EVLA Monitor and Control

Monitor & Control Slot – ID
Slot – ID

Figure 1: Basic MIB Network Block Diagram
Media Access Control

- Ethernet – Communication Method
  - IEEE Standard 802.3
  - Organizationally Unique Identifier (OUI)
    - NRAO Bought an OUI From IEEE
  - Ethernet Frame Utilizes MAC Addresses
    - Three Byte OUI + Three Byte NRAO
      - MIB ID Makes ~16 Million MAC Addresses
Internet Protocol (IP)

- Ethernet Transports the Internet Protocol
  - IP Requires Addresses
    - IP Addresses Defines IP Networks
  - Defined Networks are More Maintainable
  - Slot – ID Simply Provides IP Addresses
    - Controls the IP Address at Known Locations and for Known Devices
Internet Protocol (IP)

- Three Locations
  - IP Address Consists of Four Bytes or Levels
  - Top Level
    - Value = 10 (Private NRAO Network)
  - Second Level
    - Value = 64 (AOC) or 80 (EVLA Site)
  - Third Level
    - Values Define Antenna, Master Rack, Test Bench, or Other Locations
Internet Protocol (IP)

• Device
  ➢ Fourth Level
    ◆ Value Defines Devices
  ➢ Examples
    ◆ ACU at EVLA Antenna 13 (10.80.113.128)
    ◆ ACU at AOC Antenna 13 (10.64.113.128)
    ◆ ACU at EVLA Test Rack (10.80.99.128)
    ◆ ACU at AOC Test Rack (10.64.99.128)
Slot – ID

• Why Slot – ID?
  ➢ Maintains a Structured Network
  ➢ No Operator IP Table Reprogramming
  ➢ Allows Easy Module Exchange
  ➢ Provides Maximal Information of Slot
  ➢ Flexibility for Operations and Testing Modes
## Slot – ID

### Table 1: ACU Slot-ID Example

<table>
<thead>
<tr>
<th>Address</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0000</td>
<td>0x0A, 0x50, 0x65, 0x80 (10.80.101.128)</td>
</tr>
<tr>
<td>0x0004</td>
<td>0x0A, 0x50, 0x65, 0x01 (10.80.101.1)</td>
</tr>
<tr>
<td>0x0008</td>
<td>0x0A, 0x50, 0x01, 0x1F (10.80.1.31)</td>
</tr>
<tr>
<td>0x000C</td>
<td>0x92, 0x58, 0xC9, 0x08 (146.88.201.1)</td>
</tr>
<tr>
<td>0x0010-0x00FF</td>
<td>N/A</td>
</tr>
<tr>
<td>0x0100</td>
<td>'ACU', 0x00</td>
</tr>
<tr>
<td>0x0104</td>
<td>'Antenna 1', 0x00</td>
</tr>
<tr>
<td>0x010E</td>
<td>'Revision: -', 0x00</td>
</tr>
</tbody>
</table>
Slot – ID

• RFI Issue
  ➢ D301 Through D304 Have 2 GHz Clocks
    ◆ Minimal Module Penetrations
    ◆ Slot – ID Internal to These Modules
  ➢ Slot – ID Can’t Provide Full IP Addresses
    ◆ How Slot – ID Works for This Case is Still to be Determined
Naming Convention

EA1-L301-1

- A = AOC
- E = EVLA
- B = Bench
- TR = Test Rack
- MR1 = Master Rack 1
- MR2 = Master Rack 2
- A1 – A28 = Antennas 1 to 28

None = Single Module
-1, -2, etc. = Multiple Modules
or
-A, -B, etc. = IF Channels

Module Descriptor

Figure 2: Naming Convention Breakdown
Naming Convention

- **Naming Convention**
  - Slot – ID = Simple Name Server Table
  - Quick Name Server Table Updates
  - Don’t Need to Remember Raw IP Addresses
  - Provides Module Access Not System