

SynchroPhasor Data Communications Questionnaire

NASPI D&NMTT

October 23 2013

Co-chairs

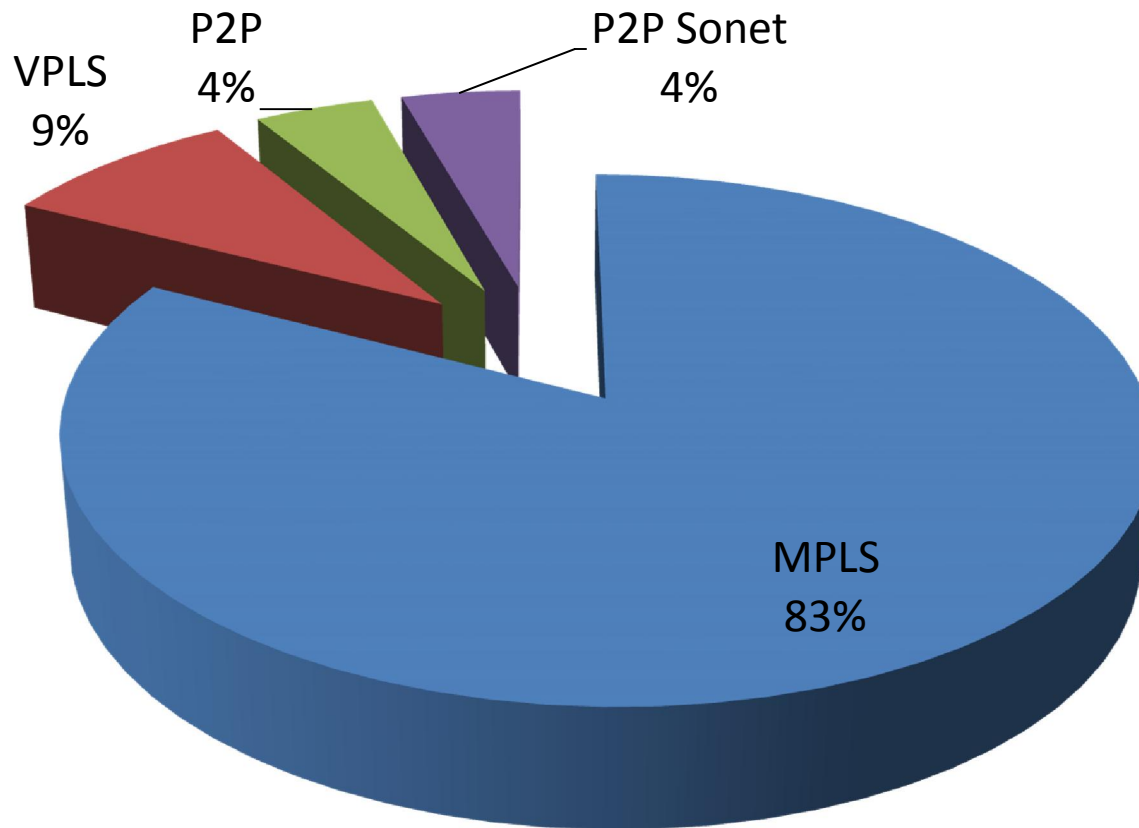
Jim McNierney NYISO

Dan Brancaccio Bridge Energy Group

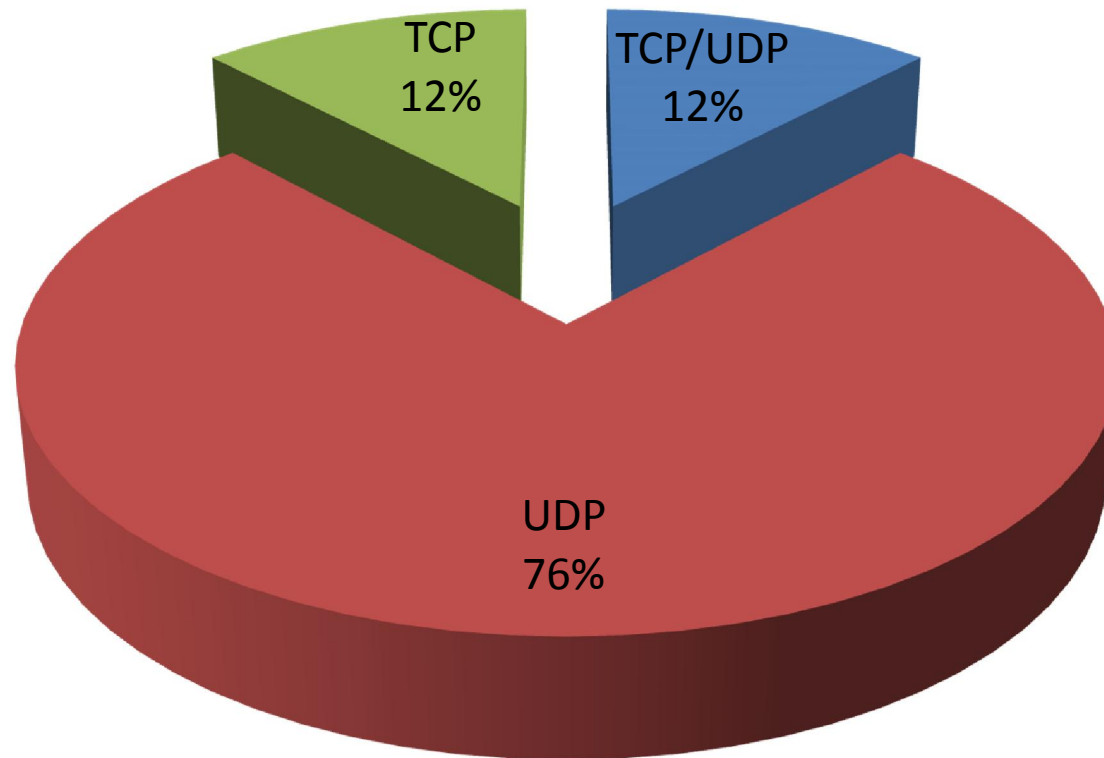
Survey says...

- Purpose of survey was to get an idea of what networking architectures existed
- Compiled questions for the survey with input from the D&NMTT
- Reached out to SGIG project participants
- Responses are in aggregate, no attribution
- Narrative paper will be posted on NASPI site

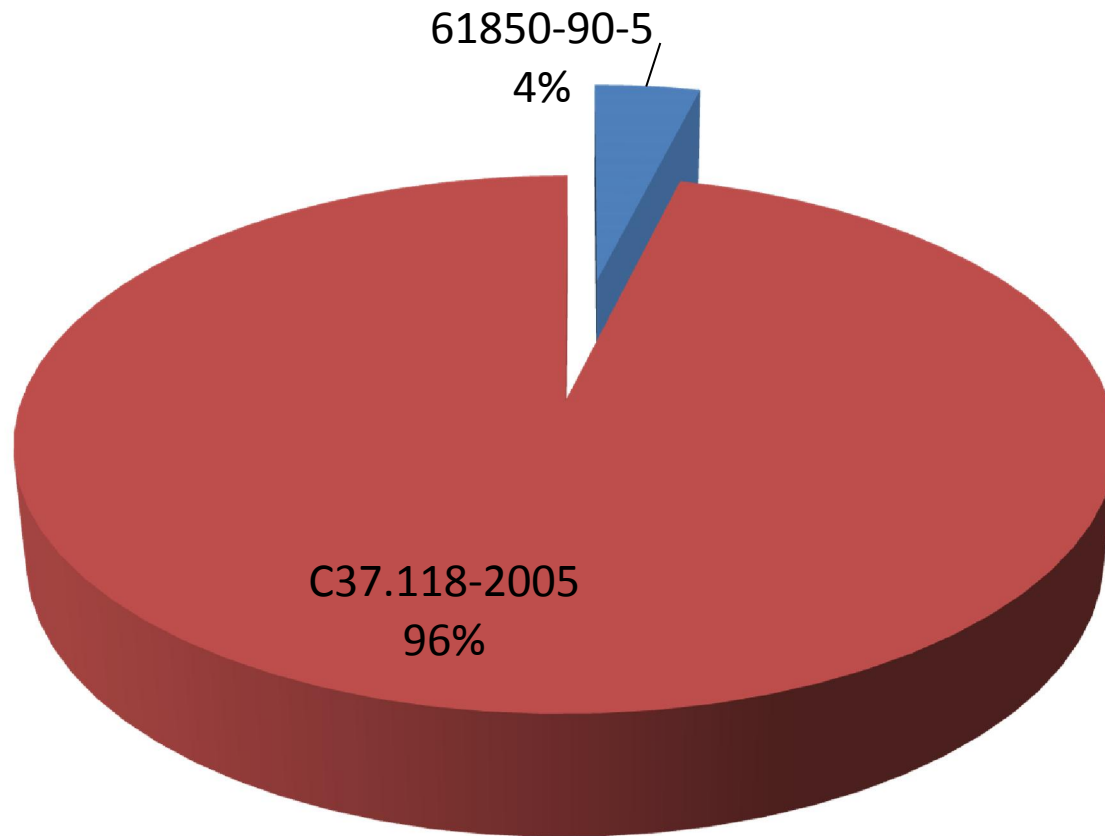
(1) What type of link layer technology did you deploy in your WAN to collect or distribute the data being collected (e.g. Frame Relay, Point to Point connections, MPLS, VPLS, some combination of items, etc..)?



