

# LIBERA INSTRUMENTS INTEGRATION WITH CONTROL SYSTEMS

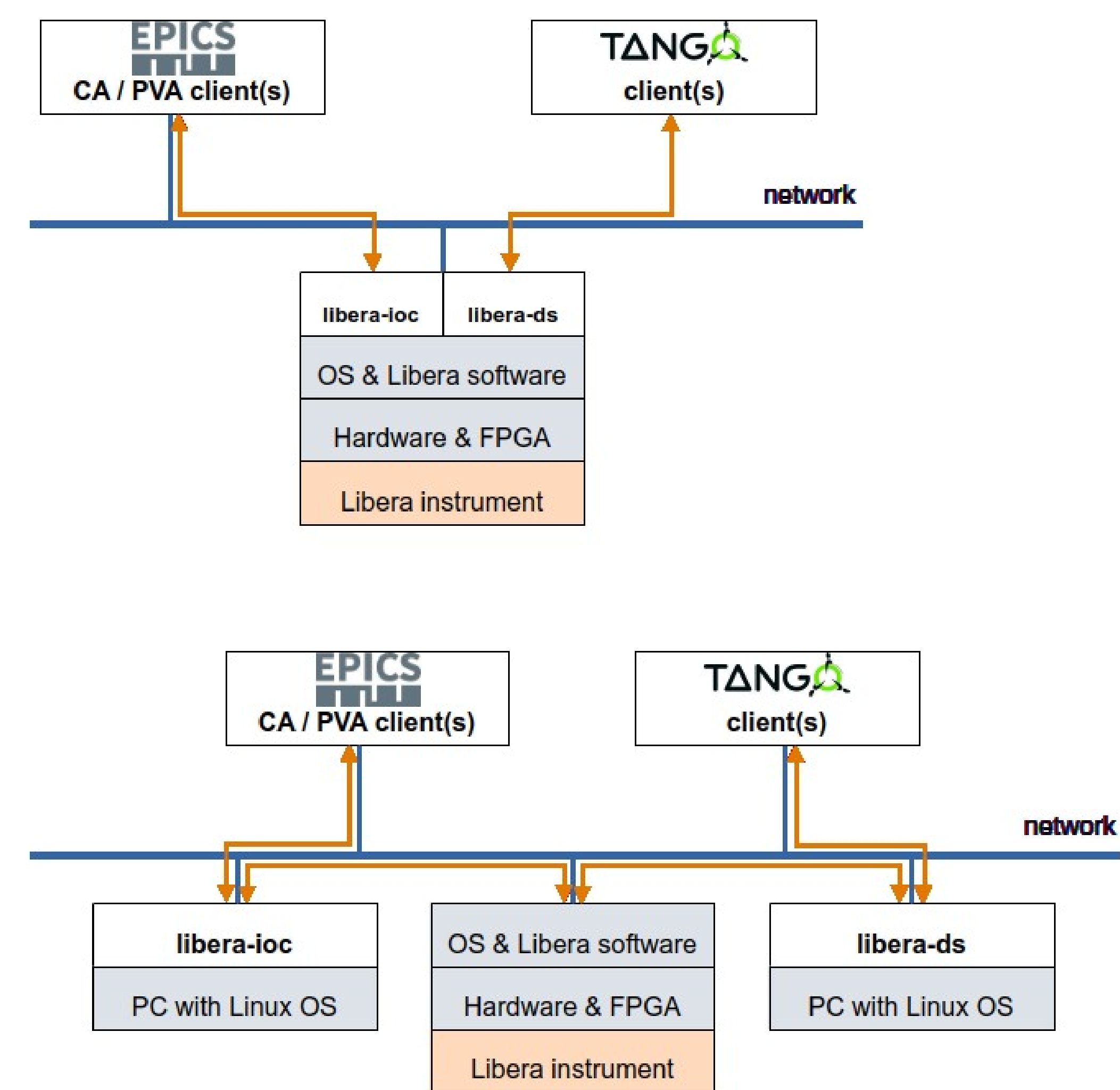
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## Abstract

