

Dynamic vs. static reporting

For the communication from field level to station level the IEC 61850 has two MMS based services. One is called `GetDataValue` - where the client has to request every bit of information - the other one is called `Report`. The second one is by far the most used for this kind of communication - measurement information and status information of the switchgear and other sensors.

In this article we want to focus on the engineering process of one such `Report` and want to explain the differences between the two major process types the dynamic and static reporting.

The SCL describes a `Report` through two elements:

- Report control block `ReportControl`: This is an object allocated in the data model of the server (field level device as bay control unit). The children and attributes of this object allow to configure the Report. Examples for this type of configurations are: trigger options, various times as integrity time, a unique ID and others.
- the payload of the report called `DataSet`: This is an object grouping all the data the report is sending.

Both these elements are connected through a data set reference in the report control block.

Based on this the basic steps to configure a report are:

- Create report control block: Add report to the server
- Configure the report control block: Define the behavior of the report
- Create data set: Define the payload of the report in the `DataSet` element
- Connect both together: Set the data set reference in the report control block

With those basic steps we can now compare the two mentioned processes together as such:

Basic step	dynamic	static
create report control block	(in the SCL) preconfigured by vendor (a set of empty control blocks without a payload)	in the SCL by SCT or preconfigured by vendor
configure report control	online through use of <code>SetBRCBValues</code> or <code>SetURCBValues</code>	in the SCL by SCT or preconfigured by vendor
create data set	online through use of <code>CreateDataSet</code>	in the SCL by SCT or preconfigured by vendor
connect both together	online through use of <code>SetBRCBValues</code> or <code>SetURCBValues</code>	in the SCL by SCT or preconfigured by vendor

pro's and con's

Type	pros	cons
dynamic reporting	There is a clean separation between the field level engineers and the control level engineers. The only exchange needed is the data model of the IEDs that is available very early in the process	As most of the configuration happens online there is a risk report configuration is not included in the *.scl. In fact that is the case in most cases as this would go against it pro.
static reporting	All information is in one file. This can be reused by: <ul style="list-style-type: none"> • testing department to simulated and see the information flow • allow to reuse configurations in the future. Reports rarely change in structure • minimize the time needed to to configure clients. The more different types of clients there are the more this is an advantage 	both the field level and station level engineers are working on the same file the SCL file or be more precise the *.scl file. They must coordinate in time: who has to do what when. Adding or changing of reports cannot must go through the system configuration tool again.

Mixing static and dynamic reporting

This is theoretically possible. It depends on the client side software, if both can be applied at the same time.