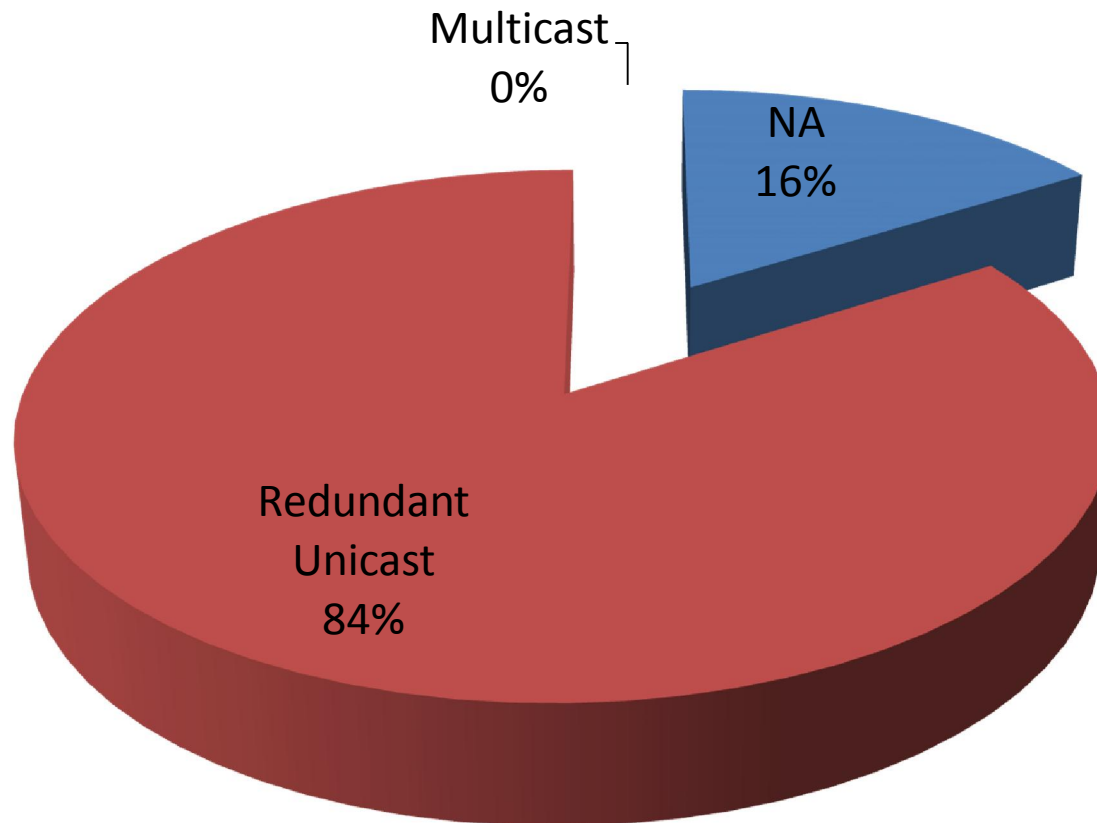
(2) What transport protocols are in use within your project effort (e.g. TCP, TCP/UDP)?



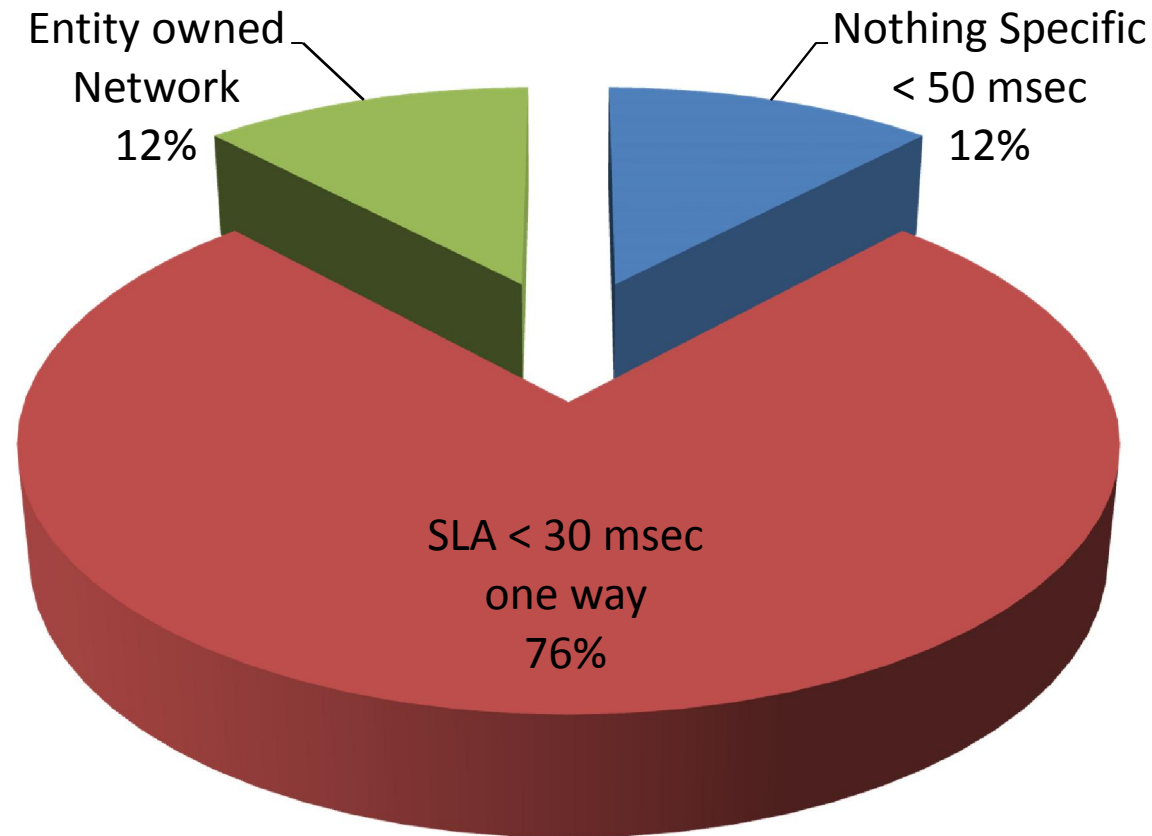
(3) What standards are in place within your project for exchange of synchrophasor data? (e.g. IEC 61850-90-5, IEC C37.118-2005, C37.118-2011.1 and C37.118-2011.2)



