

TF-NGN: Performance Monitoring Architecture – draft 0.1

The aim of the performance monitoring initiative is to provide information to the network end-user and the network administrator about the performance along a path or a sub-path along which a monitoring infrastructure is deployed. This performance information is provided in order to give to the user an overview of the network behavior or service health along the path/sub-path. It should also ease the network operator task when troubleshooting performances on a given path by helping him to identify where the problem is located.

The Performance Monitoring activity starts from a network centric viewpoint and tries as much as possible to use existing network measurement tools. Network centric means that the focus will first be on network parameters measured in a domain or across several domains before extending the infrastructure to the end-user equipment.

The Performance Monitoring infrastructure consists of a user interface to allow the user to request some measurement information. The request is then passed to the Domain tool, which will be in charge of gathering and analysing the data monitored by some Measurement Points spread over the network. The Domain tool is not only responsible for the data in the domain in which it is associated but also to request some information from other domain. Measurement Points type specific drivers are in charge of collecting the data for the Domain tool.

Foreseeable constraints and working area

Due to the current trends in the Research and Education environment in Europe, the group has to take into account that various domains uses various monitoring tools. The activity will have to find a way of bringing the different type of measurement together when possible via some recommendation (eg on how to analyse the data, on how to do the measurement), some standardisation (eg for active monitoring to use standard packet format, how to communicate between the different infrastructure) and some statistical work.

The group has also to take care of what other similar activities are developing. There is a need to try as much as possible to be “compatible” with what the main groups of users and peer R&D network are developing. The group has to keep in mind that an IP packet does not care about the domain boundaries and that a problem can appear anywhere. Due to the amount of project and the various approach taken by these groups, some choices will have to be made.

Some work will have to be done on how to represent the data for end-user and make it understandable by him. Some more work can be done on the representation for the network operators by optimising the information representation on a screen.

When software has to be developed, attention must be paid for portability, re-usability and documentation. The tool have to be build to allow different domain to implement different functionality.

System Architecture Overview

The system consist of several parts:

- A web-interface from where a user can request some monitoring information from different domains and/or start a test. The information the user can get from each networks will depend on its privileges.
- The domain tool is at the hart of the system. That is where an user request or a request from another domain tool is treated. It is in charge of the authentication, authorisation, finding the domain Measurement Points (MP) from where the measurement have to be done, treating/analysing the data accordingly to the requests, contact another domain tool if the MP are not in its domain. It also contains a Path Finder, which is in charge to find the MPs involved by an user request. The interfaces used towards the user and the other domain tools have to be defined.
- The drivers are in charge of the communication between the domain tool and all the Measurement Points and Measurement Point associated database (if any) in a given domain. There are as many drivers as Measurement Point types in the domain. A driver has to do some resource management to avoid an over-utilisation of the Measurement Points it is in charge of.
- The Measurement points are servers deployed in the network, they can also be routers (eg to measure available bandwidth) or any other type of equipment having a selected measurement capability.

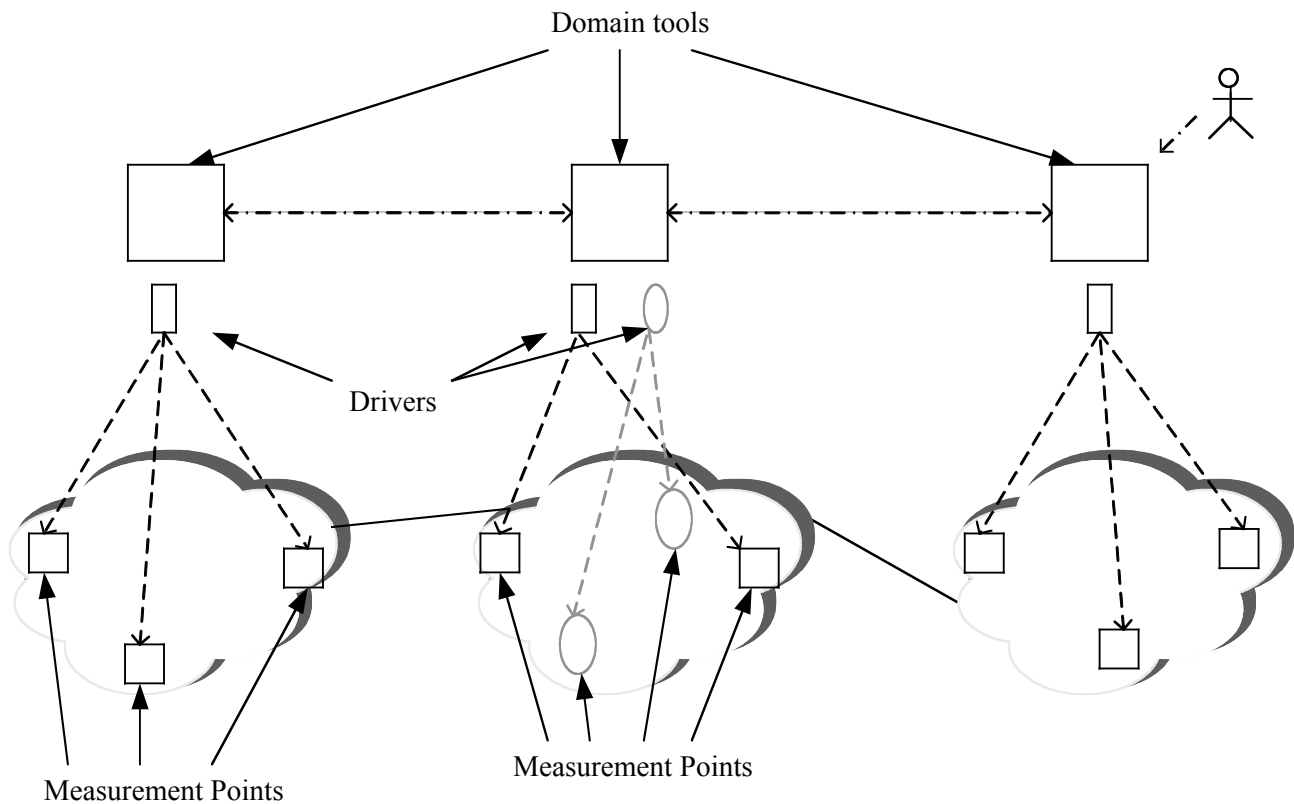


Figure 1. Performance monitoring architecture - general representation.

Performance monitoring Phases

During the first phase (ending Q4 2003), the activity will focus on defining the principle of the inter-domain communication and to test them with during a trial. The following tasks have to be done:

- Development of the domain tool to exchange data between domains and analyse them.
- Development of a GUI to allow a user to make measurement requests and to present him the results.
- Definition of the domain tool inter-domain communication interface
- Development of a driver for one type of Measurement Point (one-way measurement point)
- Development of the Path Finder module to map the MP involve in the measurement requested by the user.
- Trial in Q3 2003 between at least three domains

Second phase:

- Development of additional drivers for other type of Measurement Point.
- Development of software acting as Measurement Point for end-users equipment.
- Study on hoe present some useful and understandable information for non-technical end-user.

First phase representation

The first phase will see the implementation of the domain tool and its installation in at least three consecutive domains, a driver for one-way measurement, and the installation of one-way measurement point in the involved domains. Is should allow to test the concept of the performance monitoring architecture, the way the data are exchanged and analysed. The figure below represent various case of utilisation to allow an user to check the performances along a path and a network operator to find out where a problem is located.

