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Corrélateur WIDAR Correlator

Master Correlator Control Computer (MCCC) Requirements & Status

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Expanded Very Large Array

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Outline

- There is a bit of confusion when it comes to terms & acronyms, this presentation provides definition for MCCC, VCI & Configuration Mapper.
- Requirements for the various stages of testing.
- Questions. Are there any issues ?

The diagrams used in this presentation are copied from the NRAO document:
"WIDAR Prototype Correlator, Schedules, Testbeds, Software" Version 3.0
Author: Bill Sahr

Definitions

- **Master Correlator Control Computer (MCCC)** is of the shelf computer system running software that provides a single point of access for monitoring & controlling the correlator.
- **Virtual Correlator Interface (VCI)** is an interface between the correlator and the ***user***.
- In the EVLA system, the user is Observation Executor, but user can be any software application able to generate and transmit VCI messages.
- **VCI is a protocol** (a set of rules) that defines content and format of the messages exchanged between the user and WIDAR correlator. VCI also includes (defines) underlining transport protocol.
- In the WIDAR correlator, software that implements VCI is running on the MCCC.
- **Configuration Mapper**:
  - Is a software package that implements part of VCI protocol relevant to configuration of the correlator.
  - It translates VCI configuration messages into configuration of the correlator subsystems: Station Board, Baseline Boards, Switching Boards, Backend, etc.
  - Configures correlator subsystems as required and maintains correlator status.

Timeline

The following two diagrams show configuration for:

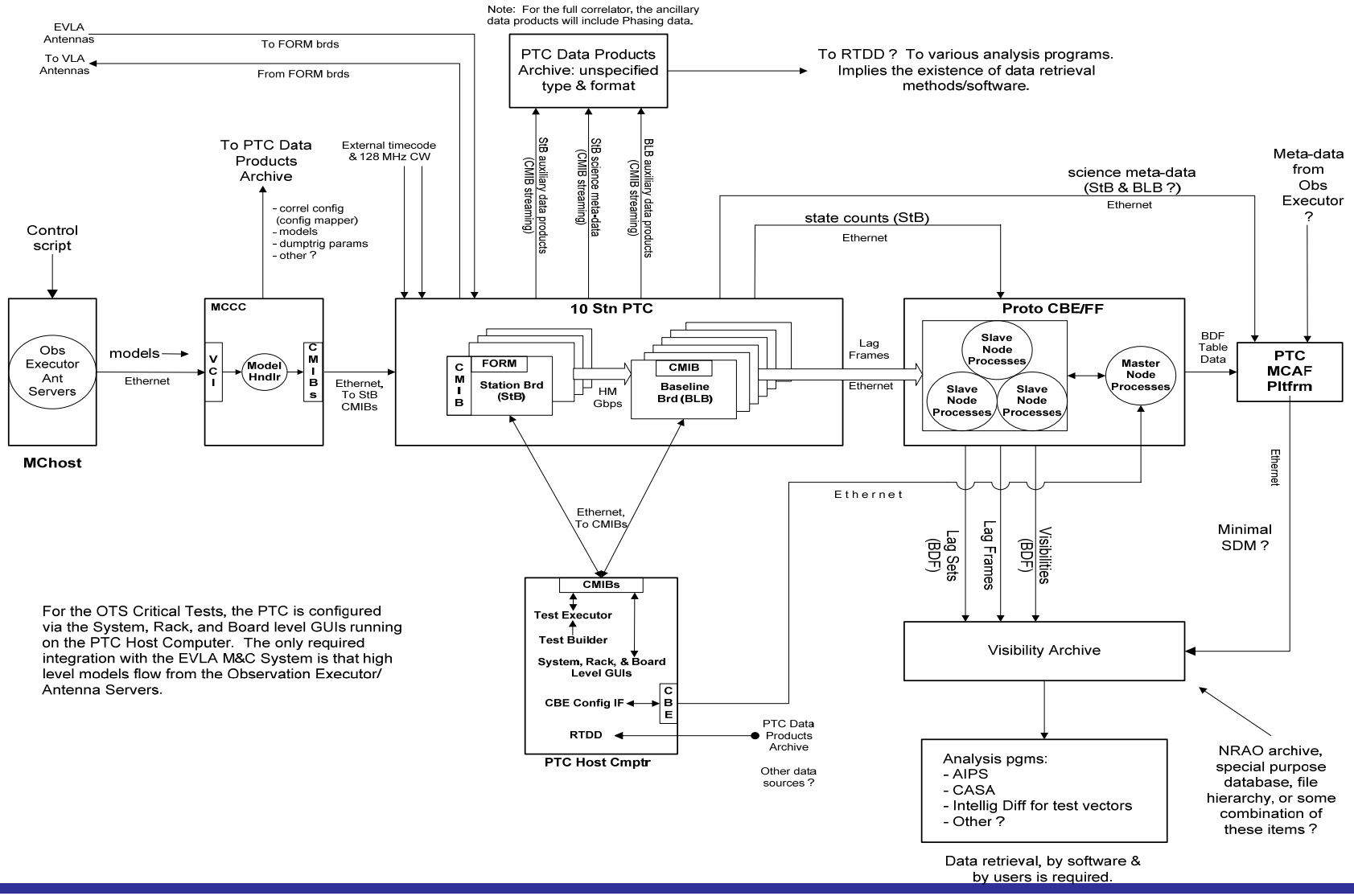
1. Critical on-the-sky testing needed to prove that hardware is working.
   - Initial plan for this phase (currently scheduled for mid Aug. 2008) was to use test tools (Test Builder & Test Executor) for configuration and monitoring.
   - Delay models are generated by Antenna System, therefore MCCC & Station Board CMIB must be able to accept models in XML format.
   - MCCC Model Server is simply forwarding models to the Station Board (implementation is simple).
   - There are some opinions that, VCI is needed in this phase in order to fully integrate Antenna System, Correlator and SDM.