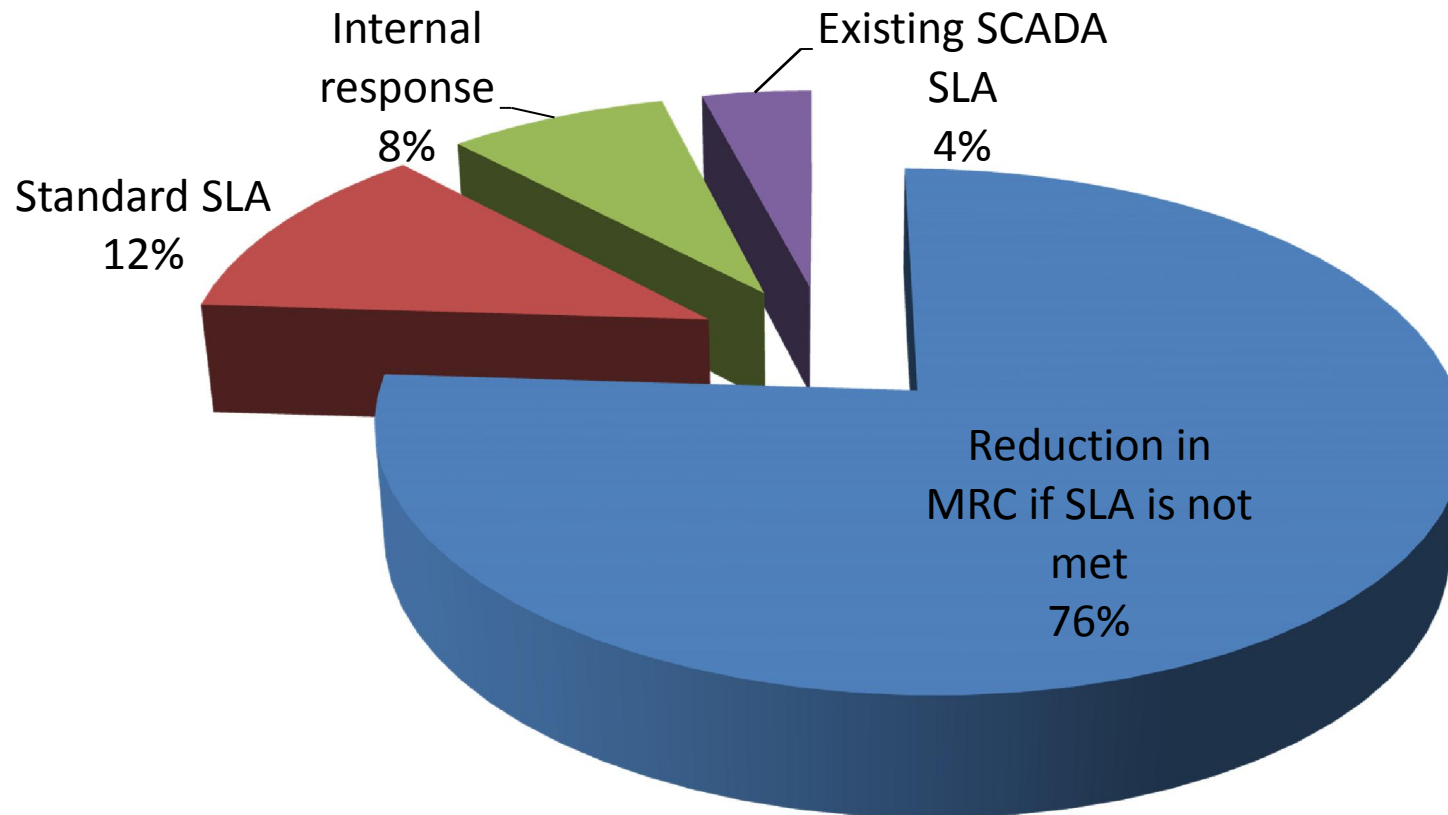
(4) Are you using UDP unicast or multicast within your project?



(5) When contracting for the WAN did you specify any latency requirements? Did your project specify latency requirements to downstream entities?

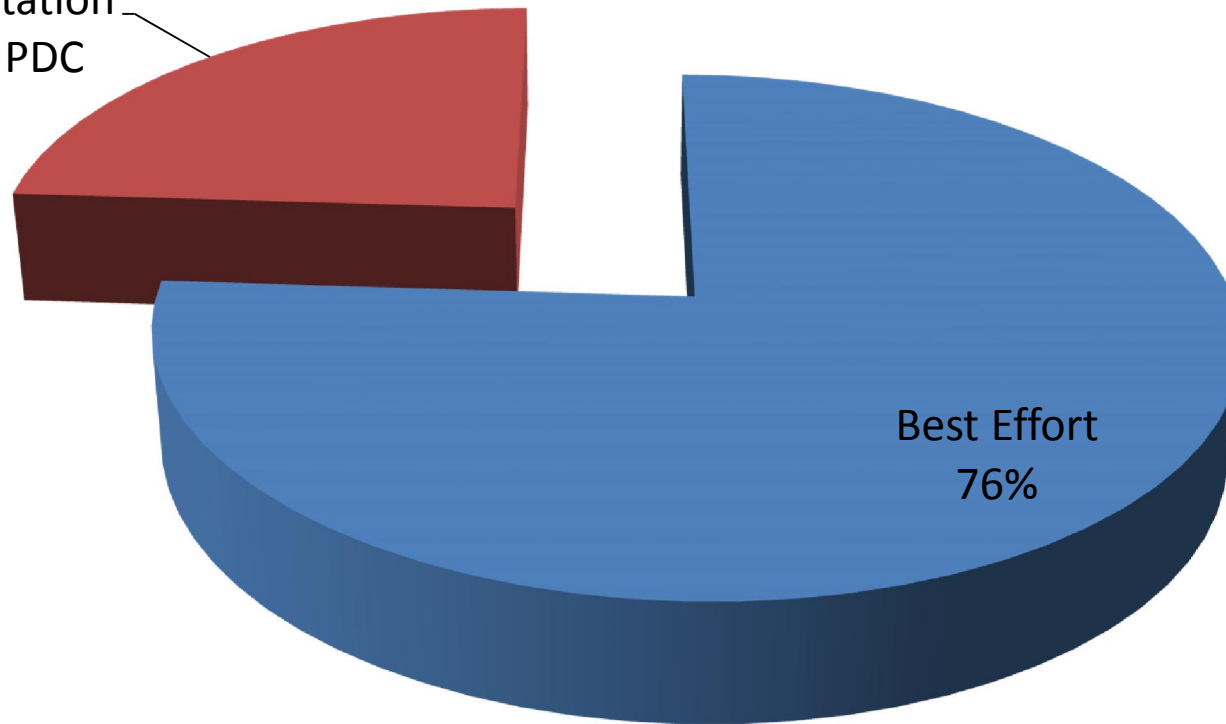


(6) What kind of SLA is part of the telecommunications contract for the services used within your project?

