

Optical Fiber connected VLBI Array
and
the Correlation Processor
in Japan

光結合通信系及び分散相関器

Noriyuki KAWAGUCHI

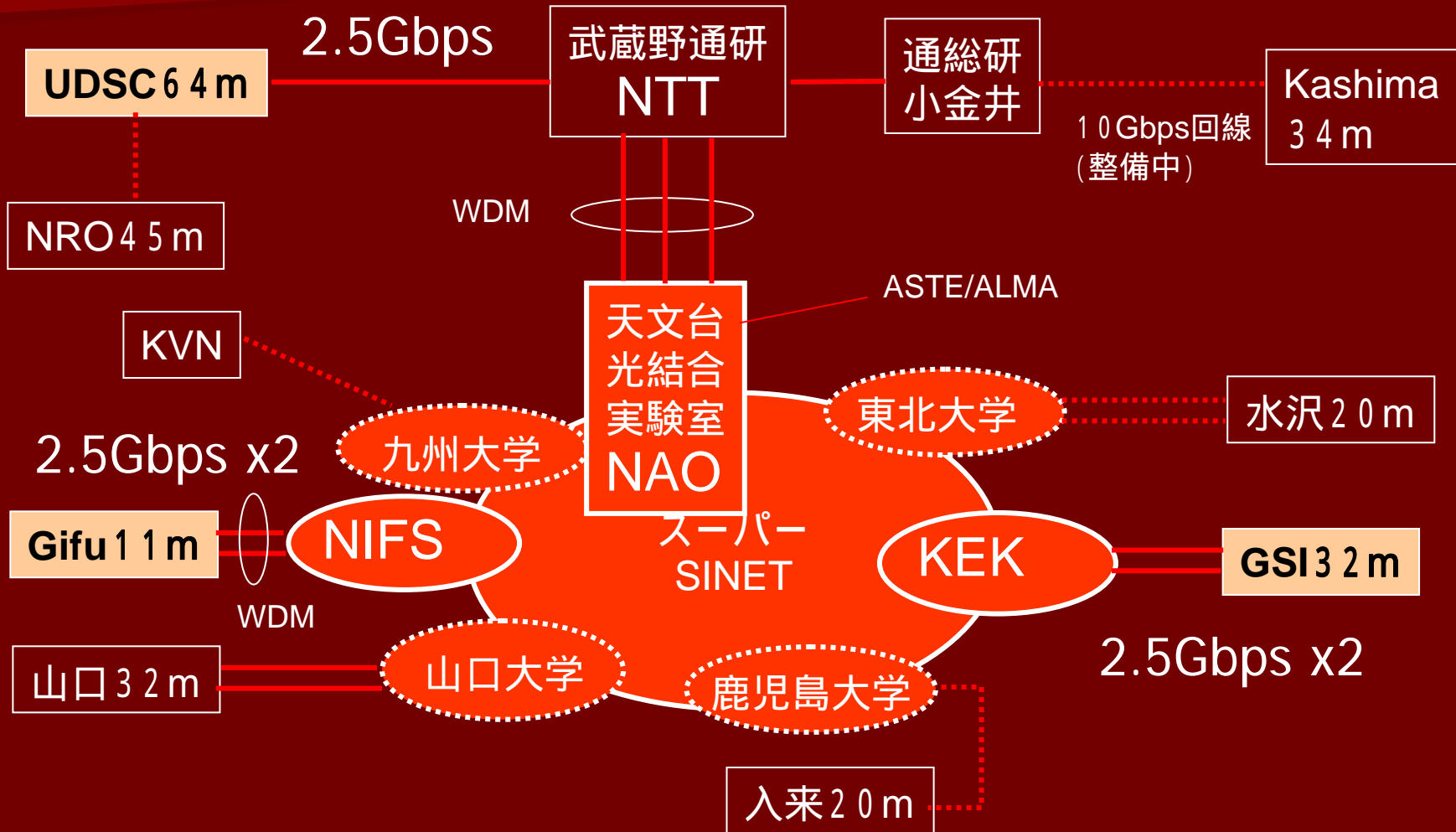
National Astronomical Observatory

2004.8.9

Correlator WS@Kashima

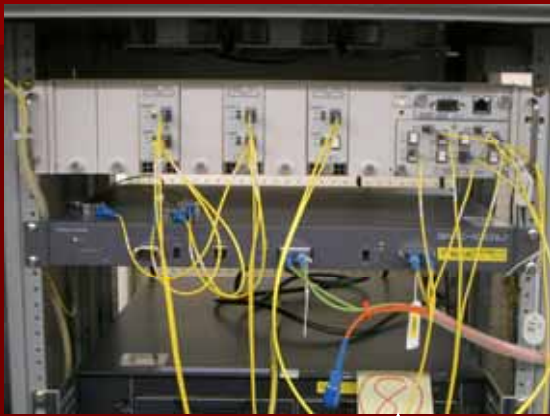
e-VLBI Network in Japan

(2004年5月現在)



