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OnlineV2- an upgraded control-monitor software for GMRT

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Abstract. An upgraded control monitor system to allow for faster and better performance of the GMRT antennas, GUIs and a web-based astronomer's interface is currently under development at GMRT. This paper briefly describes the software and the milestones that we have achieved. We aim to complete the development by October 2014.

Keywords : Instrumentation:interferometers –control monitor software

A control and monitor system (CMS) consisting of hardware and software components is responsible for controlling the antennas and the electronics associated with it in addition to monitoring the parameters and the system performance. The CMS at GMRT consisting of a monitor and control module (MCM), an antenna base computer (ABC) and a communication handler (COMH) as the main hardware components and ONLINE as the software was developed by NCRA. This indigenously developed system (e.g. Rao 1991, Technical report at

`http://ncralib1.ncra.tifr.res.in:8080/jspui/handle/2301/191.`)

has been successfully supporting GMRT observations since late 1990s.

An expanded system using present day technology and supporting features of the GMRT upgrade is desirable and the hardware work for this was started a few years ago with the development of a new MCM (e.g. Kanade et al.
`http://www.gmrt.ncra.tifr.res.in/gmrt_hpage/Upgrade/MCM_testing.pdf`) using a Rabbit processor to replace the 8051 μ controller. An upgraded version of ONLINE is currently under development at NCRA and is referred to as OnlineV2. OnlineV2

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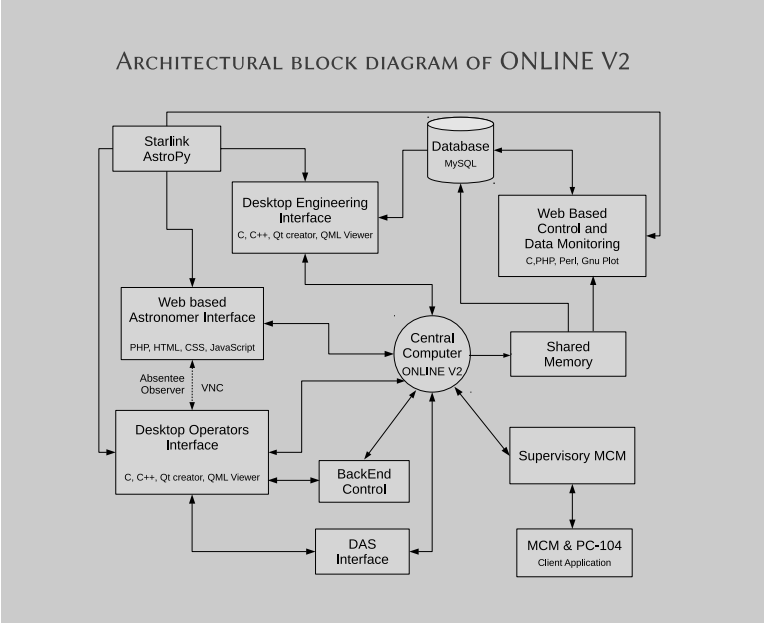

Figure 1. Architectural design of Online V2.

is Linux-based and aims at speeding up command execution and reducing the radio frequency interference by using the power of the fast 1 Gbps Ethernet connection being enabled at GMRT for the 30 antennas and the in-built capabilities of the Rabbit processor on the MCM card. OnlineV2 uses and expands the control algorithms developed for ONLINE on a different platform in a new framework. Web-based utilities are introduced in OnlineV2. Some of the new features in OnlineV2 are:

1. Enhanced functionality of control software; generalized framework to support expansion.
2. Fast background monitoring of system parameters.
3. Extensive web-based control data monitoring tools allowing for real time and statistical studies.
4. Web-based astronomer's interface - support to absentee observing.
5. Customized graphical interfaces for operators, engineers and astronomers.
6. Python-based environment.

Milestones and timeline: The software development continues on the blocks shown in Figure 1. The communication between the MCM and OnlineV2 has been enabled using multi-threading; multi-antenna communication has been successfully implemented; fast control data monitoring has been demonstrated with continuous mon-

itoring of antenna (C03) shell temperature; 0.5 second control data monitoring has been made operational; data logging in MySQL database has been enabled; GUIs - first version for desktop applications and web-based applications have been developed; test setups in lab and C03 are functional; several utilities for the web-based astronomer's interface have been developed; internal discussion forum using Vanilla has been set up and the first version of a python-based environment has been developed for OnlineV2.

Work on this project started in October 2012. The first test version is being targetted for April 2014 with the final version expected in October 2014.

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