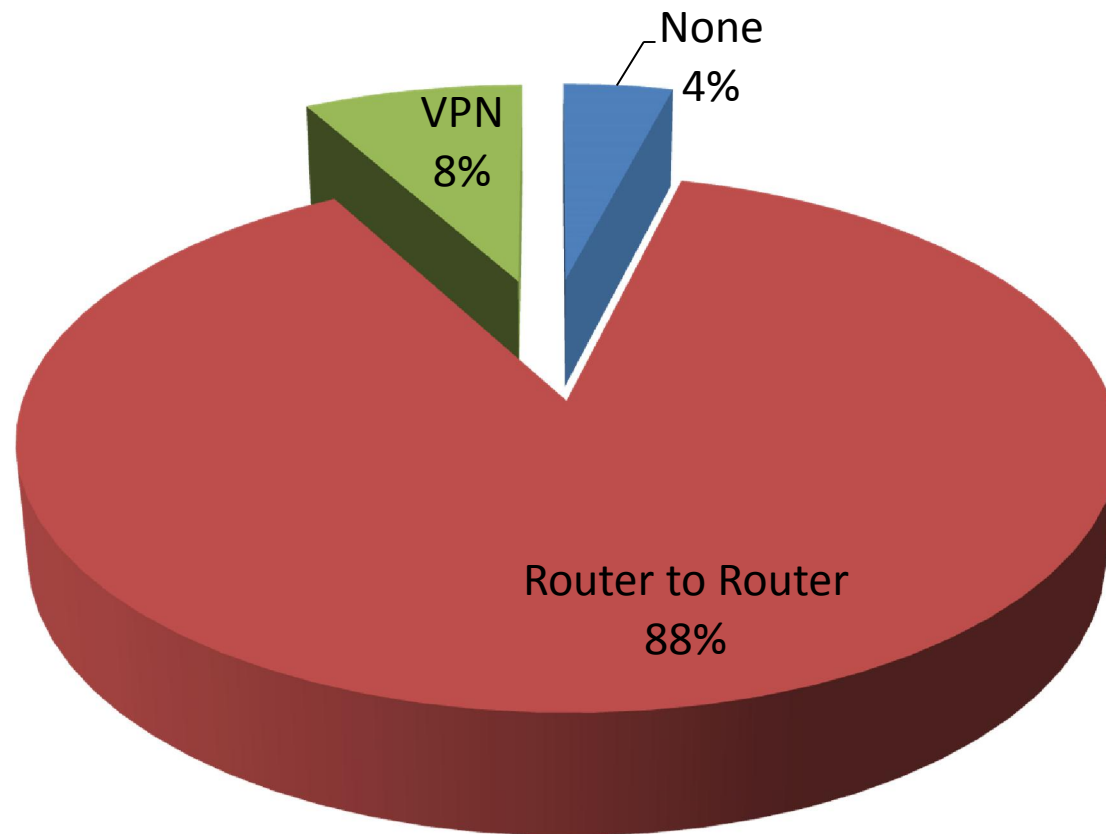


(7) What kind of SLA are you requiring from any downstream entity providing data for your project?

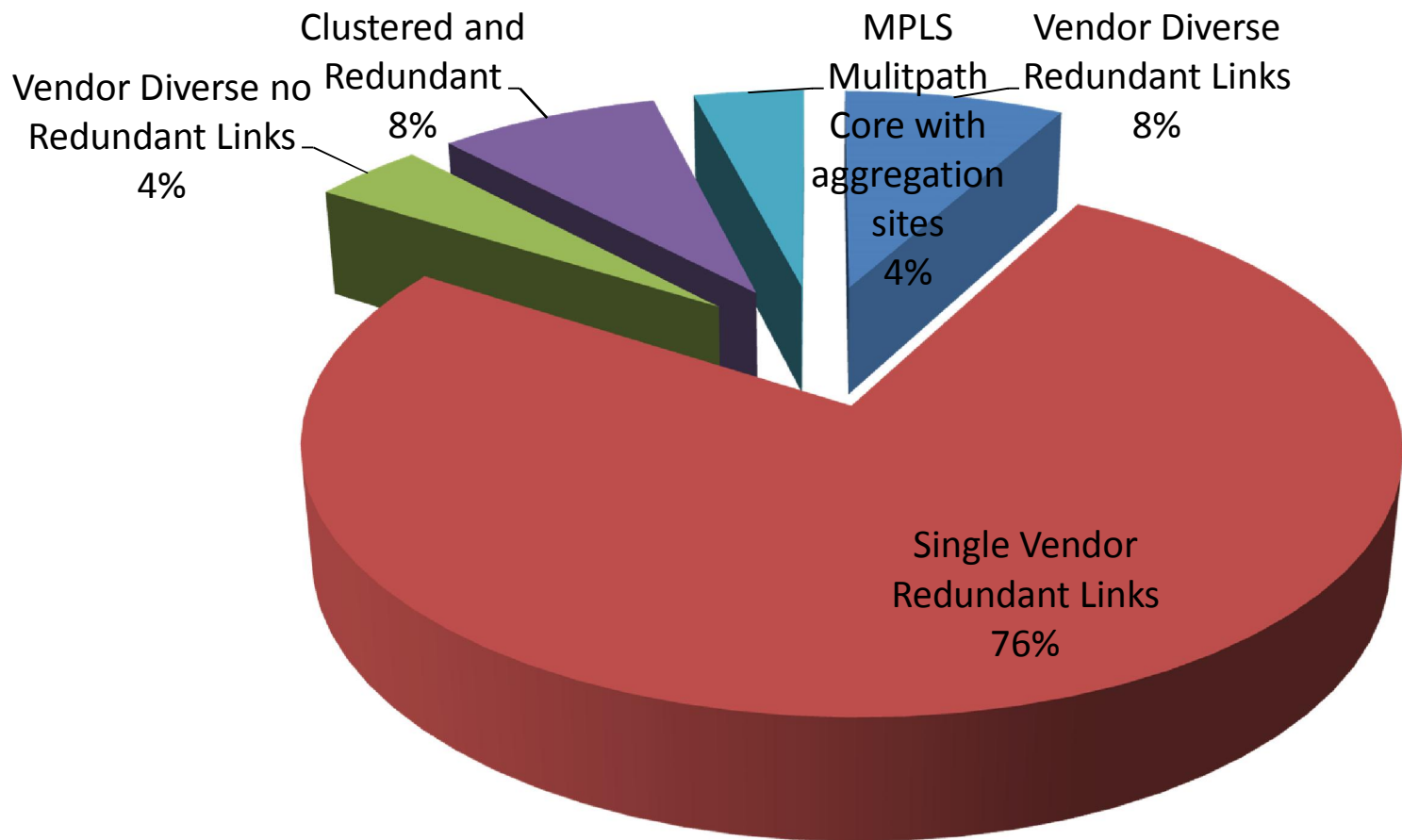
Less than 100
msec Substation
to Super PDC
24%



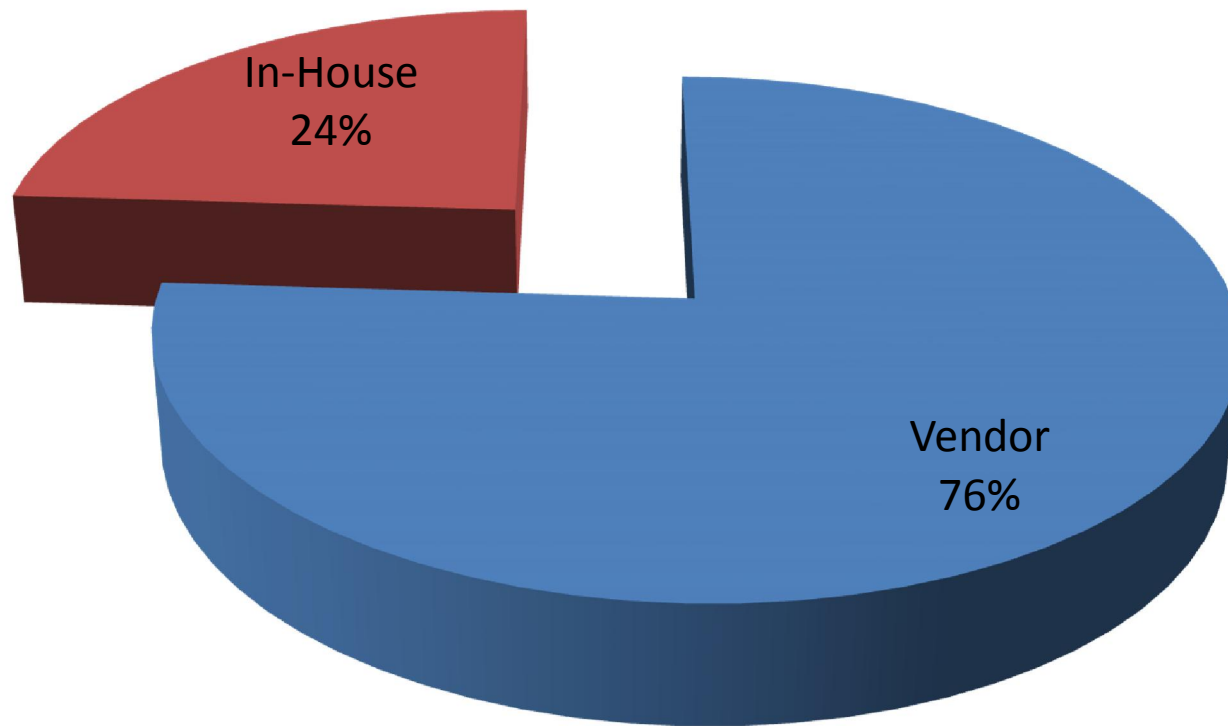
(8) Is there any use of encryption within your project? If so, where is being used?



