

1st SIG-PVM Meeting

Thursday, 03.11.2016

Location: SWITCH, 1st Floor RIGI

Program and details: <https://wiki.geant.org/display/PMV/SIG-PMV+Meeting+@+Zurich+2016>

Remote-Access Link (Vidyo): <https://goo.gl/oNNHdR>

F2F Attendees	VC Attendees
<ul style="list-style-type: none">• Richard H-J - GEANT• Antoine Delvaux - PSNC• Hank Nussbacher - IUCC• Tim Chown - Jisc• Eli Beker - IUCC• Ivan Garnizov - FAU/DFN• Miguel Angel Sotos Rodriguez - RedIRIS• Pavle Vuletić - AMRES• Robert Stoy - DFN• Indrek Rökk - EENet/HITSA• Darren Clarke - GEANT• Oleg Nosylovsky - UIIP NASB / BASNET• Uladzimir Nozik - UIIP NASB / BASNET• Alan Buxey - Loughborough University• Susanne Naegele-Jackson - FAU• Duncan Rand - Jisc• Olav Kvittem - UNINETT• Chris Welti - SWITCH• Wim Biemolt - SURFnet	<ul style="list-style-type: none">• Yehavi Bourvine - IUCC• Eimantas Šerpenskas - Litnet• Sylvia Kuijpers - SURFnet• Veronique Lefebure - CERN• Emanuel Massano - FCT FCCN• Kurosh Bozorgebrahimi - UNINETT• Brian Mortensen, NORDUnet

The first open SIG-PMV meeting was held as a workshop on Performance Monitoring and Verification topics, focusing on research, academic ICT's and industry as the target audience. Referring to the [AGENDA](#), contributions were presented on Connectivity Fault Management (CFM), Wireless Crowdsourced Performance Monitoring and Verification (WCsPM&V), optical layer PM in the optical/DWDM domain, Micro Dependability Measurement, RedIRIS's performance and monitoring tools for universities and research centres, an inside view of perfSONAR (pSmall nodes GEANT project) and Wireless Performance fundamentals in the LAN environment.

Further there was a lively discussion based on the [Survey](#) results. The rationale for the Survey can be found in the [SIG-PMV](#) charter; one early activity is to get an indicator of the PMV landscape in GEANT communities, as well as outreach communities. Therefore the SIG-PMV Steering Committee (SC) issued a fairly light survey to get some initial input, complementing information from the recent [SIG-NOC](#) tools survey, which was much broader in its scope of NOC tools in general.

The main subjects and questions addressed in the discussion are listed below:

- **End-Users, Universities:** The audience is asking How "happy" is an university in having PM&V capability available, degree of measurements (e.g. on L1/L2/L3) and analysis/interpretation of collected raw data.
- **PM&V Capability** - So the question is how many FTEs are assigned to work on network PM&V? Do we want to consider outsourced PM&V? Is there a dedicated team covering network performance issues (perhaps as part of a PERT), and providing PM&V services, which asks about the right metrics, QoS or OLAs/SLAs, or is PM&V "only" done on a best efforts basis as part of the daily work of the NOCs?
- **PM&V Metrics** - Is most interest is on throughput and/or packet loss? We have to ask what we should measure and what are the "right" metrics: Which metrics are useful? For example, does it really make sense to measure throughput (BW)? This might indicate whether QoS/SLA is really needed, or whether it's enough to stay with "overprovisioning of the network". In this context of determining the right metrics, PM&V is a strategic tool ⇒ Should the network capacity be optimized or a priori overprovisioned? From the end-user perspective, should it be possible to use/aggregate raw data from a tool kit and to visualize it, to give the end-user PM&V features in their hands? (This also opens questions on who the PM&V data should be made available to.)
- **PM&V Services** - Connectivity Fault Management (CFM) is definitely something that would help the NOCs - implementation, configuration use cases - many use cases are there. Further Alien Wavelengths are of interest to NRENs. The focus of services was discussed on Wireless and HPCs, which comes up stronger in the future. So the aggregation of collected network performance data (e.g. as a PM&VaaS) should be available community wide, GEANT plus outreach.
- **PM&V Community** - Providing help for user communities in PM&V should focus on NOCs / NREN's / Scientists). Are tools like the pSmall project (small node perfSONAR) and security in a BOX useful? PM&V should be simplified, should allow secure measurements and deliver (new) features. In the context of helping communities a single vendor on the campus could make the future difficult, so how flexible are universities in using Open Source software? There was a strong interest in using Open Source tools, to make customisation and integration with other tools simpler. In the context of Community Support there was a discussion: **How we can do PM&V better at the NREN's level - Technical:** Could this be solved by a PMV-Architecture as deployed on the GEANT project GN4-2-JRA1T3 (Concept)? And how to provide Network services, where the architecture requires measurement/creation of SLAs and delivering a statement on Network Quality Assurance (QoA), Measurement Methodology, measurement below the network etc. **Non technical:** The main question that came up was on how to get information of ongoing activities

