IPMI Status, Issues, Changes

IPMI Summary @ TB 2017

- IPMI for controlling/monitoring
  - ONSEN (ATCA shelf)
  - DATCON (µTCA shelf)
  - DHH (ATCA shelf) – not available yet
- Used since 2016 in ONSEN setups (GI, DESY, KEK)
- IPMI ↔ EPICS IOCs (now three different types)
  - ipmitool – sensor readout only
  - ipmitool – commands (any IPMI message)
  - openipmi – event based + sensor readout (not used in TB)
  - Stable operation during TB, continuous running
- Mature firmware since TB 2016, but lots of “small” changes
- Continuous updates to CSS GUIs (shifter interface for programming etc)

Test with new “final” Shelf and Boards

- Concerns: Scalability 2+2 → 9+33 boards (Carrier/IPMC+AMC/MMC), >560 sensors
  - Could only be tested with “final” system hardware available since Nov.
- Parallelize IOCs to prevent timeouts, one IOC per carrier + one for shelf
  - (limited by maximum connections to Shelf Manager)
  - Test full shelf with >560 sensor with 10s scan rate over weekend → o.k.
- IPMB bus collisions and recovery
  - Collisions normal for 2-wire bus with >10 masters, should be recovered automatically (in silicon!), but this is not always working
  - Parallel IOCs and lots of boards increase probability for collisions
  - Problem not observed anymore since update of all IPMI controllers after beam time
- Remark: only affects monitoring, not the payload

IPMI Firmware Updates

- New features and improvements in firmware
  - bridge to MMC, SEL, uptime, reset preserves payload state, firmware checksums (do not start broken firmware if update failed), firmware independent update of sensor records, fixing answer codes, board id, trigger FPGA reprogram, … (before TB 2017)
  - select firmware version, improved (de)activation, FRU quiesced → Linux shutdown (new!)
- TODOs
  - Clean up unneeded sensors to save EEPROM space
  - EKeying (for Carriers)

Activities during TB 2017

- Because of the problem with the bus lock, TB setup was using a relatively old, but reasonable stable firmware version (lacking some features)
- Actually I didnt want to update the FW during the testbeam (“never break a running system”)
- But as ONSEN „reprogramming“ was cumbersome, slow and not working sometimes (JTAG programmer problem), we decided to update to a version which supports programming from CPLD (which is much much faster)
- Luckily, no problems (unrecovered bus lock) detected anymore after update
- Running sensor + command IOCs

Summary

- No major problems.
- Performance issue solved by IOC improvements
  - openipmi event triggered IOC is an additional option
- Bus lock issue solved after several iterations of firmware
  - not observed anymore, but we keep an eye on it

- DATCON (more boards, PROM, bridge behavior of NAT MCU)
- DHH?
- Continuous work
  - Monitor sensor read performance on IOCs, ShM
  - Check for bus lock and recovery in SEL
  - Exercise alarms, inject errors/unusual conditions