

Performance Monitoring

**TF-NGN meeting,
Poznan (Poland), 08/05/03**

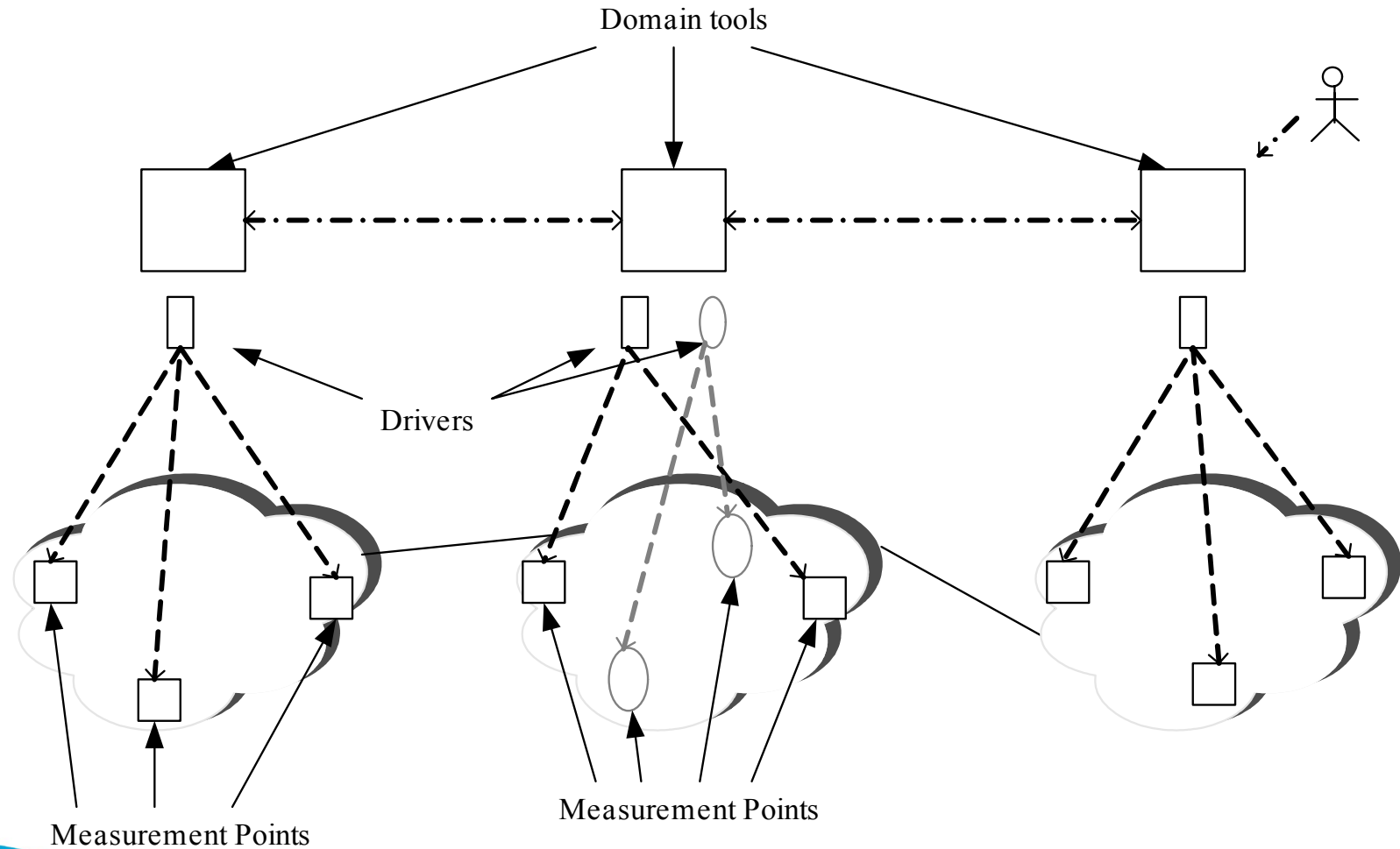
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DANTE**

Overview

- **Objectives**

- Exchange monitored data between domains to
 - Ease the troubleshooting
 - Give to the network users some views of the networks-edge to network-edge performances (later on end-to-end).
 - Network/service health verification.
 - SLA verification
- Re-usable parts (as much as possible).
- Extendable to new type of tests.

