

National Radio Astronomy Observatory

Charlottesville, Virginia

January 28, 1983

To: COG Committee

From: A. Shalloway

Subject: Digital Data Switch Description

I am presently in the process of designing a digital data switch (DDS). The purpose of this memo is to present a brief description, a progress report and an idea of availability.

DESCRIPTION

The DDS will be very similar to the voice PBX's at all of our locations except its purpose will be to connect terminals, computers, word processors and facsimile equipment together rather than human voices.

A person at a terminal wishing to communicate with a computer would type in a specified character (probably the RETURN key) and wait for an answer. The DDS would return with a statement (such as NUMBER PLEASE) and the person would type in the mnemonic name of the device with which he wishes to communicate. This is the equivalent of dialing a phone number. The DDS would connect the terminal to the computer and send a message to the terminal (such as CONNECTED), or if there are no ports available on the computer, the DDS would send a message to the terminal informing the person that the line is busy and that there are X number of requests ahead of this request and ask the person as to whether he wishes to be put in line.

AVAILABILITY

If a person wishes to communicate with a computer at another site, he goes through the switch at his site then through the NRAO digital communications network and then through the switch at the remote site. In this case, he goes through something similar to dialing one number and then a second number. When necessary to go through one or more sites, we may program in transfer ports in the statistical multiplexers to reduce the amount of dialing required.

The DDS is designed in units of 64 ports each. With one set of micro-computer and control cards we can add port cards (64 ports at a time) up to 256 ports. We then add some additional microcomputer cards and control cards for each additional 256 ports. The system as designed can easily go to 1024 ports and with some addition - which can be added later - can continue to grow. All ports can simultaneously

accept 9600 baud asynchronous data. They can also accept synchronous data but at present there is no method for dialing in synchronously. This could be added later if for some reason it was so desired.

Each port of the DDS can be programmed to be disconnected if no transmission occurs for a predetermined time. This time can be from 10 to 150 minutes or infinity (meaning: do not disconnect).

In Charlottesville, when the wiring is completed, a terminal can be plugged in to a telephone module in any room or office that has been predesignated for this purpose. The communications between the terminal and the DDS is then carried over the already installed telephone lines. The telephone module into which the terminal is plugged will be an 8-wire module so that the terminal cannot be inadvertently plugged into the telephone system.

PROGRESS REPORT

About 70% of the design has been completed. None of the drawings have been officially completed nor have any of the layouts or wiring lists been completed. There will also be considerable programming required on the microprocessor.

The intention is to put the first DDS in Charlottesville and the next at the VLA site and etc. It is hoped that we can get Chuck Broadwell to come to Charlottesville for a limited time and help with the project; if so, there is the possibility of completing the DDS in 1983.

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