

Power Measurements on Mira Argonne Leadership Computing Facility

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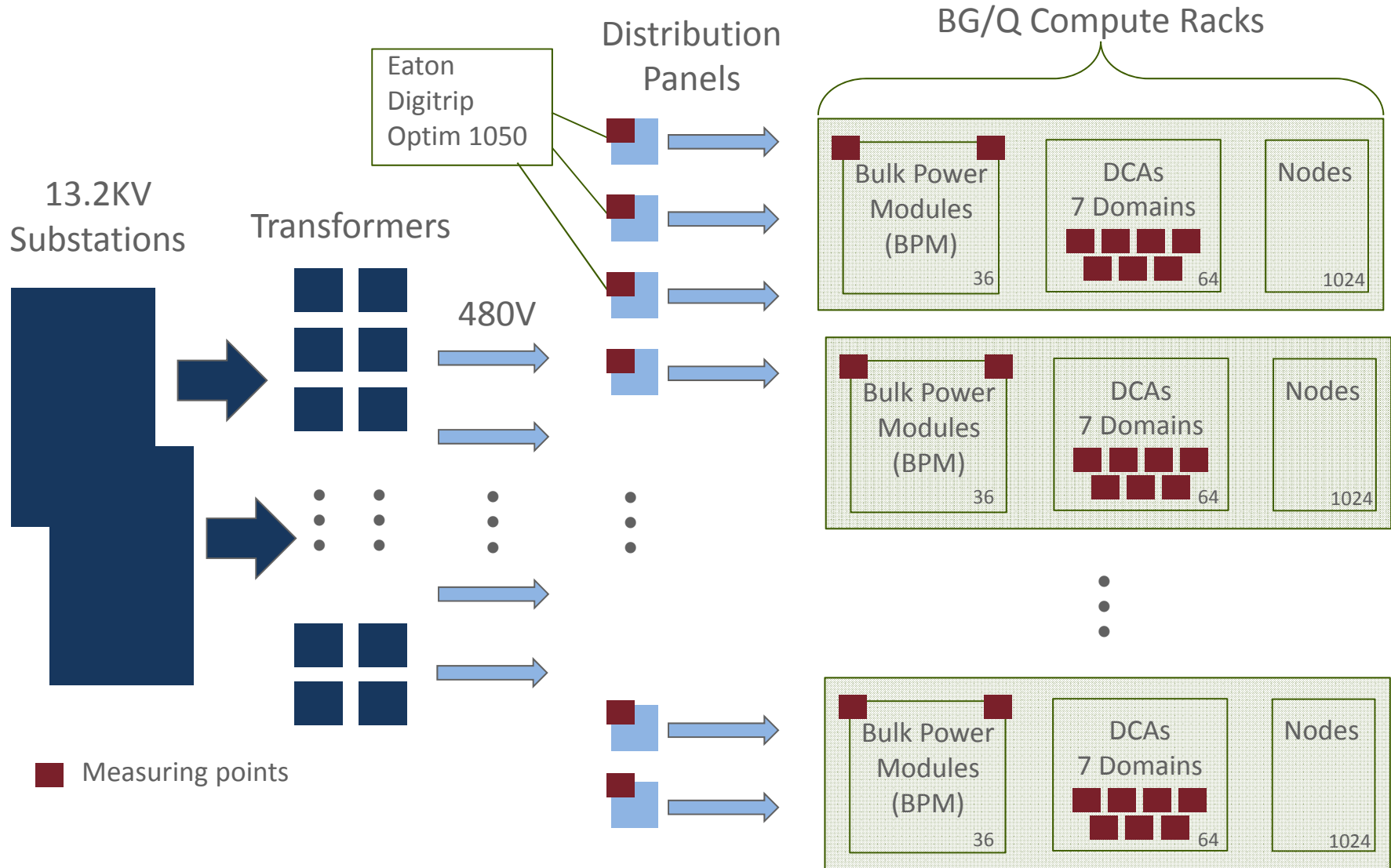
The Mira System



Mira Statistics

10 PF Peak	8.1 PF HPL
48 Racks	48K compute nodes
768K cores	3.1 B threads
768 TB memory	16 GB memory per node
28 PB disk	240 GB/s
4.8MW peak	48 racks at 100kw each