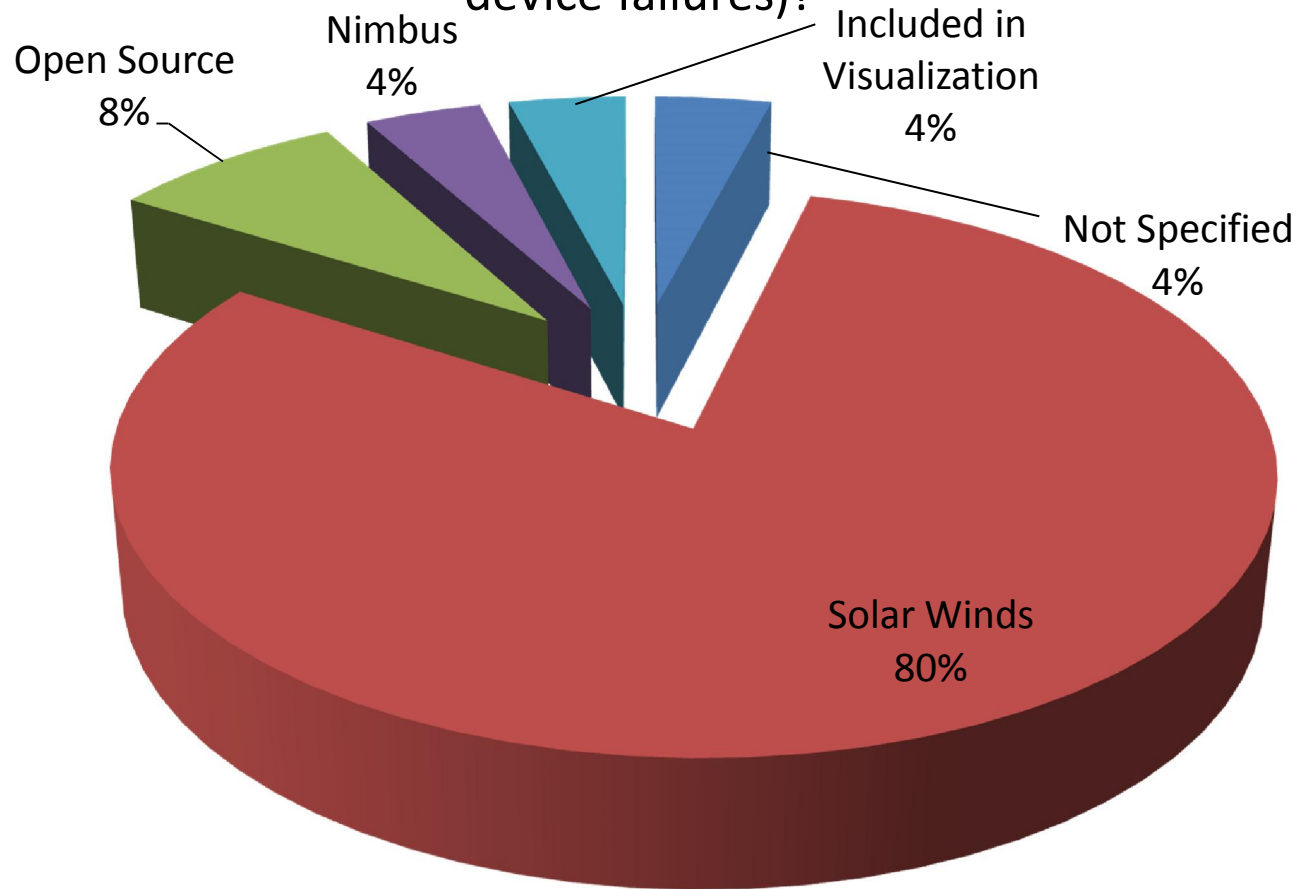
(9) What kinds of reliability / resiliency characteristics are deployed as part of your project? (e.g. multi-vendor, over-lapping WAN clouds)



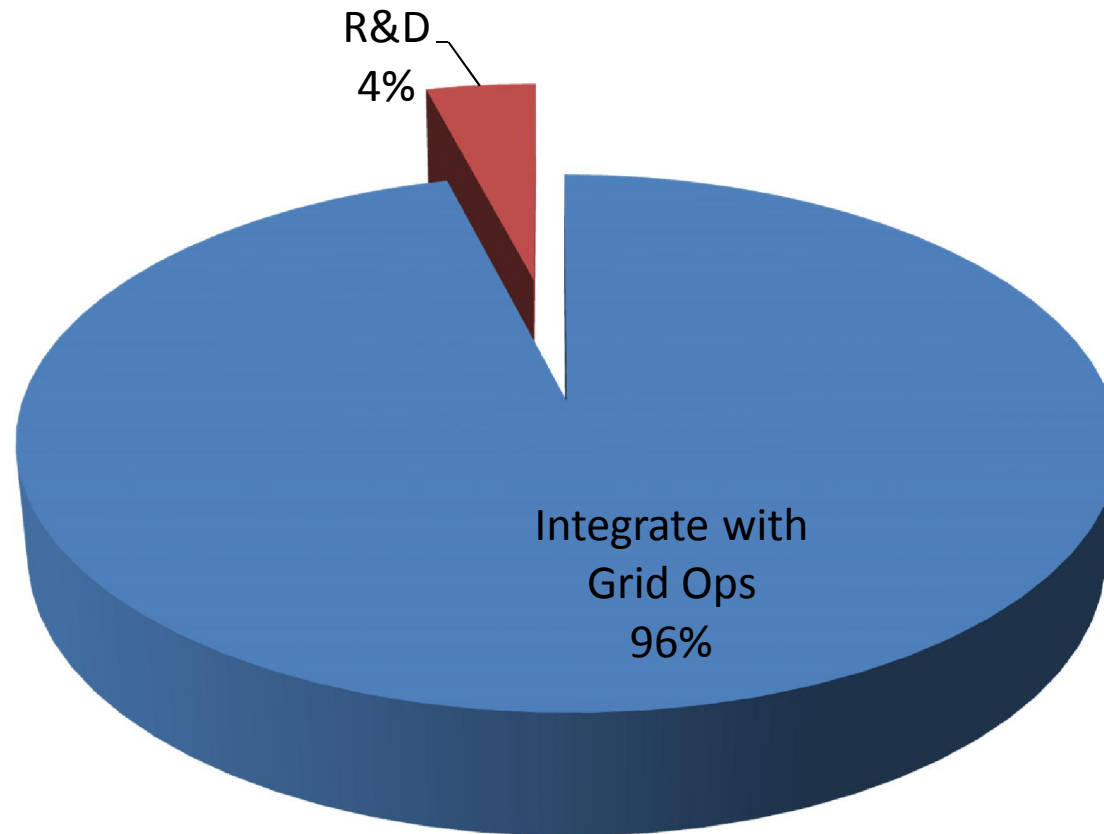
(10) For the network management component of your project, was this contracted out to a vendor or done “in-house?”



