

# A Web-based Report Tool for Tango Control System via Websockets

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## REQUEST

Beamlines at Synchrotron Light sources operate 24 hours/day requiring Beamline scientists to have tools to monitor the current state of the Beamline without interfering with the measurements being carried out.

The previous web report system developed at ALBA was based on cron tasks querying the Tango Control system and generating html files using a predefined tango attributes list.

The new system integrates all those automatic tasks in a Tango Device letting the users create their own reports without requiring the intervention of the software support groups.

## SOLUTION

The Tango Device runs a Tornado web server providing an html5 web interface to create, customize and visualize its reports in real time (via WebSockets).

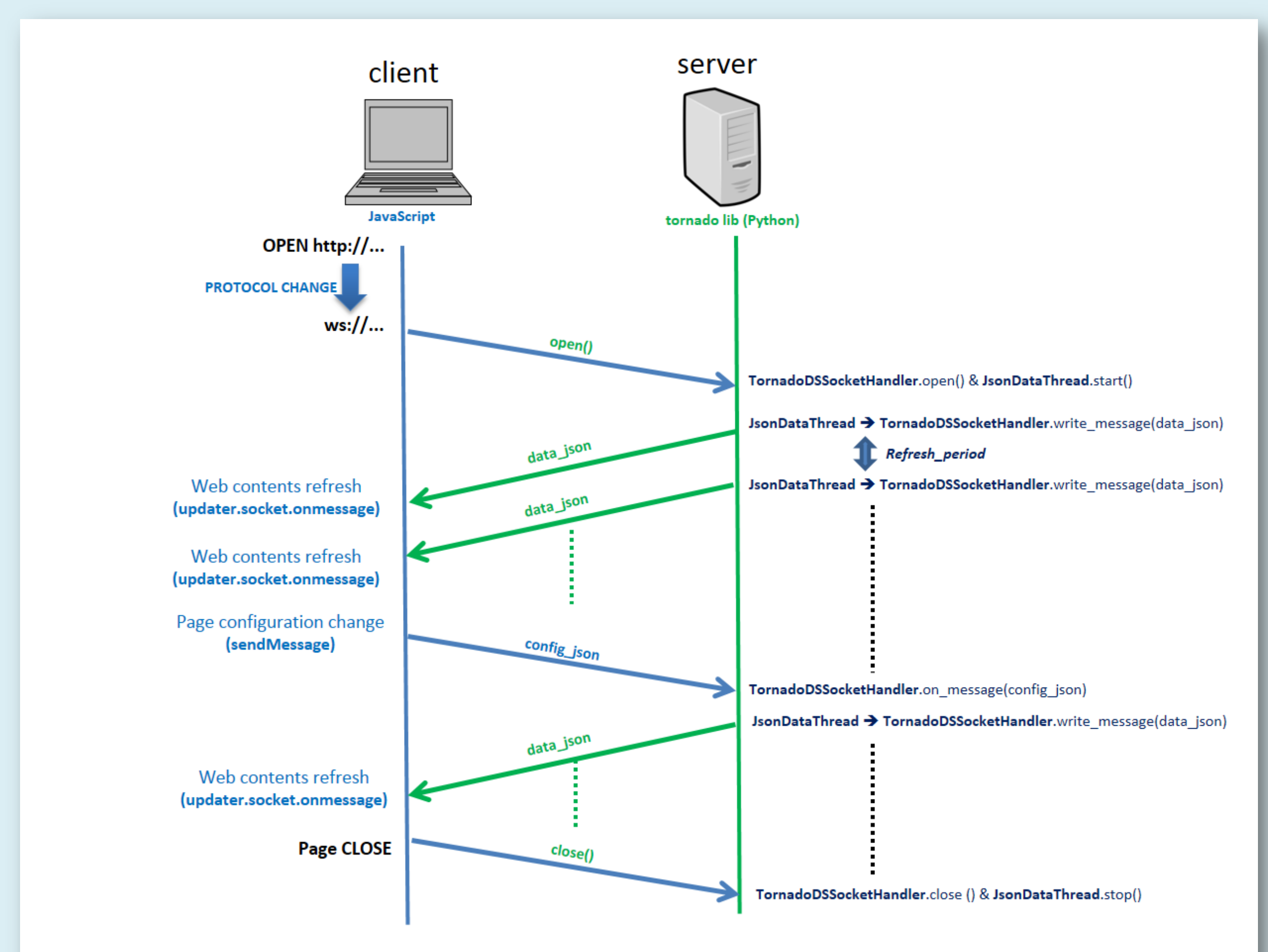
### Tango Device server

- Inherits from Dynamic DS
  - Allow creation of Dynamic Attributes
- Runs a Tornado web server in an independent thread
- Independent command to update defined attributes
  - JSON format auto generated
  - Data Refresh period configurable
  - Port configurable