Super SINET connection in Gifu

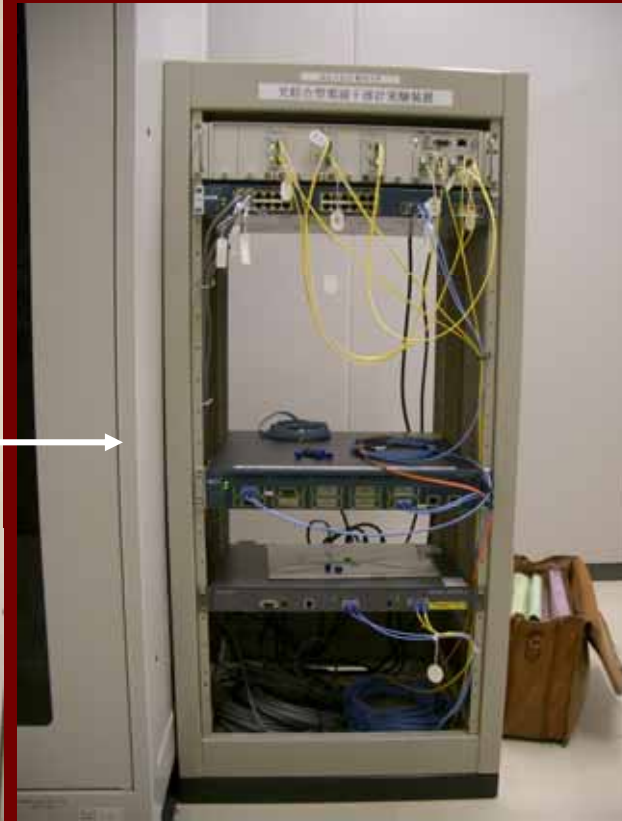
2004年3月10日



Gifu
University



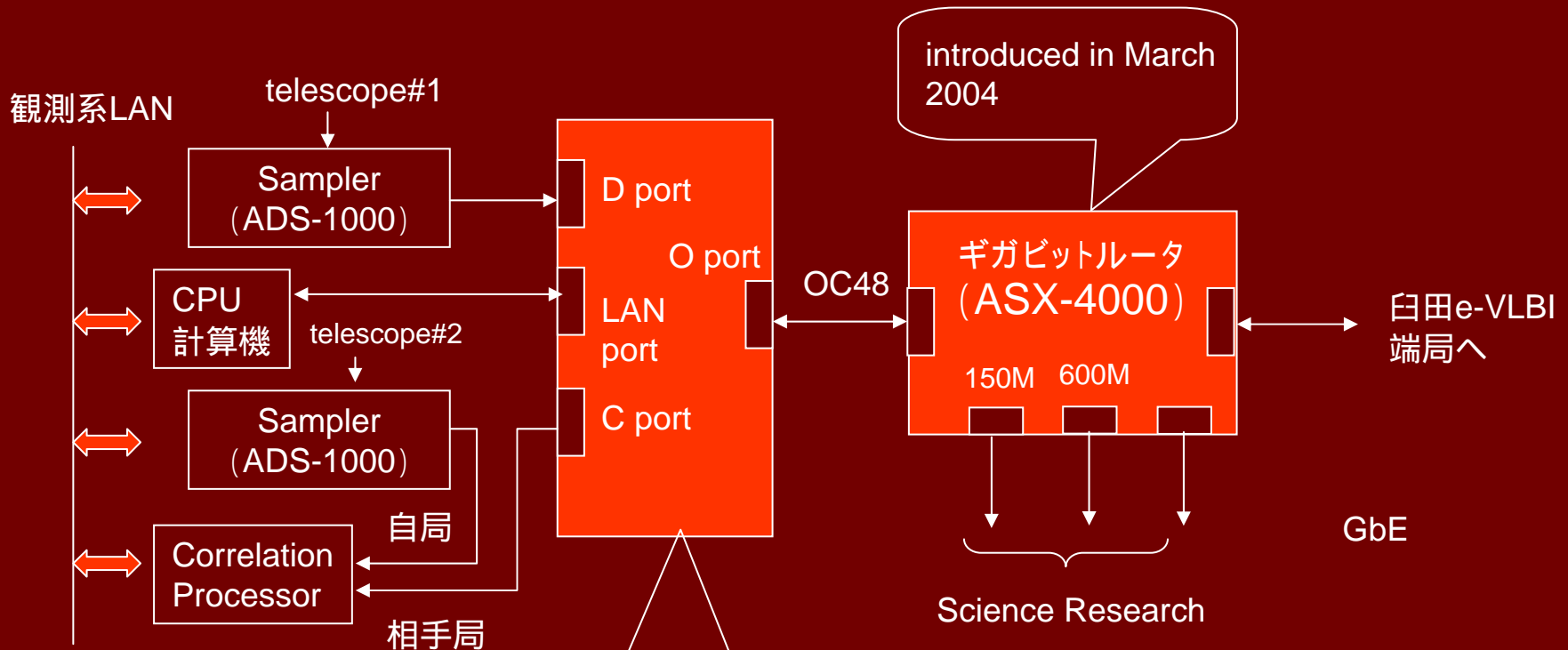
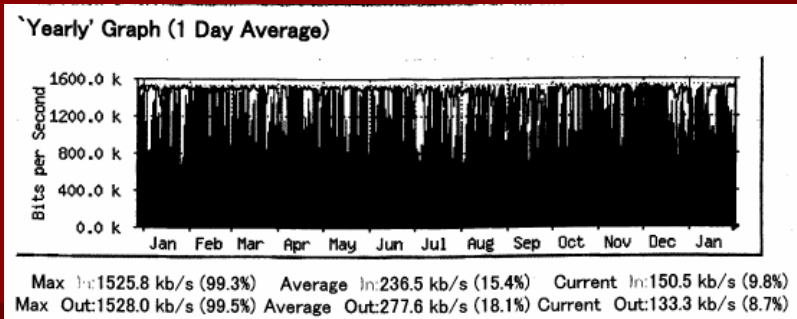
NTT
Mino-
