The Mark 5C VLBI Data System

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The rapid adoption of disk-based VLBI data systems has had a tremendous impact on VLBI capabilities over the past few years, increasing sensitivity through higher data rates, vastly improving reliability over old magnetic-tape systems, and lowering data-recording costs by a factor of 10 or more. The Mark 5C disk-based VLBI data system is being developed as the third-generation Mark 5 disk-based system, increasing the sustained data-recording rate capability to 4 Gbps. It is built on the same basic platform as the Mark 5A, Mark 5B and Mark 5B+ systems, which have become the *de facto* standard in global VLBI applications, and will use the same 8-disk modules as earlier Mark 5 systems.

Unlike its earlier brethren, which used proprietary data interfaces, the Mark 5C will accept data from a standard 10 Gigabit Ethernet connection. Data sources for the Mark 5C system will be based on new digital backends now being developed, specifically the DBE2/DDC in the U.S. and the dBBC in Europe.

Use of a standard 10 Gigabit Ethernet connection allows easy data manipulation and transport using readily available commercial 10GigE devices, such as switches and routers, which adds flexibility at relatively low cost and meshes well with standard global high-speed networks.

The data format for the Mark 5C will conform to the VLBI Data Interchange Format (VDIF) specification being developed by an international VLBI standards committee. The adoption of this format by heterogeneous VLBI systems will enable easy interchange of data, particularly over global high-speed networks.

The Mark 5C system has been adopted by NRAO as part of the VLBA sensitivity upgrade program, and is expected to be rapidly adopted by both global astronomy-VLBI and geodetic-VLBI programs.

Mark 5C system specification and development is supported by Haystack Observatory, NRAO and Conduant Corporation. Prototype Mark 5C systems are expected in late 2008/early 2009.