EXPANDED VLA DATA TRANSMISSSTION SYSTEM

Mike Revnell
NRAO Socorro
Electronics Division
EVLA REQUIREMENTS

- 16 GHz bandwidth to the correlator at 3-bit quantization.
- 4 GHz bandwidth to the correlator at 8-bit quantization.
- Digitize at the antenna.
- Keep the VLA running during the upgrade.
STATUS OF DTS

- 8-Bit digitizers and DTS components in production. 10 antennas outfitted, 9 in production use with VLA.
- 3-Bit digitizer prototype functional.
DTS ANTENNA MODULE

- Digitizing in the antenna makes RFI a big concern. Module measured at over 85dB shielding.
- Digitizers and all high-speed digital logic for one baseband pair contained in a single module.
- Minimize number of electrical connections.
- Based on telecom OC-192 optical components.
- Altera Stratix FPGAs for data handling.
OPTICAL FEATURES

- DWDM puts 12 OC-192 laser channels on one single-mode fiber.
- EDFAs for more distant antennas.
- FC/(A)PC style optical connectors provide good RFI isolation.
DEFORMATTER

- Receives optical signals, deframes and synchronizes data for correlator.
- Contains digital transition filter and DAC to drive VLA base-band system.
- Will install as a daughter card onto the WIDAR correlator station card.
- For interim operations fits in a standard VME card cage.
DIGITIZER SIDE OF DTS MODULE
DTS FRONT PANEL
FORMATTER BOARD
DEFORMATTER BOARD