Kamo



NIFS



Approach to NRO



introduced in March 2004

Gigabit Network Access Unit developed by NAO

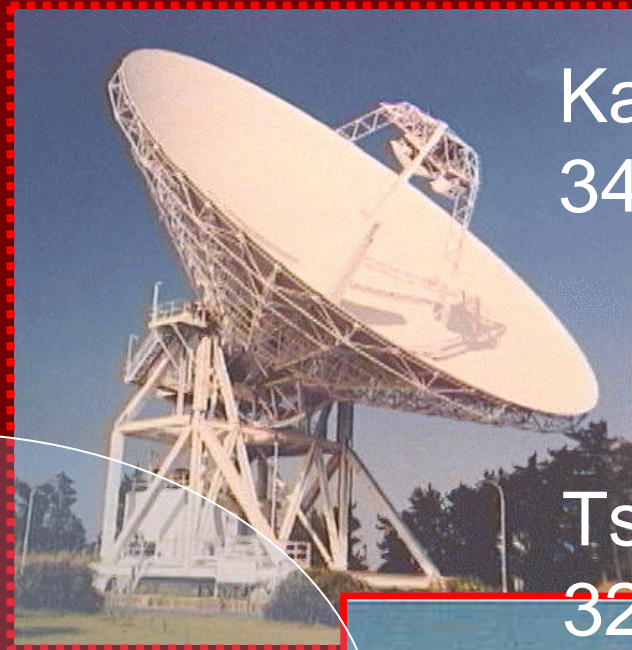
- 観測中でないときはOC48の最大速度が利用できる
- 観測中でも60Mbpsの利用が可能