### Tornado Web Server Features

- Tornado webserver
  - Python
- Websocket protocol
  - Provides full-duplex communication channels over TCP/IP
  - Supported in most major browsers
- Default report form provided
  - Developed with Bootstrap open source library
  - Tango attributes autodetection format/quality
  - HTML5
  - Spectrum attributes with chartjs library

### Server - Client Communications diagram



## APPLICATIONS

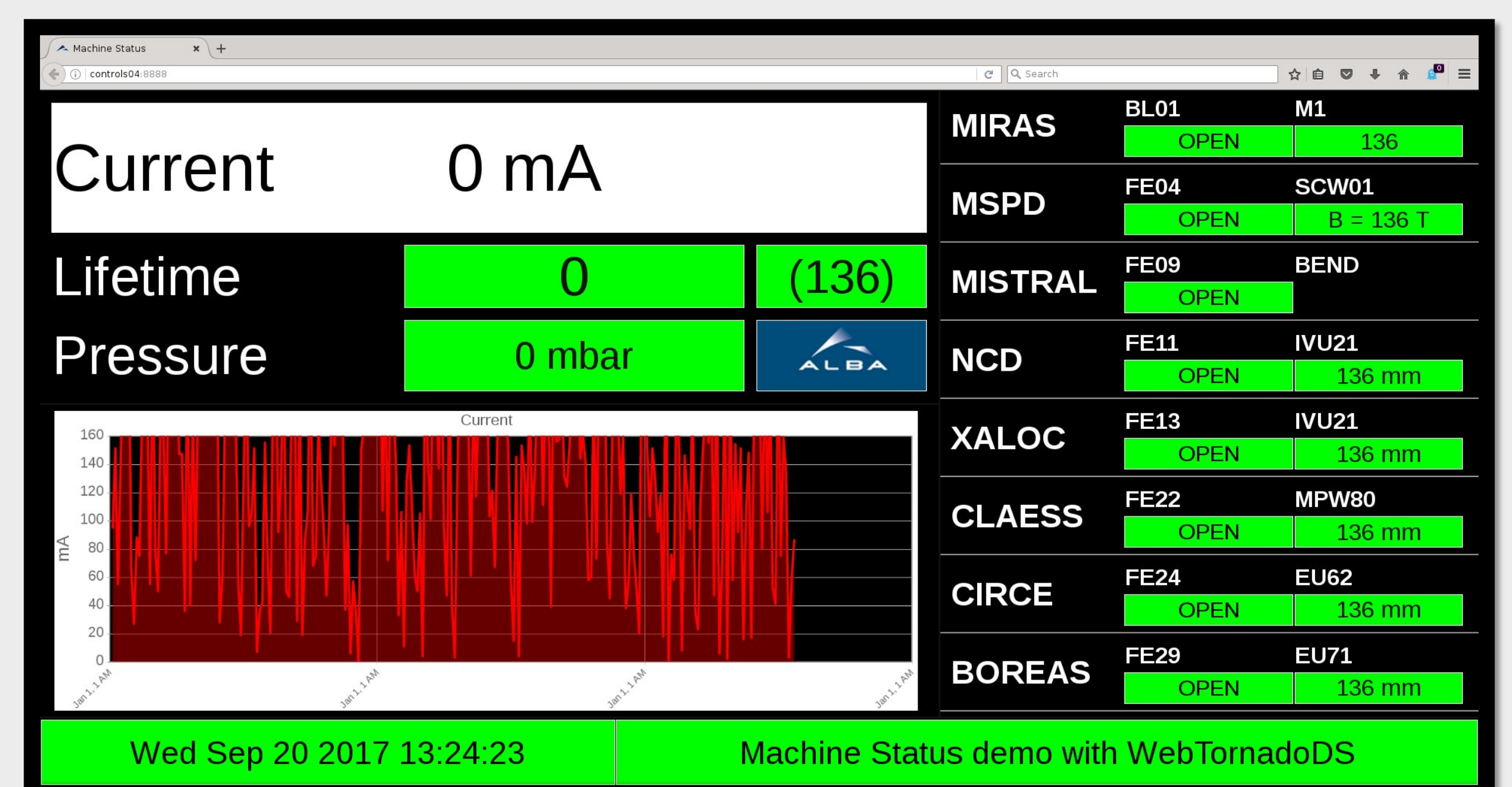
Dynamic reports are created and used by the scientists and engineers to remotely check the experiments and system status (Ex. Vacuum, on call, etc..)

Tango Attribute Report

Section configuration

## BENEFITS

- Centralized Server
- Flexible way to create dynamic reports
- Integrated in the Tango Controls System
- Custom reports layouts.
  - Ex: Alba Synchrotron Machine Status



Also used at THSH203: "Internet of Things (IoT): Wireless Diagnostics solutions" ICALEPS 2017