Performance Monitoring Overview



Activity Status

- **The work has been subdivided into several tasks**
 - Test definition.
 - Measurement box guidelines.
 - Measurement protocol.
 - User representation and statistics.
 - Data storage, retrieval and analyses.
 - Domain tool architecture.
 - Domain tool implementation.
 - Inter-domain measurement request.
 - Path finder.

Test Definition

- **One-way test**
 - Metric from IPPM (OWD, IPDV, OWPL, re-ordering, RTT) and traceroute.
 - Will be used for trial as an infrastructure already exists (RIPE TTM boxes).
 - No traffic pattern defined yet to get the best representation of the network performances. Looking for people having work on the topic or able to provide some help/advices.

Test Definition

- **Other types of test.**
 - Need input from NREN, TF-NGN, APM etc to know in which direction we have to go later on. Feedback needed.
 - The goal is to have an infrastructure as widespread as possible amongst the research community.
 - Test can be active or passive, information taken from a router or a PC, etc

Measurement Box Guideline

- **Provide guidelines about what equipment, what is needed to provide good measurement.**
 - HEANET, GARR and DANTE contribution -> more needed.
 - GPS and NTP document is being put together.
 - Try to use already existing measurement boxes
 - measurement box = dedicated hardware to monitoring the network with specific software.
- **Need to have the community to agree on which one to choose for the long run.**

Inter-domain Measurement Protocol

- **Needed mainly for active test between different type of equipment.**
 - Specify the packet payload format to be understandable by different measurement boxes type.
 - This part is left for later, once the type of tests have been agreed by the NRENs.

User-representation and Statistics

- **Metric Additivity**
 - A statistical work has to be done to provide guidelines on how to concatenate measurement taken from different domains.
- **Statistics**
 - Will start with simple function as averages, percentiles.

User-representation and Statistics

- **User Representation**
 - What is the best way to represent the information to the user?
 - How to have this information understandable for a non-technical user?
 - How to represent on a screen the behavior of a network? (a bit as a plane cockpit)

Data Storage, Retrieval and Analyses

- **Data storage**
 - Left for later, we will use to start with the storage capabilities from the measurement boxes themselves.
 - Minimum requirement: storage of the raw data for 4 weeks.
 - To allow post analyses.
- **Data retrieval**
 - Done by a “module” interfaced with the domain tool.
 - See domain tool for more information.

