Data Flow Diagram
Capabilities

Proposed Application Capabilities
- A single application running on the PPC-440.
- Receive and process commands that manage the DDS.
- Initialize and configure the DDS with a particular FPGA personality and capabilities.
- Set and query particular DDS features during operation.
  - **Timing Features**
  - **Clock Frequency**
  - **Synchronized Time**
  - **Valid Data**
  - **Mark5C Data Frame Format** -
    - The synchronized time epoch is 00UT 1 Jan 1990.
  - **Mark5B Compatible Data Frame Format** -
    - Synchronized time is loaded using VLBA BCD time code.
Capabilities

- Query the state of the DDS.
- DDS Setup
  - General setup –
    - channel gain mode.
    - ADC sample statistics.
    - channel sample statistics.
  - Specific feature setup
    - channel bandwidth.
    - LO frequency for each BBC.
    - sideband indicators.
    - oversampling factor.
- Data-mode Configuration Setup –
  - data transport parameters.
  - VLBI data payload formats: Mark5C and Mark5B compatible
  - FPGA core parameters and 10G Ethernet interface
  - MAC addresses - support up to 16 MAC address of 48 bits.
EVLA Executor

- Script
- EVLA Executor
  - VLA Correlator
  - CMP
  - EVLA “Antennas” Modules
    - VLA Antennas
VLBA Executor

Station Computers (VMEs) -> MK-V
Script -> VLBA Executor (LINUX)
VLBA Executor (LINUX) -> Modules
VLBA Executor (LINUX) -> CMP-Like Thing
VLBA Executor (LINUX) -> DBE
DBE Control System

- VLBA Control File is processed via Python
  - Python including File/Script

DBE Control System Diagram:

1. **Process Schedule (Python Script)**
   - Antenna pointing data
   - DBE configuration data

2. **Configuration of DBE**
   - DBE configuration data

3. **Generate Telescope Calibration Data**
   - Calibration data

4. **Generate and Propagate Delta X, Y Data to VME**
   - Delta X, Y data

5. **DBE**

   Issue: Will the DBE need to send Calibration Data messages back to the Executor? If so, does this interface exist or is it possible? Yes, the DBE will need to send calibration to the monitor data stream. Reference pointing data will also need to be sent back to the executor. These interfaces do not exist.

6. **Operator**

7. **Archive DB**

   Issue: Is the DBE responsible for generating and propagating alert and monitor data to Operator GUIs and Archive DB? If so, who is responsible for creating this interface? The data will need to be propagated to the user interface.
VLBA Control File is processed via Python

DBE Control System

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  - DBE configuration data
  - Configuration of DBE
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- Generate and Propagate Delta X, Y Data to VME
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Python including File/Script
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