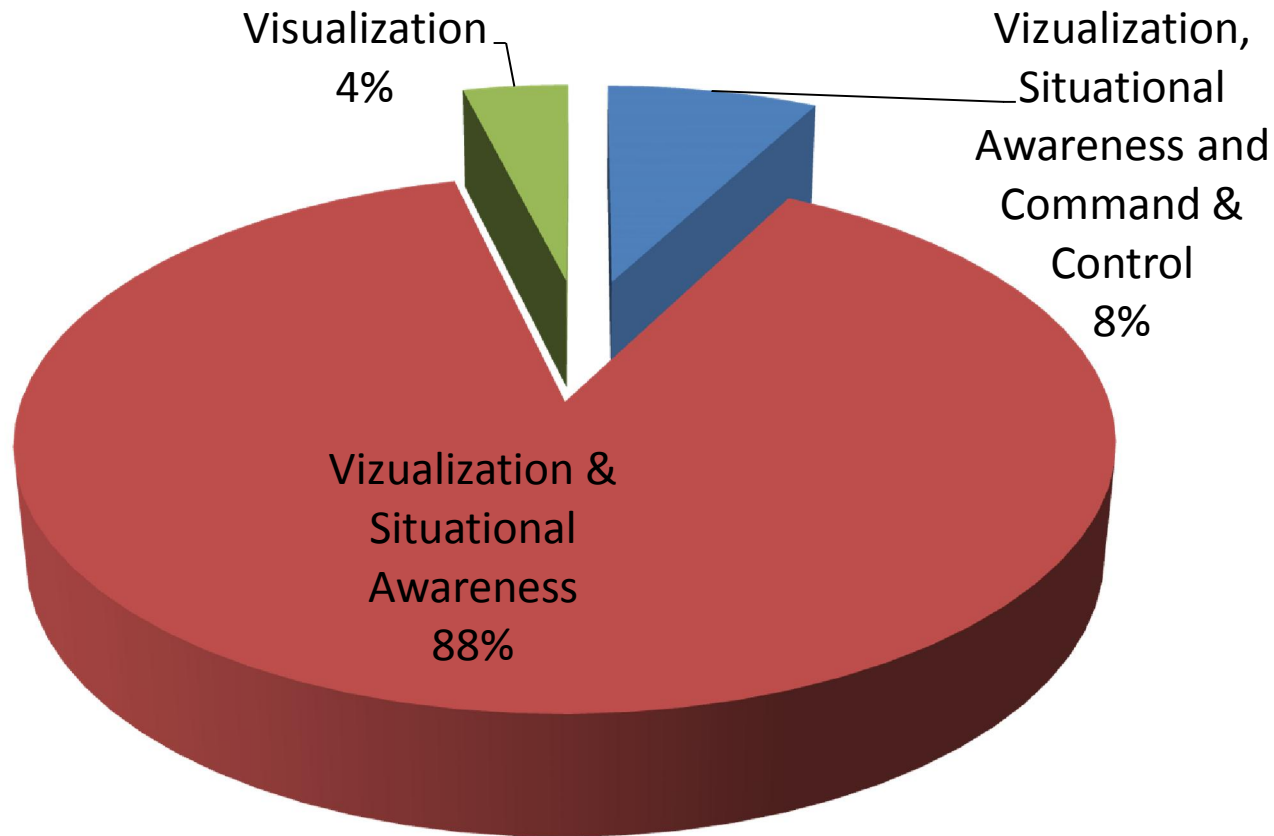
(11) Are there any products in use to provide alerts or alarms with the loss of any communications services (e.g. HP OpenView alerts, online notifications of device failures)?



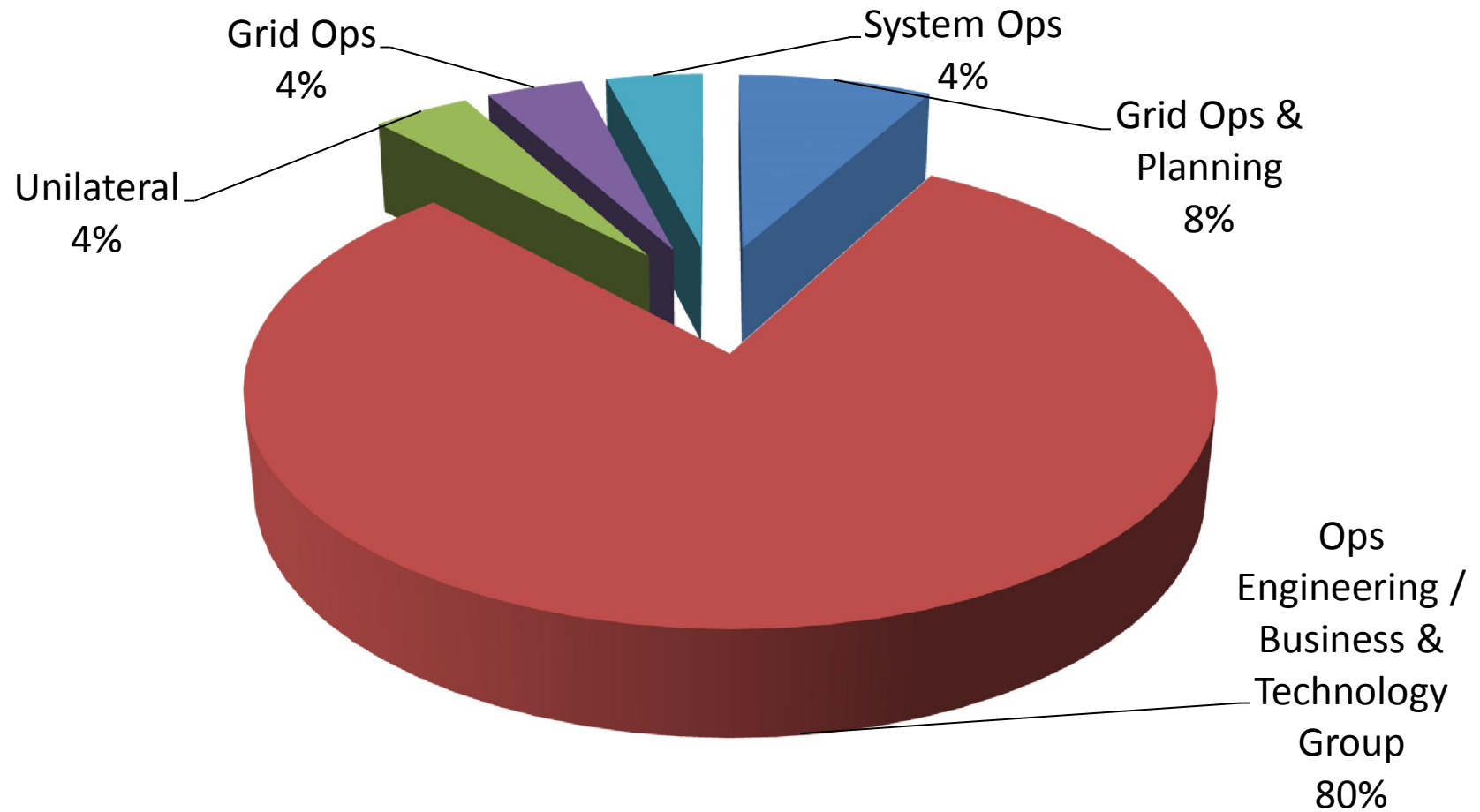
(12) Was it a part of the project goals to integrate within Grid Operations or was the effort characterized as more of an R&D effort?



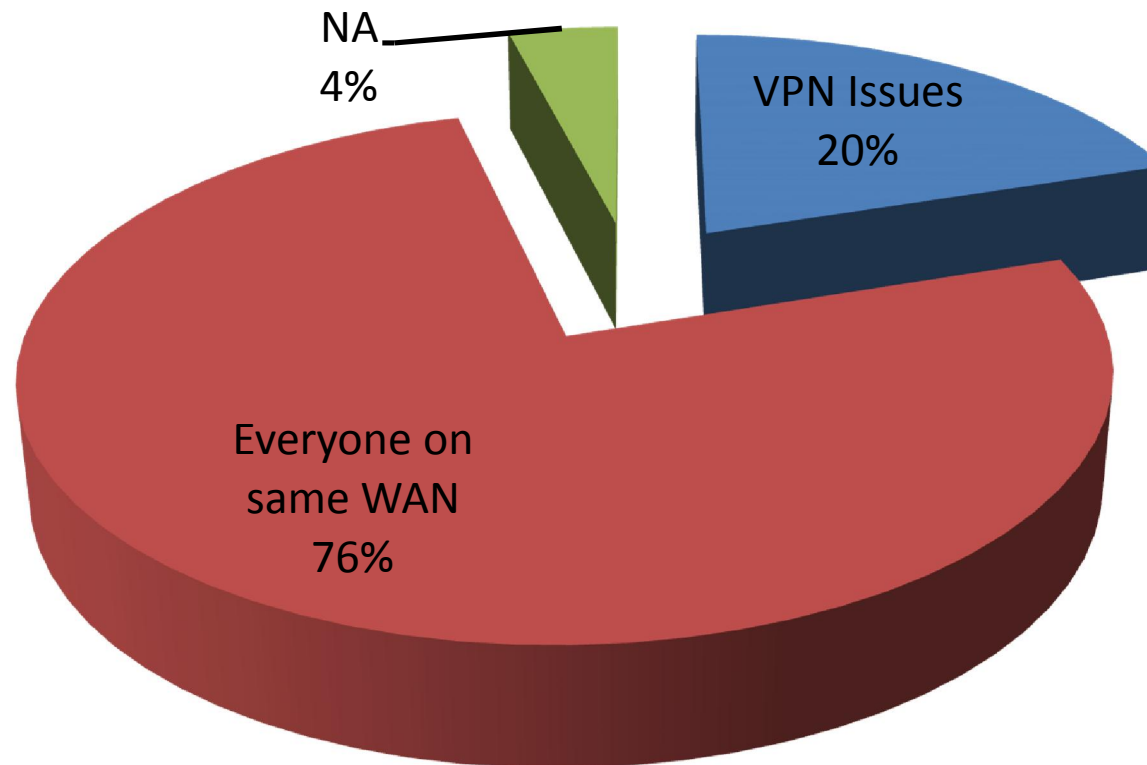
(13) Were the applications being deployed as part of the project principally visualization or in some instances, command/control?