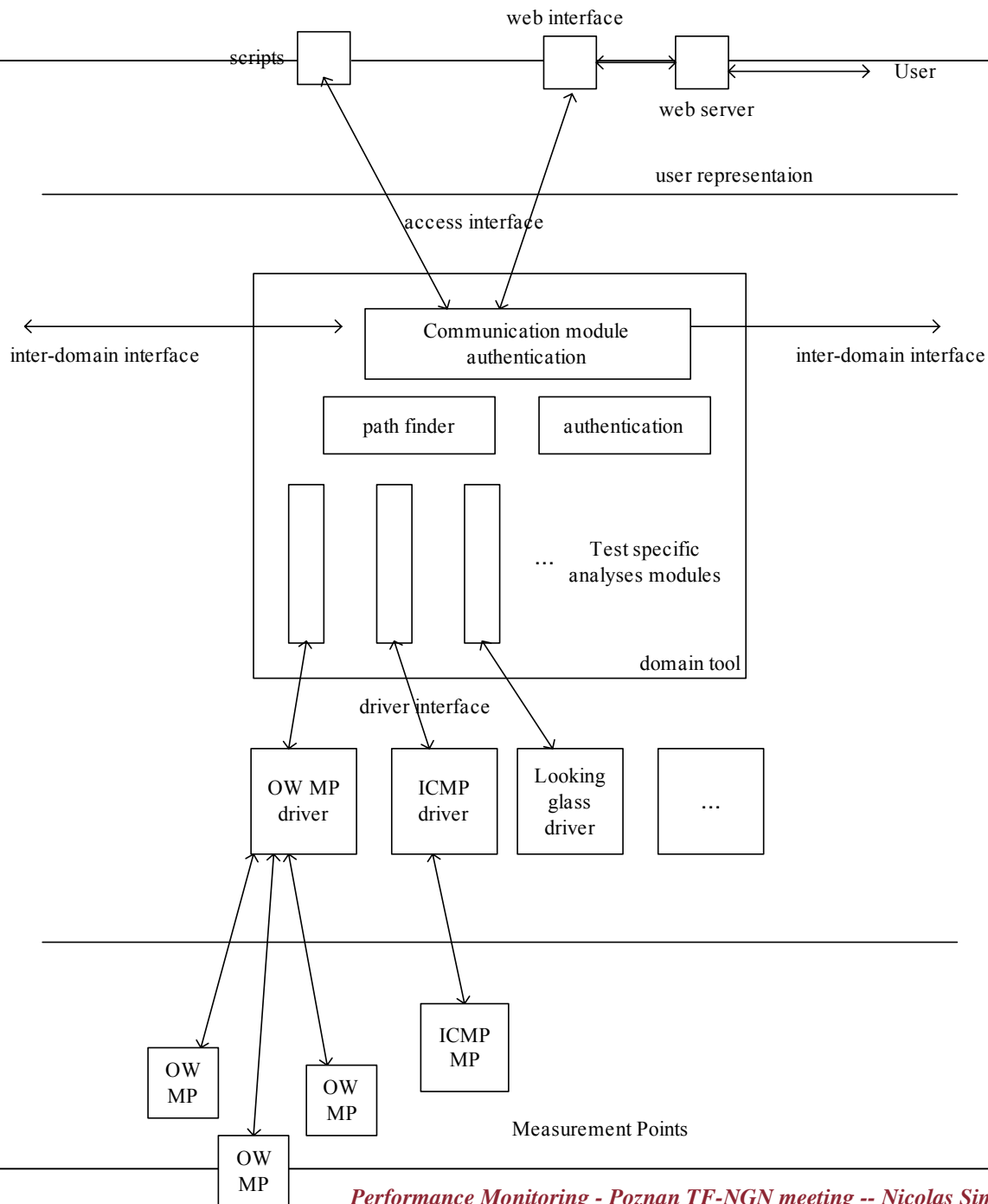
Data Storage, Retrieval and Analyses

- **Data analyses**

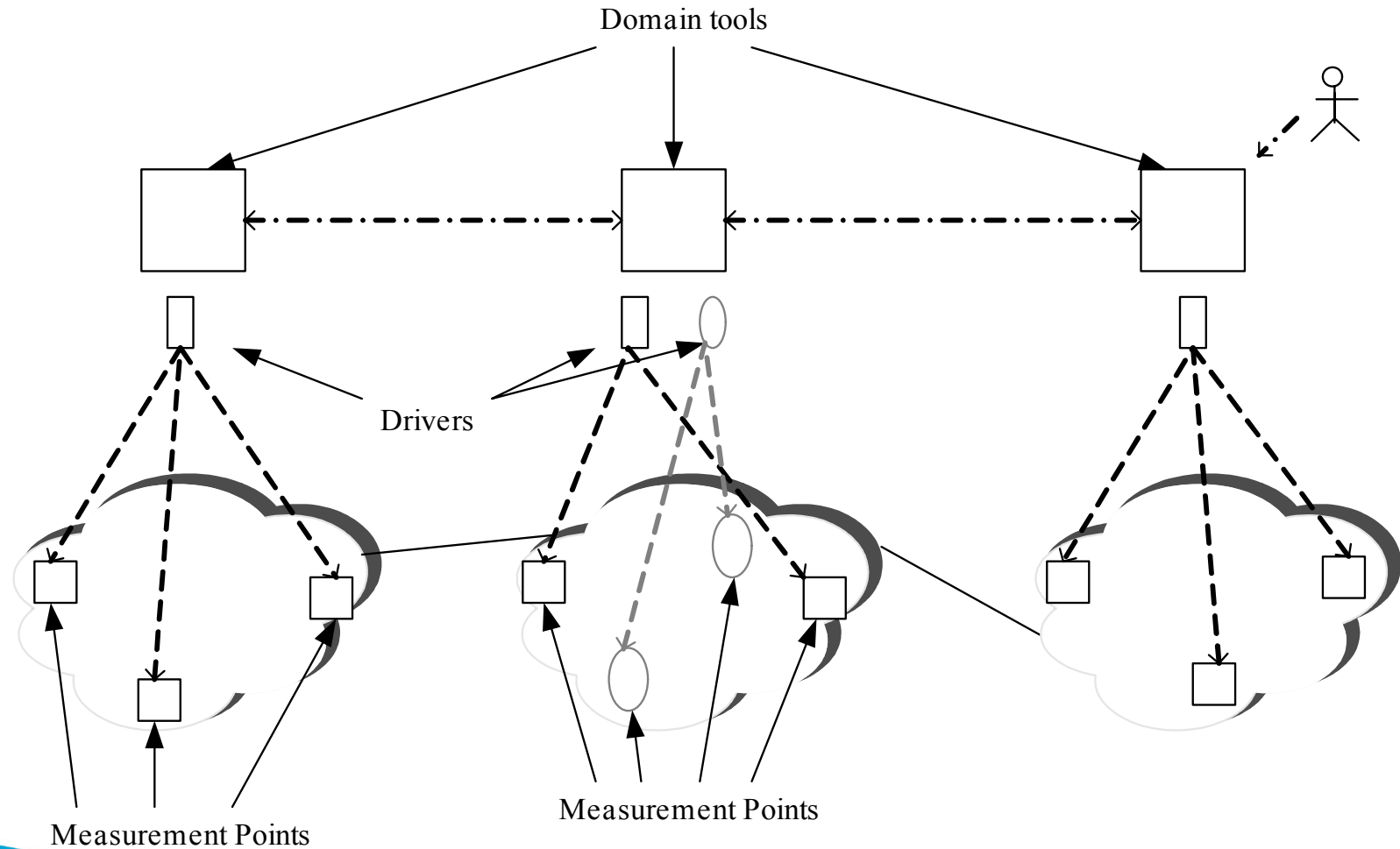
- Done by the domain tool
 - can also be done by a script between the domain tool and the user..
- How to analyse the data to provide the format needed by the the user (cfr user representation).

Domain Tool Architecture

- **Exchange data between domains and start new tests.**
- **Uses**
 - start OW measurement between different domains, retrieve data from these measurements.
 - Looking glass like functionality (possibility to automate some verification on several routers).
 - Tracking of DoS attacks across networks.
 - Available bandwidth on a given path.



Performance Monitoring Overview



Domain Tool Architecture

- **Drivers**
 - Measurement point specific.
 - Resource management.
 - Cope with exceptions messages.
- **Path finder**
 - Find a measurement point inside a domain.
 - The closest to an IP address or along a given path.
 - Find the next domain tool towards an IP address.
- **Comments more than welcome!**

Domain Tool Implementation

- **Path finder implemented by SWITCH.**
- **Gluing of the components led by Dante.**
- **Implementation of the OW driver and the corresponding module by Dante.**
- **Implementation of the interfaces by Dante.**

Inter-domain Measurement Request Protocol

- **SL + VR leading it.**
 - Have a look to GGF, i2 e2epi.
 - First version of the interface due mid-June.
 - Implemented by Dante.

Trial

- **In September**
 - One-way type tests (use of RIPE TTM boxes)
 - GARR, GÉANT, HEANET and SWITCH
 - GARR, SWITCH and HEANET already have some RIPE TTM boxes. Three RIPE TTM boxes will be installed on GÉANT.

Information

- **URLs**
 - <http://www.dante.net/tf-ngn/perfmonit/>
 - <http://chx400.switch.ch/mailman/listinfo/perfmonit>

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