of the observation
- Virtual presence. To enable scientists and engineers to interact closely with onsite personnel and instrumentation
- New observing modes. Establish and test new innovative observing schemes

Fast data access: Iperf bandwidth measurements between ESO/OCA and REUNA are showing 925 Mbits/sec and 980 Mbits/sec. Figure 3 shows bandwidth measurements obtained between the OCA observatory and the home institution in Bochum.

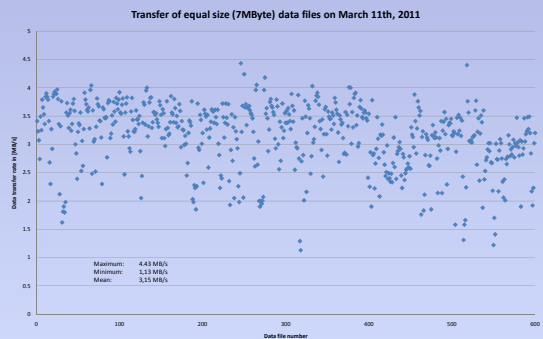


Figure 3. Bandwidth measurement between OCA and AIRUB.

Link upgrade:



Figure 1: EVALSO general layout

Virtual presence/Remote engineering:



Figure 4: Surveillance cameras installed on OCA site

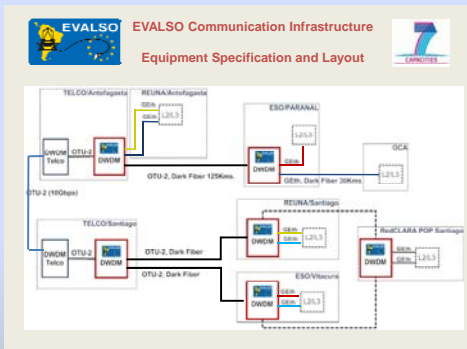


Figure 2: Communication Infrastructure

After a disc crash in January 2011 the software for a telescope control computer was completely reinstalled over the network. In early April a malfunctioning servo controller was tested and the results distributed in real time to the different engineering departments. Without the high speed link these remote engineering tasks would have been impossible.

New observing modes: In getting experience and confidence in the fast link EVALSO can improve the scientific exploitation of the capabilities of both observatories through innovative operations schemes, which will act as pathfinders for the operation of future facilities like the European Extremely Large Telescope.



Participant organizations

