

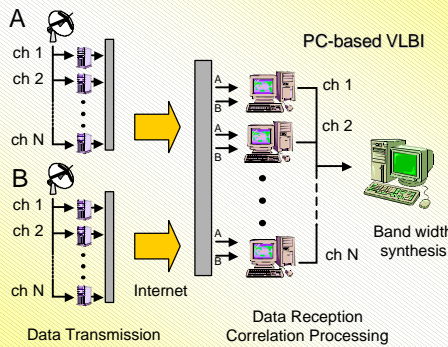
# Internet VLBI system developed at CRL

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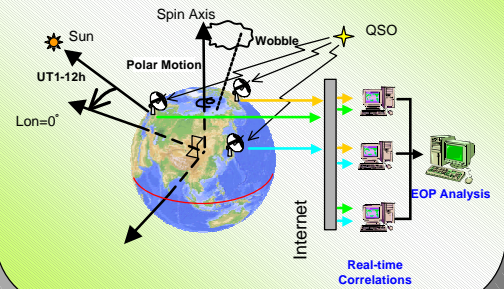
Communications Research Laboratory \* Nihon Tsushinki Co.Ltd.

The Internet VLBI system developed at CRL is dedicated to taking over current geodetic VLBI system. A geodetic VLBI system usually receives 14 to 16 frequency channels at S and X bands. Each channel data are transmitted independently by using the IP (Internet protocol) technology. Thus, only establishing the system for one channel, we can easily expand it to the multi-channel system, i.e., geodetic VLBI system. We have been developing the system as a PC-based system consisting of a PCI-bus sampler board and PC softwares to make real-time data transmission, reception and correlation. In parallel with the development of the real-time system, we are developing K5 data acquisition system consisting of PCs equipped with a PCI-bus sampler board and hard disk drives. K5 enables us to carry out not only real-time operation but also off-line operation.

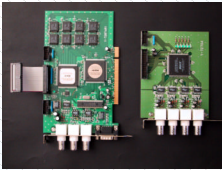
## Multi-channel Internet VLBI system



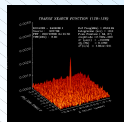
## Real-time monitoring of Earth Orientation Parameters



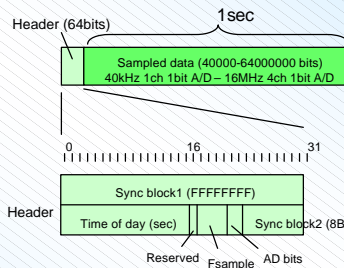
## PCI Sampler board (IP-VLBI board)



PCI Sampler board (IP-VLBI board)



First Fringe for 16MHz sampling



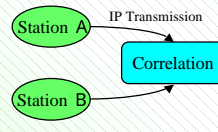
Sampler board output data format

### Specifications of Sampler Board

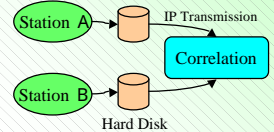
Reference signals	10MHz (+10dBm), 1PPS
Number of INPUT CH	1 : main board only 4 : with auxiliary board
A/D	1, 2, 4, 8 bits
Sampling Freq.	40kHz, 100kHz, 200kHz, 500kHz, 1MHz, 2MHz, 4MHz, 8MHz, 16MHz

## Supposed operation forms of Internet VLBI

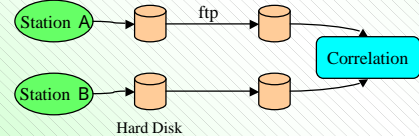
### Real-time VLBI



### Quasi real-time VLBI



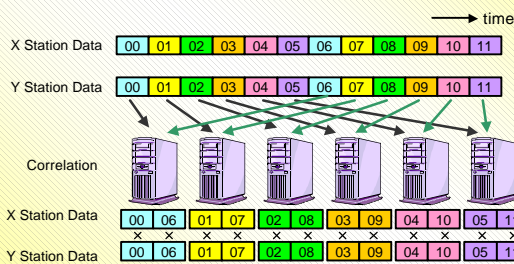
### Off-line VLBI (ftp-VLBI or e-VLBI)



24-hour session { scan length : 200 sec  
number of scans : 300

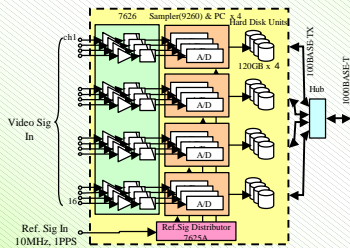
Data rate 256Mbps (16ch X 16Mbps) → 1.92TB  
64Mbps (16ch X 4Mbps) → 480GB

## Software correlation processing (time distributed processing)

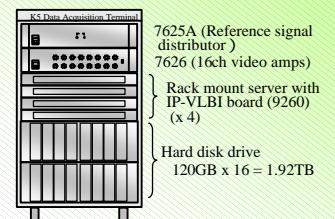


## K5 (provisional name and coming soon)

### Data Acquisition Terminal Block Diagram



### K5 PC-based Terminal



### K5 PC-based Correlator

