

North American SynchroPhasor Initiative (NASPI)

Data and Network Management Task Team (DNMTT)

Meeting Minutes

October 2, 2008

12:30pm - 1:30pm PDT / 3:30pm - 4:30pm EDT

Via Live Meeting and Teleconference

A meeting of the NASPI Data and Network Management Task Team was held on October 2, 2008 via Live Meeting and teleconference. 7 participants were in attendance. The attendance list can be found in Appendix A. The following action items and agreements resulted from the meeting.

NEXT MEETING

Next meeting of the DNMTT is scheduled for October 30, 2008. Instructions for the teleconference can be found in Appendix B.

ACTION ITEMS AND AGREEMENTS

1. **Dave Bakken.** Provide the team a summary report of the September 16 meeting in Pullman, Washington.
2. **Sushil Cherian.** Continuing to lead the effort to identify known failure modes.
3. **ALL.** Send Sushil comments, input and feedback on the spreadsheet for known failure modes.
4. **Himanshu Khurana.** Continuing to lead the effort to determine the next generation PMU features.
5. **David Chassin.** Continuing to lead the effort on the roles of the PDC inside NASPInet.
6. **ALL:** Review Dave Chassin's document for comment (see Appendix C).
7. **Dave Bakken.** Continuing to lead the effort for documentation on system conventions (Utilities).

CONTACT INFORMATION

- Data and Network Management Task Team
 1. Chair – Paul Myrda, EPRI, pmyrda@epri.com.
 2. Co-chair – Kris Koellner, SRP, Kris.Koellner@srpnet.com
- DNMTT Website: <http://www.naspi.org/meetings/dnmtt/dnmttmeetings.stm> .
Contact: Ranata Johnson, PNNL, (509) 375-6311, ranata.johnson@pnl.gov.
- DNMTT SharePoint Site: <http://www.eippshare.org/dmtt/default.aspx>. Contact: Ranata Johnson, PNNL, (509) 375-6311, ranata.johnson@pnl.gov.

MINUTES

Notes from the meeting are as follows.

1. Dave Bakken discussed the September 16 meeting. The purpose was to get the 3 separate tasks together to discuss the overlap of the activities. Although the tasks are separate there is overlap that they needed to walk through as a group. They ended up discussing the architecture in detail. Paul has slides which we should be made available. Attendees at the meeting were Dave Bakken, Dave Anderson, Dave Chassin, Paul Mryda, Richie Carroll by phone, and Himanshu Khurana.
2. Kris briefly walked through David Chassin's outline for the role of the PDC inside NASPINet (see Appendix B). Comments are needed on this.
3. RFP has been awarded and was announced today, that it was Quanta Technology. The vendor is supposed to present at Charlotte.
4. The next C37.118 standards cycle was discussed with regard to what next-gen features may need to be added to it. A key potential update to C37.118 is the performance of PMUs under dynamic electric system conditions.

The meeting was then adjourned.

Appendix A:

Attendees		
Last Name	First Name	Affiliation
Bakken	Dave	WSU
Chamberlain	Leonard	Entergy
Ghassemian	Ali	FERC
Johnson	Ranata	PNNL
Koellner	Kris	Salt River Project
Khurana	Himanshu	UIUC – TCIP
Hu	Yi	Infrasource

Appendix B: Instructions for Teleconference

Instructions for conference call participants:

- **Local participants:** call 376-7411 and ask for the conference title "DNMTT Meeting".
- **Long-distance participants:** call 1-800-664-0771. When you hear the Octel voice mail system answer, please dial 0 and ask the Operator for the conference title "DNMTT Meeting".
- **International participants:** Please call 509-376-7411 (will incur long distance charge to you) and ask for the conference title "DNMTT Meeting".