focusing PM&V into GEANT. Today NA3 has relations, and/or is collecting information on an international level. So it would be helpful to know where people from (N)RENs are working on PM&V topics (Projects, Collaborations, etc.) and focusing particular topics on PM&V, e.g., to elaborate measurement methodologies, to work on network performance and verification services, deployments of measurement software suites, etc.

- **Tools** - The scope of PM&V should include “other” tools (like perfSONAR), which means the SIG needs to investigate tools through which a framework on PM&V could be established, or building an open source tool (e.g., a software suite integrating known technologies with extended functionality) or based on expertise (e.g., RIPE) to create something from scratch. Whether to make or buy was not explicitly a part of the discussion, but from the technical/strategy point of view it’s essential to know how to perform PM&V within (N)RENs. However, the output of all activities should be efficient - Recommendation: We should work towards tool development, where we have to figure out which features are important, so that they can be prioritized in a road map (e.g., as happens with GEANT perfSONAR with Internet2). As a consequence of that a list of prioritized features should be the outcome. Further a concrete statement come up to use NetFlow statistics, tap the fibre and send all the micro flows to the appliance.
- **Open Software Interface (APIs)** - The requirement to (an) Open Software Interface, API’s (e.g.RESTful, JSON, etc.) was mentioned, so that the NRENs (NOCs) are able to aggregate collected measurement data (e.g. by a toolkit), according their needs and on top of that to have own tools in place which allows data research and analysis on the collected raw data. In this context there were also statements to Open Source Analytic Software (e.g. PNDA, see <http://pnda.io>). Regarding the survey results, most responses noted Open Source tools as a basis for deploying their own software/scripts.
- **Training in PM&V** - The concept “Train the Trainers” was noted as essential for the PM&V eduPERT community. There was a discussion on what was meant by “training”. According to GN4-2-NA3T6, training defines clear learning objectives that means a clear output for the attendees. Or should we start with a new form of “train the trainers”? If SIG-PMV recommends certain tools, it would be essential for encouraging new deployments to introduce appropriate training on prioritized features. The training needs should also be evaluated by considering the tools supported by eduPERT.
- **Meeting Format:** A discussion come up on the format of the SIG-PMV meeting . The audience decided unanimously to keep the workshop format. One statement came up regarding the earlier stage of eduPERT, that participants could introduce their own use cases (max. 15 Min) presentation, and the meeting could then discuss how those cases would be solved by the NRENs. Discussions should be held on the mailing list “pert-dicuss@lists.geant.org” beforehand, and the lessons learned should be noted as part of the SIG activity.

Action Points from the Discussions:

- How well are Universities able to carry out PM&V: To define a schema of measuring QoE (see “Techniques for Measuring Quality of Experience” - <https://goo.gl/PTj1QL>).
- PM&V Metrics/Methodology: To determine what should be measure and to simplify access to network performance measurement instruments/tools
- PM&V Community: To provide fundamental information on PM&V through SIG-PMV events. To show visibility through online resources such as the eduPERT service page, and support from GEANT (e.g., NA3).
- Tools: To investigate in PM&V by small expertise, currently provided by eduPERT (e.g WiFiMon, RIPE Atlas probe, CFM, etc...). To offer educational tracks to the PM&V Community.
- Open Software Interface: To investigate appropriate APIs (e.g. REST(ful), JSON, etc...), and to offer information on and discussion of them in workshops for the PM&V community
- Training in PM&V: To provide training - including “train the trainers” - in form of tutorials (F2F, Online) or workshops
- Meeting format: To offer SIG-PMV as a workshop, at least once per year.

Next steps:

Hosting of the next SIG-PMV and further plans on PM&V:

- 2nd SIG-PMV Meeting in Amsterdam - becoming a regular annual (at least) event
- TNC2017: an eduPERT training session ⇒ submit a proposal to TNC2017 by 11.2016
- TNC2017: a PM&V session ⇒ submit a proposal to TNC2017 by Nov 30th