

# Open assignments “Management of SURFnet6”

Together with SURFnet, TNO and the UvA, the UT performs research on the management of [SURFnet6](#). This new research network will be a hybrid IP/Optical networks. The management functions within this new network provide information on its performance, and allow end users to dynamically establish and release optical connections. Students can participate in this research by doing assignments on the following topics. For further information, please contact [Aiko Pras](#).

## Topic 1: Light path management overview

The goal of this work is to investigate which light path related management capabilities will become available within the optical switches of the future SURFnet6. The investigation focuses on three aspects: information model, data model and management protocol. The information model defines the managed objects at the conceptual level, and is useful for designers of management applications and operators. Conversely, the data model is defined at a lower level of abstraction and describes the managed objects using some kind of syntax; examples are the “Structure of Management Information” (SMI, IETF) or the “Managed Object Format” (MOF, DMTF). Finally, the protocol defines how management data will be exchanged; examples are the CLI, SNMP and HTTP.

The outcome of this work will, amongst others, be a list of counters and (status) messages (traps, syslog etc) that might be relevant for managing light paths.

## Topic 2: Analysis of measurement data

Measurements can be divided into two categories: passive and active. Passive measurements involve the monitoring of packet headers and / or packet payload, while active measurements involve the generation of test messages. In our work the focus will be on passive measurements that determine the Quality of Service as perceived by the end user. Examples of these include:

- throughput,
- loss,
- delay and
- delay variation (jitter).

On this topic there are multiple assignments possible.

## Topic 3: Measurement infrastructure

The goal of this assignment is to investigate how measurement data can be collected and stored at a central place. Since such data will be made openly available, anonymity and confidentiality are important requirements. Therefore it may be necessary to include within the capturing devices special functions for that purpose. Within this assignment prototypes of such measurement infrastructure will be developed.

## Topic 4: Demo

The goal of this assignment is to build prototypes of a management / measurement applications that demonstrate various aspects of optical network management. The prototypes will likely be web based, and show pages with useful information for end users. Amongst the parameters that will be presented are throughput, loss, delay and jitter.