



Data & Network Management Task Team Report Out

Co-Chairs:

Dan Brancaccio, BRIDGE Energy Group

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October 15, 2015

Chicago, IL



D&NMTT Breakout Agenda

- Peak RC – Delivering synchrophasor data using the Secure Information Exchange Gateway and Gateway Exchange Protocol – Dan Brancaccio (Peak RC)
- Hitachi – Efficient PMU data analysis through high performance data management platform – Bo Lucy Yang (Hitachi)
- NASPI C37.118 Data quality flags task force report – Ryan Nice (PJM Interconnection)
- Schneider Electric – Increase power grid stability and reliability with enterprise historians for synchrophasor data management – Louis Guiamatsia (Schneider Electric)
- Briefing on PNNL studies – “NASPInet 2.0” and “Security best practices” – Dave McKinnon (PNNL)



D&NMTT Breakout Agenda

- Hitachi – Efficient PMU data analysis through high performance data management platform – (Hitachi)
 - Outlined Hitachi centric solution
 - High Speed Database engine
 - Integrated PMU applications
 - Visualization Solution
 - Fully utilizes hardware resources
 - SQL processing for DB search is divided and executed with parallel processing
 - Unsupervised data cleansing
 - Automatic abnormality detection



D&NMTT Breakout Agenda

- Peak RC – Delivering synchrophasor data using the Secure Information Exchange Gateway and Gateway Exchange Protocol – Dan Brancaccio (Peak RC)
 - Follow up DoE Grant focused on considering the use of alternate protocols
 - Currently PEAK uses C37.118-2005 and UDP
 - Problems include fragmentation leading to data loss
 - PDC Stacking attributes to data loss
 - Explore, test and pilot new techniques
 - Use of GEP – breaks up large frames, use GPA's PDQ tracker to check statistics
 - Explore the use of gateways for more efficient use of the WAN



D&NMTT Breakout Agenda

- NASPI C37.118 Data quality flags task force report – Ryan Nice (PJM Interconnection)
 - Outlined problems with current implementation and use of quality codes
 - Planned outage, Dropped or Missing Data, Synthetic Data
 - Investigating the value of implementation of C37.118-2011
 - Protocol changes can be expensive
 - Better definition of STAT bit 15 and 14
 - Suggested reserved value for filler data frames to indicate dropped data
 - Section 6.3.1 describes standard “filler” data where STAT is set to test mode
 - New STAT flag identified Modified packet
 - Suggest using test mode flag to indicate a planned outage
 - Recommendation to vendors
 - PDC Output should indicate filled or modified samples per C37.118.2
 - Properly used , complete differentiation between test/ production mode



D&NMTT Breakout Agenda

- NASPI C37.118 Data quality flags task force report – Ryan Nice (PJM Interconnection)
 - To avoid risk of downstream data users unknowingly receiving modified data
 - Disciplined and universal use of the data modified flag
 - Standard business practice to restrict sending modified data to downstream parties unless explicitly requested / notified
 - Consider join work with IEEE PSRC working on C37.118
 - Merging with IEC 61850 may manifest in several changes to C37.118 including data point level quality indication
 - Work with DNMTT to identify other opportunities to improve on these recommendations and champion for acceptance



D&NMTT Breakout Agenda

- Schneider Electric Wonderware eDNA(formerly InStep) – Increase power grid stability and reliability with enterprise historians for synchrophasor data management – Louis Guiamatsia (Schneider Electric)
 - Enterprise Historians for Synchrophasor Data
 - Use of three DBs
 - High Resolution sub second db
 - Snapshot DB (1 sec or 2 sec)
 - Event Archive DB – Stored disturbances as they happen
 - RT Data Collection
 - Special caching algorithm
 - Case Study with SCE



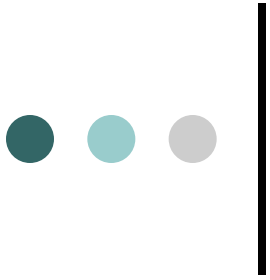
D&NMTT Breakout Agenda

- Briefing on PNNL studies – “NASPInet 2.0” and “Security best practices” – Dave McKinnon (PNNL)
 - Future mission-critical synchrophasor apps will require strong cybersecurity and state of the art data networks
 - Best Practices – Risk Assessments, Lifecycle security using standards, strong identity, time security, personnel training, data protection cloud security
 - Specify readily available networking best practices
 - Accommodate varied stakeholder roles. RCs do not directly control resources. Some PMU owners simply transit data
 - Core features – Support data and resource discovery, application aware routing and data forwarding. Support for multiple types / classes of applications
 - Studies were kicked off in the summer
 - Tech review committees have been formed
 - Best practices are being distilled
 - Draft results will be provided to NASPI community for review and comment
 - Goal is to have results published in 2016.



DNMTT Business

- 2016 efforts
 - Use and definition of synchrophasor registry
 - Continued work with Ryan Nice on standardizing use of quality flags
 - Middleware business case
 - Assist with defining standards conformance testing efforts with IEEE – Tony Johnson and Alan Goldstein



Thank you for participating!