e-VLBI Array around Tokyo Area

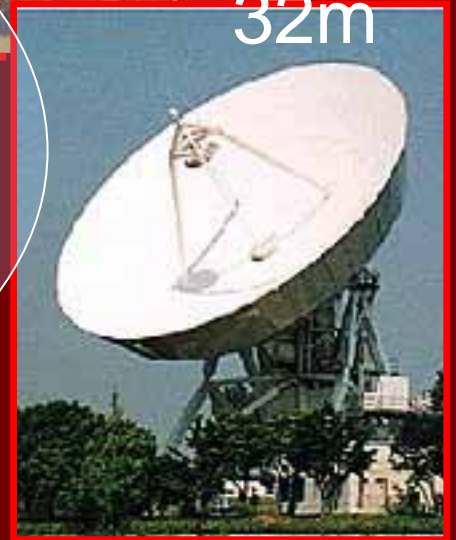
Usuda
64m



Kashima
34m



Tsukuba
32m



Nobeyama
45m



Super SINET



Gifu 11m

Observing Instruments



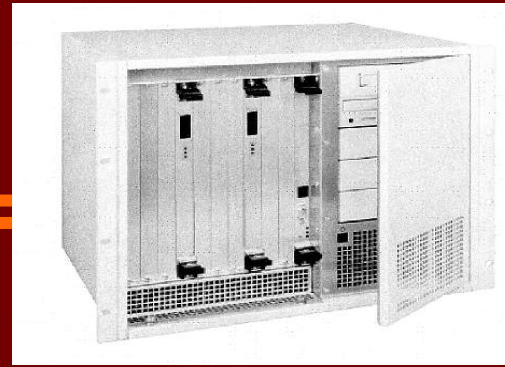
Telescope



ADS1000
(NiCT)

