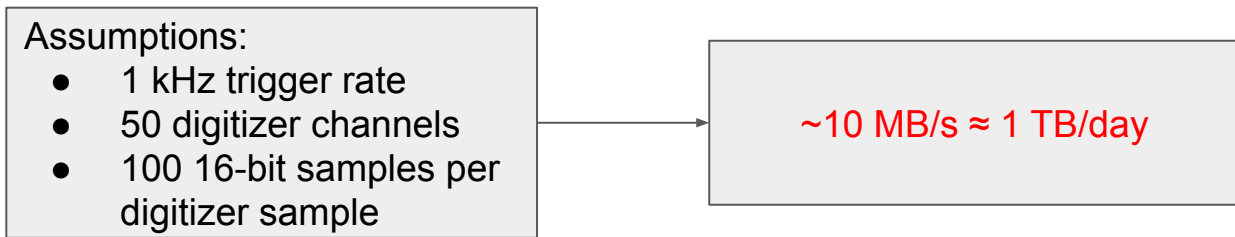# Addressing Some Questions

- Front end (FE) Computer plan:
  - Fermilab to return three FE computers to UKy that have 2x10GB links and 2xK40 GPUs.
  - One to go to UW then go to PSI as the readout frontend

- Data Rate

Assumptions:
- 1 kHz trigger rate
- 50 digitizer channels
- 100 16-bit samples per digitizer sample

~10 MB/s ≈ 1 TB/day

- Higher trigger rate (>10 kHz) additional preparation will need to be made
  - Throw out portion of data
  - Use GPU compression
  - Additional storage (~100TB)

Current Progress

Hardware and Frontend code:

- All necessary frontends initialize
- Changing logic in AMC1300 frontend "begin run" code to expect one crate system
- No meaningful data readout yet

Backend code:

- Began taking steps towards event reconstruction
  - Poking through g-2 midas files, Cornell teststand generated files to understand data structure
  - Offline read-in using python

Development Steps (Rough Outline)

- Compiled UKY g-2 teststand DAQ (software only)
  - Uses more recent midas version
- Modified AMC13xx frontend code to edit ODB to match configuration file
- Compiled modified g-2 DAQ on Cornell teststand
  - Connected and communicated with frontend hardware (AMC13s with FC7s or WFDs)
- Swap out hardware to one crate system
- Remove/replace hard coded references to FC7 crate from frontends
- Generate data, check "integrity" of files
- Clean up DAQ for easier user control, package with modified midas, distribute

```xml
1   <!-- The purpose of this file is to specify what devices are in each frontend crate -->
2   <!-- To declare frontend AMC130x create root node <frontend id="x"> -->
3   <!-- To declare device in slot 'y' of create, create node <slot id="y" type="device_type" -->
4   <!-- Select "device_type" from FC7, WFD, or Rider (WFD and Rider are the same device) -->
5   <?xml version="1.0" encoding="UTF-8"?>
6   <frontend id="0">
7       <slot id="1" type="FC7" />
8       <slot id="2" type="FC7" />
9       <slot id="5" type="WFD" />
10      <slot id="6" type="FC7" />
11      <slot id="7" type="WFD" />
12      <slot id="8" type="WFD" />
13      <slot id="10" type="WFD" />
14      <slot id="11" type="WFD" />
15      <slot id="12" type="WFD" />
16  </frontend>
17  <frontend id="1">
18      <slot id="1" type="WFD" />
19      <slot id="2" type="FC7" />
20      <slot id="3" type="WFD" />
21      <slot id="4" type="WFD" />
22      <slot id="5" type="WFD" />
23      <slot id="6" type="FC7" />
24      <slot id="7" type="WFD" />
25      <slot id="8" type="WFD" />
26      <slot id="9" type="FC7" />
27      <slot id="12" type="WFD" />
28  </frontend>
```

Example crate contents configuration file