iFDAQ Status and Preparation

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Technical Board Meeting
2018/02/20
Outline

- Presence of iFDAQ members at CERN
- iFDAQ Stability
- Drell-Yan 2018 Preparation
- Proton Radius Measurement 2018 Test Preparation
# Presence of iFDAQ members at CERN

## iFDAQ On Call Duties

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iFDAQ Stability

- iFDAQ Software is stable since beginning of October 2017
- Last observed iFDAQ Software crash is on 22nd September 2017
- DIALOG helped to increase stability of the iFDAQ
- DAQ Debugger detected all remaining software issues
- The iFDAQ UpTime – time when iFDAQ is able to take data

Monthly UpTime:

- **2015/8**: 95.39%
- **2015/9**: 94.44%
- **2015/10**: 94.2%
- **2016/5**: 95.77%
- **2016/6**: 97.66%
- **2016/7**: 98.55%
- **2016/8**: 97.16%
- **2016/9**: 98.42%
- **2016/10**: 96.22%
- **2017/5**: 98.72%
- **2017/6**: 98.48%
- **2017/7**: 99.55%
- **2017/8**: 99.63%
- **2017/9**: 99.88%
- **2017/10**: 99.88%
Drell-Yan 2018 Preparation

- Igor performed stress test at the end of Run 2017
  - Trigger rate 40 kHz
  - Test without beam
  - Only detectors for Drell-Yan 2018 were included
  - Several hours of smooth data-taking
- iFDAQ is switched on again after the winter shutdown
- Electric outlets on the left side of rack 4 in DAQ Barrack are not working (safety fuse is on)
- The current iFDAQ configuration is called “2018-Test”
Cross-point Switch Integration I

- It connects
  - FE electronics
  - DHCmx modules
  - DHCsw module
  - Spillbuffers

- Purpose
  - Ease of load balancing
  - System redundancy to compensate hardware failures

- It provides fully customizable network topology
Cross-point Switch Integration II

- Eye Diagram for data rate of 1.25 Gbps
  - Good characteristic
  - Bit error rate $\approx 25e^{-81}$ ⇒ No risk for data taking
- Default configuration on power-up planned ⇒ No configuration of cross-point switch needed
Cross-point Switch Integration III

2018

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<tr>
<th>February</th>
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<th>April</th>
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<td>07 Week</td>
<td>08 Week</td>
<td>09 Week</td>
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<td>Finalizing VHDL Dev</td>
<td>Slave Dev</td>
<td>DB Dev</td>
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Proton Radius Measurement 2018 Test Preparation

- Stand Alone iFDAQ is working
- Stand Alone iFDAQ Software has been updated (the same version as main COMPASS iFDAQ)
- Move of Stand Alone iFDAQ rack from Clean Area to 888
- Update of MUX firmware from version 6 to version 7 (the same version as main COMPASS iFDAQ)
Proton Radius Measurement 2018 Test Preparation II

- TPC DAQ (ACTAR) is coming to CERN on 20th March
- Synchronization of TPC DAQ (ACTAR) and StandAlone iFDAQ
- DIM library will be used for synchronization of run start/stop
- Precise timestamping of events on both DAQs – discussion is still ongoing
- Preparation for Proton Radius Measurement 2018 Test is still ongoing
Conclusion

- iFDAQ Software is stable since beginning of October 2017
- iFDAQ UpTime is around 99.88% ≃ 1 hour loss / month of data-taking
- Continuously running DAQ
  - iFDAQ is running without starts and stops
  - It takes more data
- iFDAQ is prepared for Drell-Yan 2018
- Cross-point Switch is planned to be integrated to iFDAQ
- Preparation for Proton Radius Measurement 2018 Test is still ongoing