e-VLBI Correlation
Processor

Network Unit

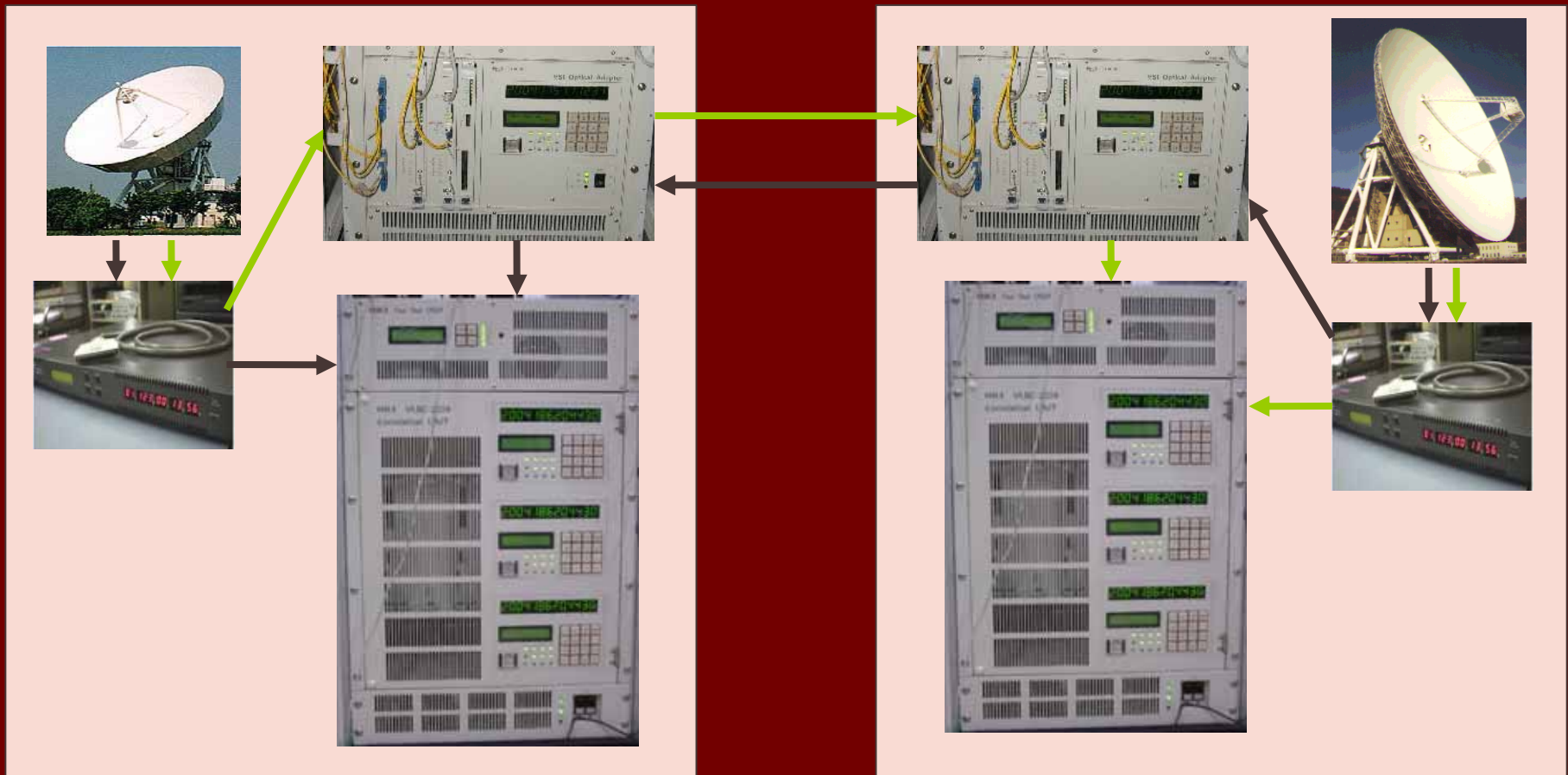


Bidirectional
2.4Gbps
3 Lines
STM-16
/OC-48



e-VLBI Operation

- Correlation works are shared in both sites.



e-VLBI Correlation Processor

- Three Baselines
 - 3-Station Data Distributor
 - 3 Correlation Units
- 2048 Mbps
 - 1024 Msps, 2bps
- 256 Lags
- 1-second Integration



Simple Operation

e-VLBI Correlation Processor



Correlation Parameters



Station Position

Source Position

EOP

Observing Time

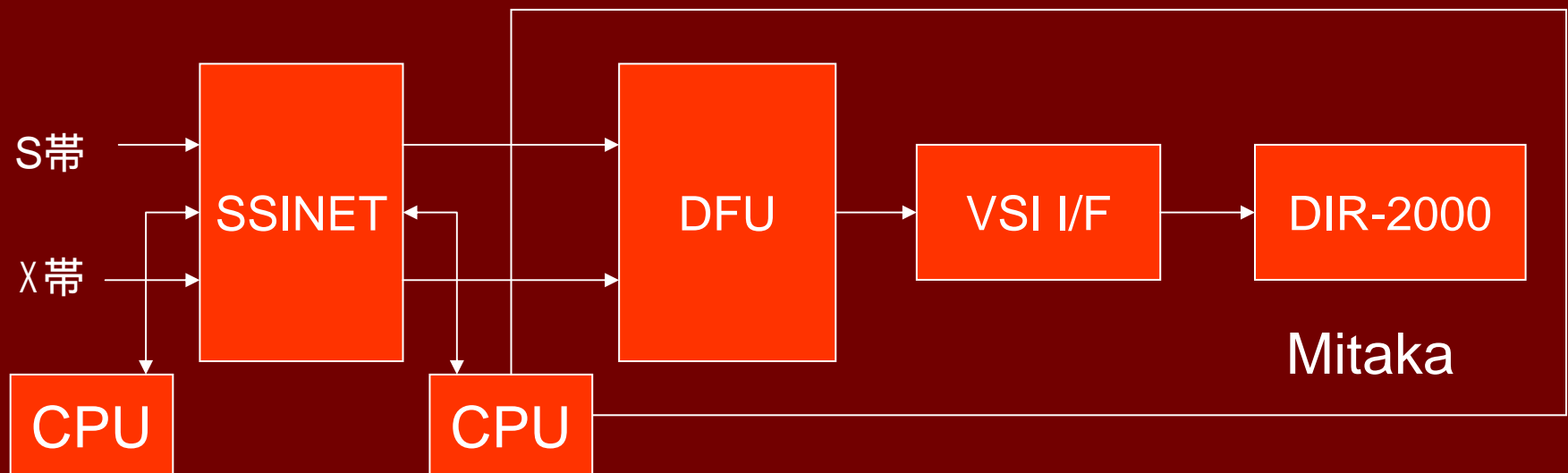
Hardware Parameters are
calculated by
the inside 'firmware'

e-VLBI Applications

Tsukuba 32m Recording in Mitaka

- VERA Application -

- New Network Units has the own comm. channel
 - GbE
 - Observation Control
- Gigabit Data Recording in Mitaka via e-VLBI line



Storage and Transfer

- High Speed Sampling
 - 1GHz, 2bit
- Storage System of Ultra Large Capacity
 - 22 TB for 24-hour observation
- Data Transfer via communication lines
 - As fast as possible, hopefully in real time