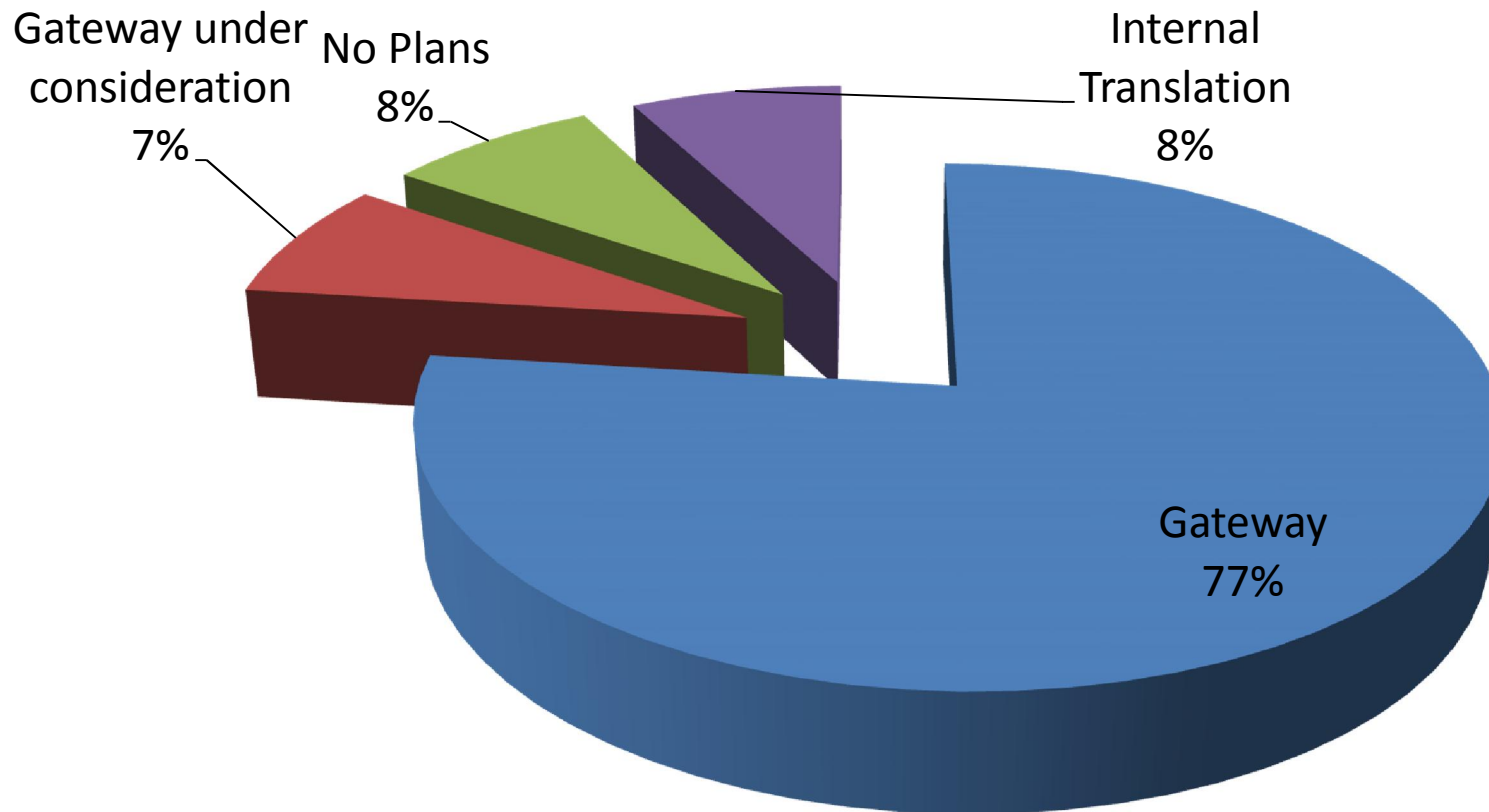
(14) Who/what was the identified area within your organization that was the principal stakeholder in the project? (e.g. Grid Operations, Planning)



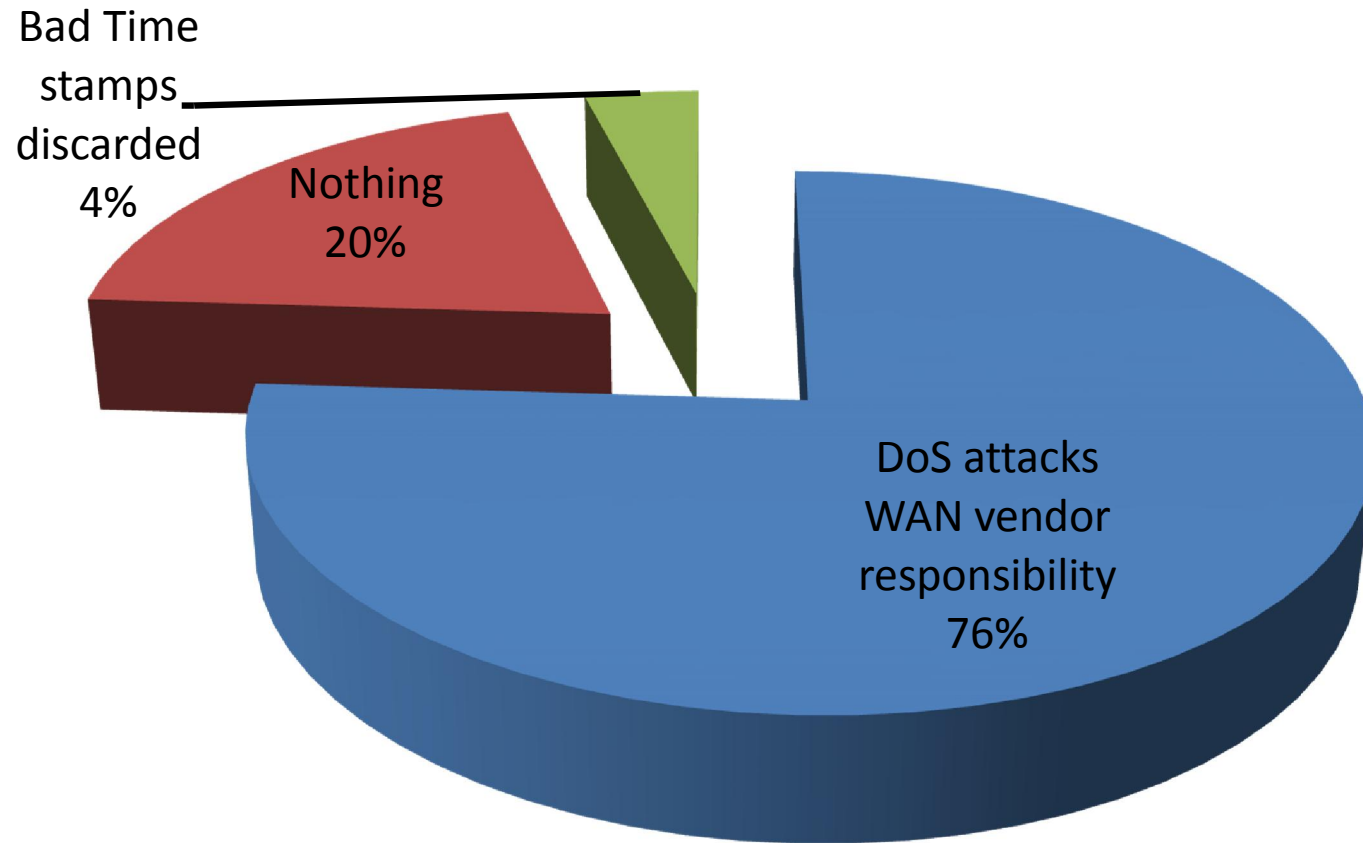
(15) What WAN data communications protocol and other implementation conventions (security measures, network management hooks, etc.?) did you work out with your geo-neighboring NASPI WAN(s) operator(s)? What was learned during network interoperability integration testing?



