Voltage Measurement and Monitoring in Smartgrid

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Recap

- Problem Area :-
  - Measurement, Monitoring and Analytics
- Problem :-
  - Monitoring voltage and phasor characteristics using PMUs
- Methodology :-
  - Why simulation rather than actual metering?
  - Why iPDC?

Technical difficulties

- Experimental setup
  - How many PMUs? PDCs?
- Too much data!!
  - A simple SELECT * from …. takes an awfully long time!
  - Had to bypass the database for “pseudo-real-time” plotting
- Analytical queries
  - What are we looking for? Predictions?
  - Frequency analysis cannot be done.

- Targets
  - Voltage quality as per modified C84.1 stds.
  - Real-time graph plotting
  - Analytical queries
- Achieved
  - PMU generated data does not show out-of-bound variation.
  - Per sec snapshots voltage and phasor amplitudes and angle.
- Fell short
  - Analytical queries

If given more time..

- Explore distributed processing avenues. (eg hadoop)
- Switch to continuous query processing which is more suited for data streams.
- Analytical queries.
  - Disaggregations?
  - Machine Learning?

Thank you