

IEEE 1722A Presentation



Debug Counters and Variables for 1722A



Overview



- Suggested not mandated
- Implementation details out of scope

Number 1722 Sequence Number Mismatch



- Useful to detect missing packets
 - Keep track of what next packet should be.

Number of Media Clock Restarts (1722:mr)



- 1722:mr –Signals change media clock
- Useful to validate/debug handling of changing medial clocks by both listener and talker endpoints.
- Talker malfunction detection

Number of timestamp uncertain (1722:tu)



- 1722:tu – Bit set by talkers to flag that timestamps may not be globally synchronized with network time at this time.
- Useful to debug general gPTP issues
- If counter is growing, there is a timing issue on network.

Number of Timestamp Valid (1722:tv) Anomalies



- 1722:tv – Indicates that a 1722 packet contains a valid timestamp
- tv set pattern will vary based on 1722 payload
- Monitor fluctuation pattern of this bit, increment counter when anomalies occur.

Number of unsupported stream type requests



- 1722:FMT – Stream format ID
- Monitor this field, if unsupported value increment this counter
- Use:
 - Debug 1722.1 enumeration
 - Debug Controller implementations

Number of Bad Presentation Times



- Defined: Number of times timestamp on packet has expired
- Use: System debugging/testing.

Number of 2ms Latency Violations



- Defined: Number of times the MSRP Accumulated Latency number $> 2\text{ms}$
- Use: Debug/detect bad network architecture (i.e. violate 7 hops rule)

1722 Packet Counts (Packets Received)



- Total number 1722 packets received
 - Very useful when initially bringing up system
 - Useful for performance tuning and analysis
 - Great indicator of SRP malfunction
 - Getting packets you didn't ask for.

1722 Packet Counts

Number Packets of interest



- Total number 1722 packets of interest received.
- Useful for testing system as a whole.
 - Subscribe, unsubscribe check value.
- Useful indicator of SRP/switch malfunction

Number of Stream Reset Events

- **Reset Event Causes:**
 - Sequence Errors
 - Stream detection timeout
 - Detect if a stream is in error
 - Detect if a stream is gone/back (bouncing)
- **Presentation Time Alignment Failure**
 - Audio buffer pointer jumped to new (invalid) spot in buffer

Incoming Stream Presence Indicator



- Allocate 1 bit for each stream on listener. Toggle bit each time packet arrives for stream.
- Observation
 - If bit on a stream stops toggling, the stream is gone
 - Count how many times bit toggles
 - Indication of stream coming/going

Bandwidth Counters

- Current Bandwidth Allocation - Bandwidth allocations as they occur.
- Current Bandwidth Consumption
 - Number 1722 Packets Per Second/Total bytes available per second

Data Validation Bit

- Monitor Data Integrity
 - Enables upper level interfaces to know if data coming in is valid
 - Example: Check for non zero values in data channel

Number unknown SYT Intervals



- SYT Interval Details
 - Indicates the number of data blocks between two successive SYTs.
 - Information not in 1722 header, but can be found (IEC61883-6 FMT for example)
- Count number of packets received with unknown SYT interval. Invalid SYT interval could help debug clock recover issues.

Media Clock Recovery: Locking



- Syntonization – Locking to frequency of remote clock
 - Counter - indicates number times since first lock that fell out of lock.
 - Boolean – Indicates if current Syntonized or not
- Synchronization– Locking to phase of remote clock
 - Counter - indicates number times since first phase lock that fell out of lock.
 - Boolean – Indicates if currently synchronized or not

Media Clock Recovery: Adjustments

- Last frequency adjustment (Hz)
- Last phase adjustment (ns)
- Largest frequency Adjustment (Hz)
- Largest phase adjustment (ns)

Questions/Comments

- Does all of this belong in 1722 ? Some counters are really part of other AVB Specifications ?
- This is not in any way complete, please send me additional suggestions for content in this section.