(16) In the absence of agreed WAN-WAN protocol/security/management implementation conventions, what's the plan – translating gateways?



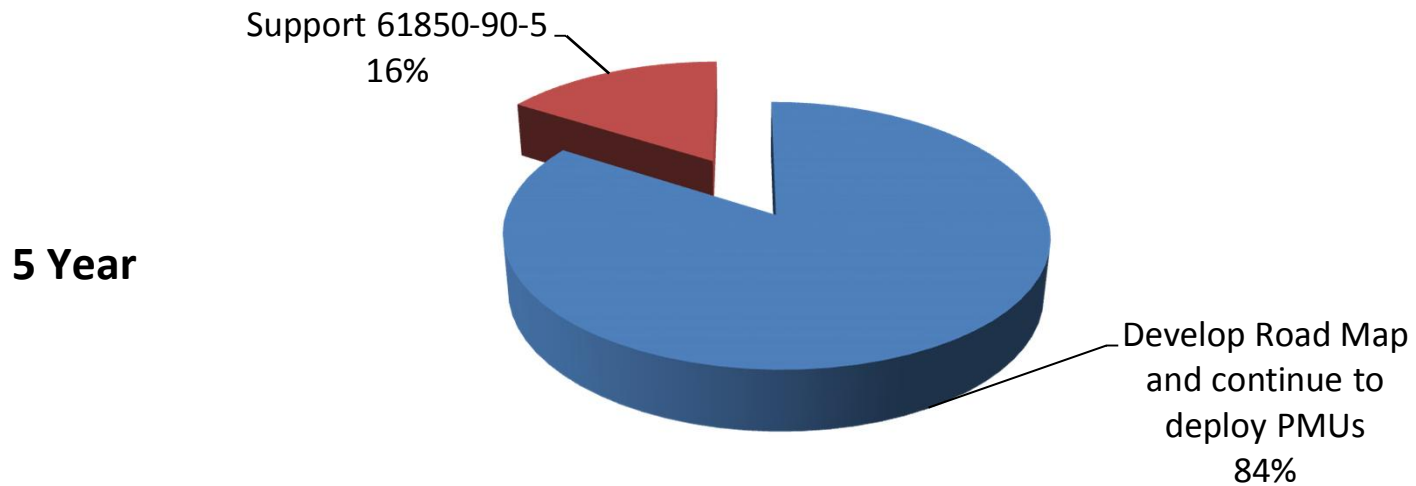
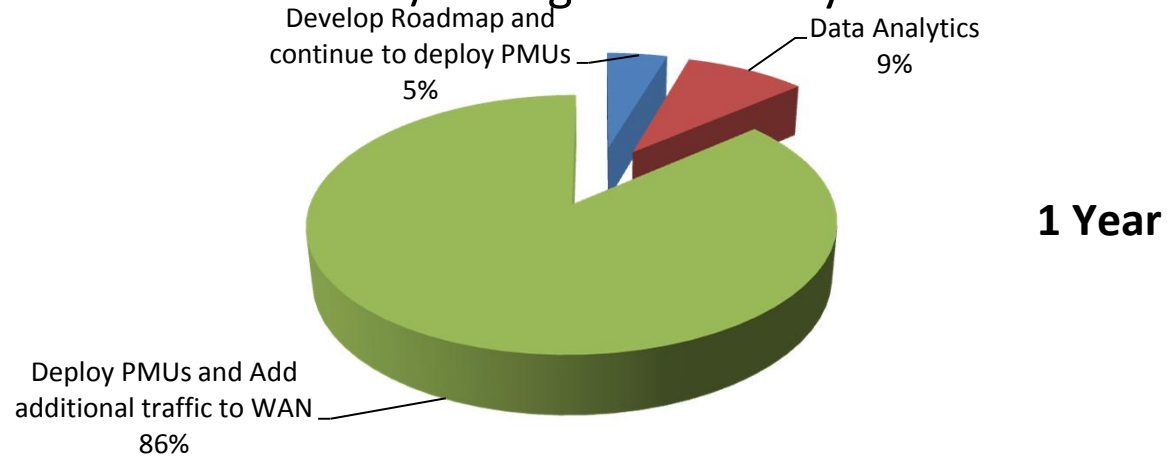
(17) What have you done to mitigate the threat of GPS spoofing, poisoning, DoS, etc.?



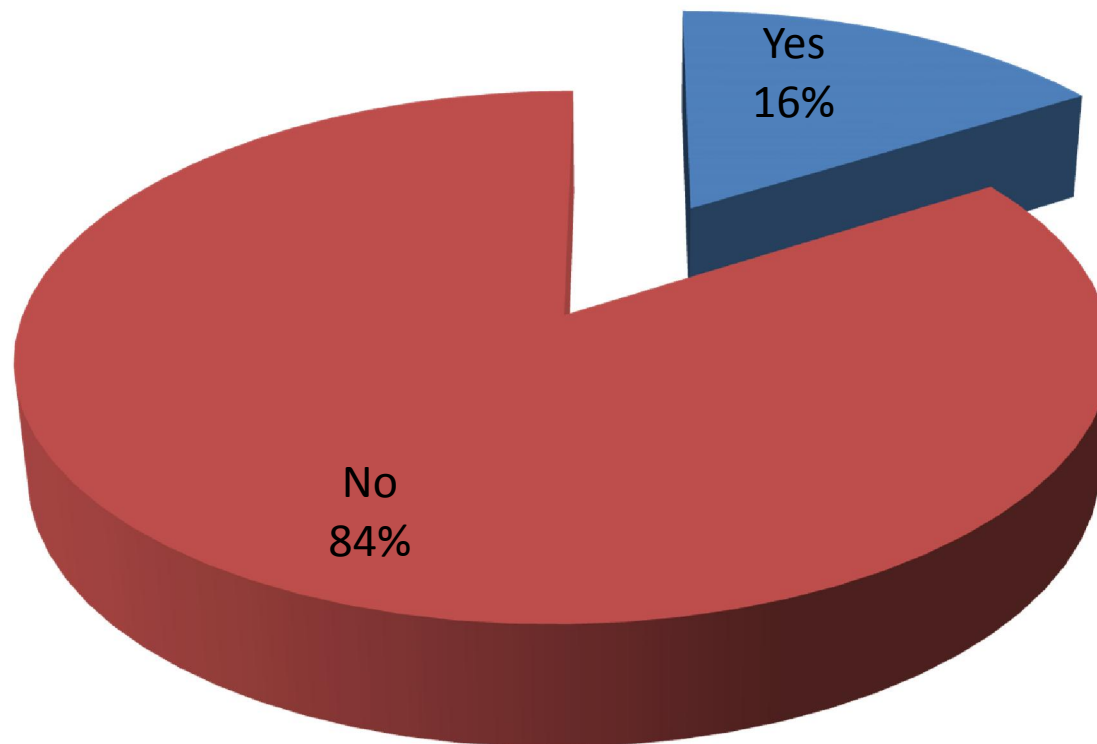
(18) What future plans are in store for the technology being deployed by the project?

A. Growth within one year?

B. Growth / changes within 5 years?



(19) If you had the project to do over, would you change anything or do anything differently as it relates to the telecommunications aspects of the project effort?



Some notes

- Two participants are using serial communications from substation to participant data center siting CIP concerns as the reason for the choice
- Some respondents were individual BAs and TOPs describing their “campus” area networks
- WISP had 19 participants all using the same network technology

Questions

- D&NMTT Co-Chairs

- Dan Brancaccio



- Bridge Energy Group

- DBrancaccio@BridgeEnergyGroup.com

- Jim McNierney

- NYISO



- JMcNierney@nyiso.com