2. System Integration (may start in June 2008, if hardware is delivered to VLA) and limited observing.

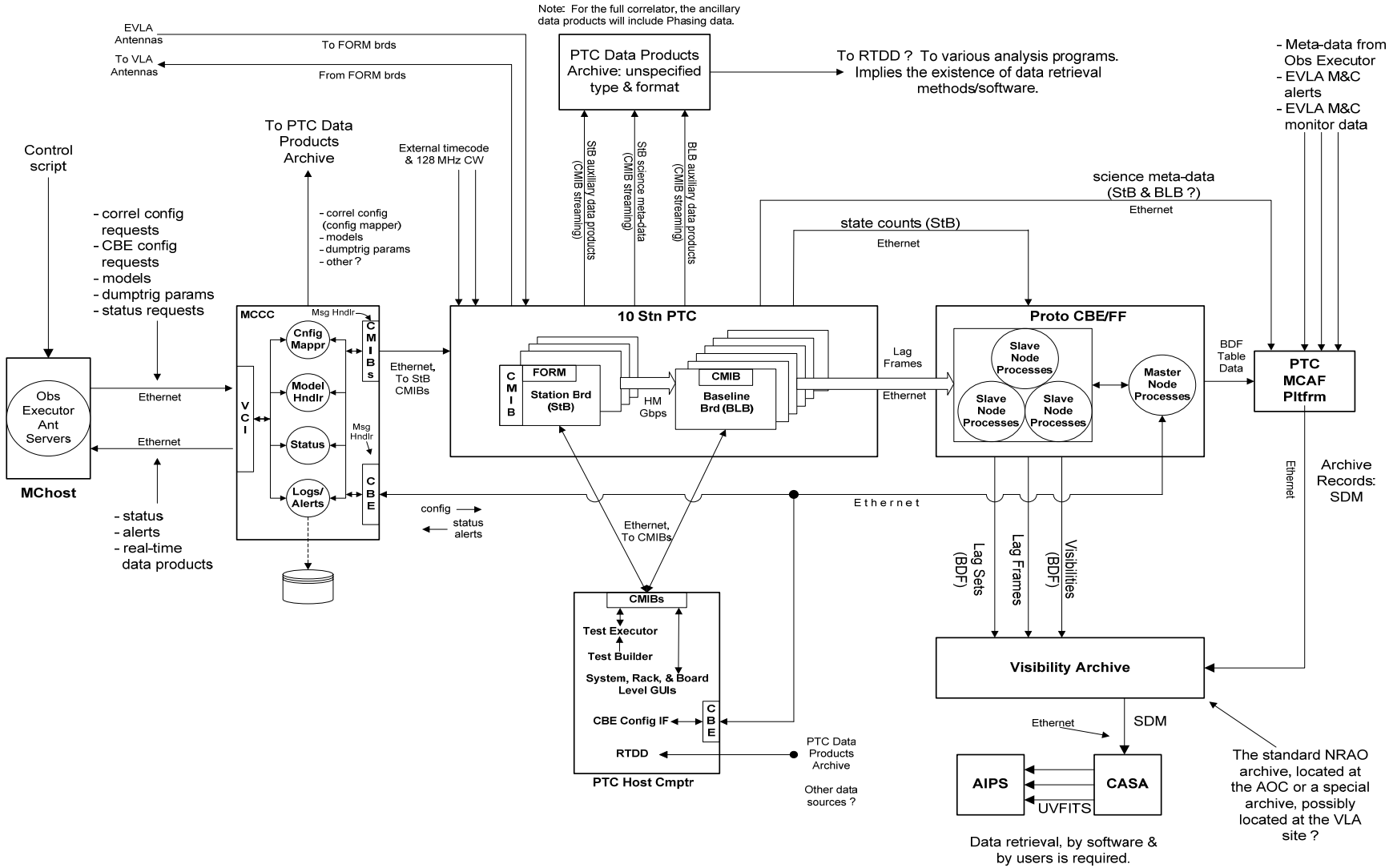
   For that phase MCCC should provide:

   1. Configuration Mapper
   2. Correlator Status
   3. Model Server
   4. Logger

Critical On-The-Sky Testing (aka Critical Hardware Tests) – Aug. 2008



System Integration (possibly June2008), Limited Observing - Q3 2008,



Status

1. Still need to define the final version of VCI protocol.
2. Need to define priorities for implementation of the Configuration Mapper.
3. In order to configure the correlator using Configuration Mapper we need Observation Executor and CMIB software that can process configuration generated by the Configuration Mapper.
4. Need a GUI tool able to provide visual representation of the correlator. Such tool would be used for testing of the Configuration Mapper and Observation Executor.
5. Much of the existing Configuration Mapper code need to be re-written, but provides a good basis for the final implementation. Should be able to provide a basic functionality till mid 2008.
6. Testing of the interface between Configuration Mapper and Observation Executor should start in June 2008, if not earlier.
7. Basic implementation of the Model Server will be available in June 2008.
8. Correlator status may not be available, may need to manually enter status, and rely on Board & System level GUIs for monitoring.
9. The ability to provide logs for all the correlator subsystems will not be available in June 2008. Need to consider deliverables in more detail.

Plan for the next week

- Need to define a *final version* of VCI, i.e. the interface between the correlator and the rest of the system (for EVLA that's Observation Executor).
- Over next 4 work days (*and perhaps weekend*) requirements for the VCI and Configuration Mapper will be discussed in detail.
- The following documents will be basis for the discussion:
  - Presentation "WIDAR configuration for the interested user"
  - Configuration Mapper RFS and
  - VCI Protocol Specification, Version 3.0

Objective:

- Define as much details as possible: complete list of parameters for various functions/modes, range and format for each parameter.
- Define priorities, i.e. functionality needed for critical tests (recirculation, pulsar binning, pulsar gating, burst mode, etc).