(If you need assistance, please call PNNL Telephone Services at 509-375-6400)

NASPI Phasor Gateways and Their Relationship to Phasor Data Concentrators

David Chassin, PNNL
Ritchie Carroll, TVA
Dave Bakken, WSU

Abstract – The North American Synchrophasor Initiative (NASPI) Data Network Management Task Team (DNMTT) has issued a Request for Proposal (RFP) for a specification of the NASPI Network (NASPINet). This specification is to satisfy requirements set down by the DNMTT for two major elements of the NASPINet: the NASPINet Data Bus and NASPINet Phasor Gateways. This paper describes the role of Phasor Gateways (PGWs) and their relationship to Phasor Data Concentrators (PDCs) and Phasor Measurement Units (PMUs).

Summary of PDC Requirements

Phasor Data Concentrators (PDC) correlate data by time tag and then broadcast the combined data for processing within an organizational unit. Generally speaking, there is no expectation that PDC data will be sent directly from one entity to another over the NASPInet without going through at least two PGWs, one for each organization. However, PDCs will be expected to accept PMU data from PGWs as though it was coming directly from the PMU and not through NASPInet's Data Bus. This must include temporal data synchronization.

Within an organizational entity, traffic to and from PDCs must conform to IEEE standard C37.118. This is not considered a requirement for all traffic beyond the PGW because it is expected that additional control and administrative traffic is required that is not supported by C37.118.

PDCs verify the integrity and completeness of the data stream from the PMUs and ensure delivery of the data to local data consumers, including Phasor Gateways. The Phasor Gateways verify the access rights and control the flow of traffic out to NASPInet clients and in from NASPInet servers.

The PDC will capture data on a continuous basis and archive long term data to the server. Each organization will have primary responsibility for the historical record of data from its PMUs and the PDCs are expected to either be the main system on which the historical archive is kept, or from which the historical archive is managed.

The PDC software will reside on the server connected to user Network. The software that operates the PDC is completely contained within the organizational unit's network. No part of the PDC is directly exposed to NASPInet.

The PDC handles the temporary capture of data of unspecified time duration. The PDC acts as the principal buffer between data sources (PMUs) and data sink (applications). One would at least one PDCs between any given PMU and application, and if the data is transmitted over the NASPInet data bus, most likely two PDCs would be involved one in each organizational unit.

The PDC must be capable of handling data from a large number of PMUs (75 or higher based on Eastern and / or Western North America's present installed based phasors). This is in contrast to the PGW, which does not buffer data, but may be required to handle large number of pub/sub connections.

Summary of PGW Requirements

The PGWs must manage data flow according to service class. PDCs do not alter their behavior based on service class of the traffic, although PDCs are expected to provide service class information arising from incoming PMUs to outgoing streams as appropriate.

The PGWs handle compliance with naming conventions data flowing over NASPInet. PDCs need not respond to or utilize the NASPInet naming convention used on the Data Bus although they can if the user wants.

The PGWs support C37.118 for phasor data traffic. This is to allow direct flow of phasor data from PDC through PGWs over NASPInet data bus back through PGW and into another PDC without significant data conversion.

The PGWs implement new protocols for all other traffic, e.g., administrative, access control. Such traffic is does not affect PDCs and is never delivered to PDCs.

The PGWs address end-to-end Quality of Service for both data and control traffic. This is not handled by PDC and does not directly affect PDC requirements.

The PGWs are responsible for all cyber-security in NASPInet. It is assumed that within an organizational unit all phasor data traffic is trusted and PDC do not need to address cyber-security matters related to NASPInet.

The PGWs handle all emergency mode management and operations. No additional requirements exist for PDCs to handle off-normal situations.

The PGWs implement the trust management systems for NASPInet. This is not a PDC function.

The PGWs are the primary instrumentation data collection point for NASPInet. This is not a PDC function.

The PGWs are the only point at which traffic flow management is implemented. The expectation is that there is sufficient infrastructure within an organizational unit to ensure that data delivery from the PMU to the PDC meets the demands. The PDCs do not need to consider traffic flow management.

The PGWs implement failure modes and event notification. This is not a PDC function. The PDC is only required to pass along the failure mode flags generated by the PMU and act accordingly (e.g., drop bad data, tag questionable data).

The PGWs implement data and task logging. This is not a PDC function.