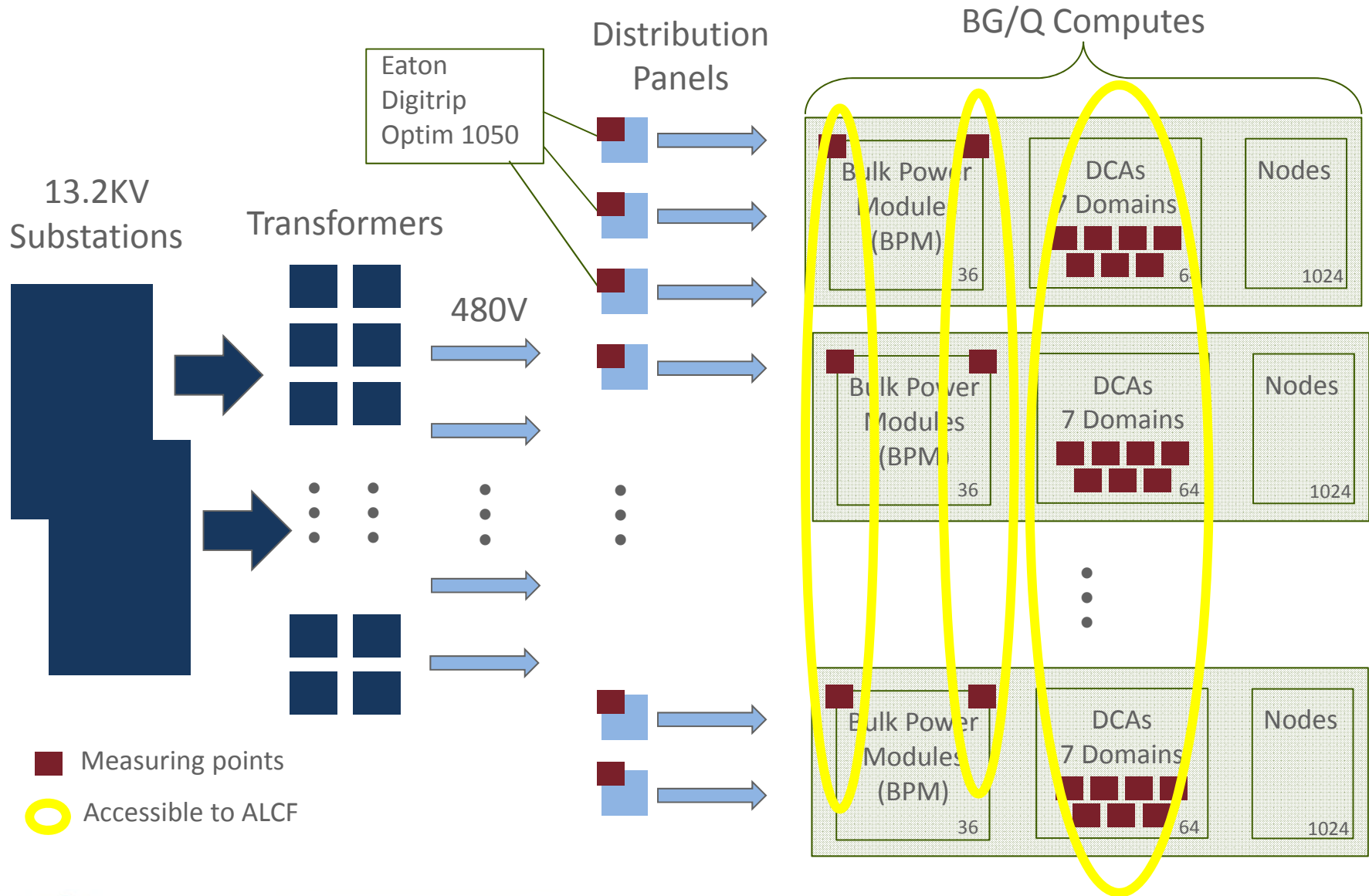
Mira 480V Compute Power Distribution System



ALCF Power Measurement Methodology Challenges

- Challenge #1: Length of time required for HPL run
 - Mira integration not complete, system still in hands of vendor
 - Difficult to justify so many hours just to measure power
 - Recommend using a benchmark that runs in an hour or two
- Challenge #2: Access to external AC power data required for L2 and L3
 - Building and all infrastructure is owned by a 3rd party Trust
 - Distribution panel power measurement data only visible to the building management company
 - All contact with building management company must go through the Argonne Data Center Manager (ADCM)
 - Still no data after months of working through ADCM
 - Attempted to find boxes to measure between panels and racks
 - Impossible to find existing boxes – 480V 3 Phase, receptacle HBL560R7W
 - Custom ones cost just under \$10K per rack to **rent**

Mira 480V Compute Power Distribution System



Data from 48 racks running HPL