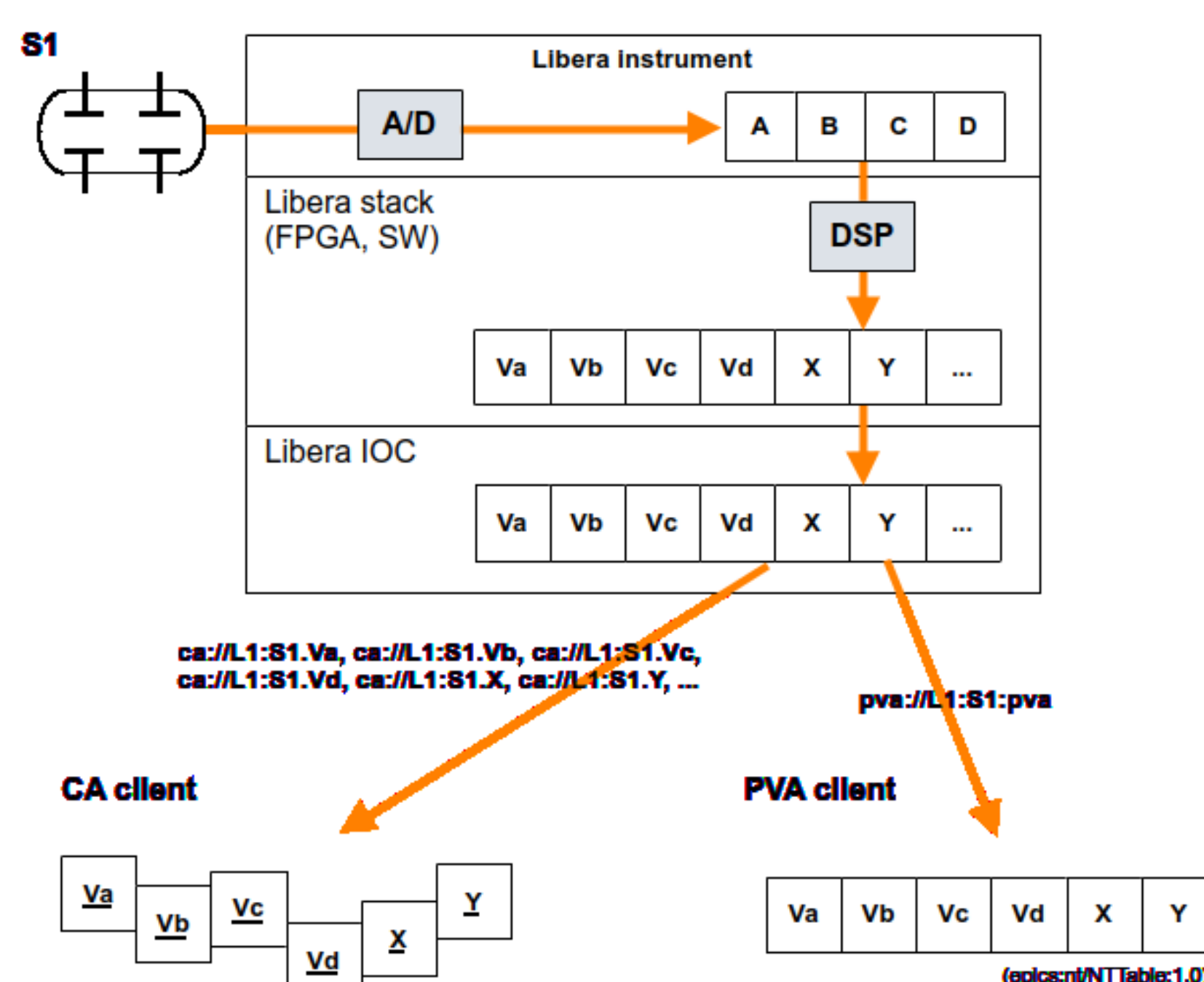
Libera instruments have been used with various control systems for several years. In line with the latest security and functionality upgrades, the Libera control system interfaces have also been upgraded.

The EPICS interface in the Libera instruments has been upgraded to support the latest EPICS BASE version 7.0.9, which enables users to use the PVA protocol and retrieve more signal data in a single call. Group PVs, allowing atomic access to all signal components, were also added. Furthermore, similar parameters, such as sensors, can be grouped on the Libera side already and provided to PVA clients in a single PV.

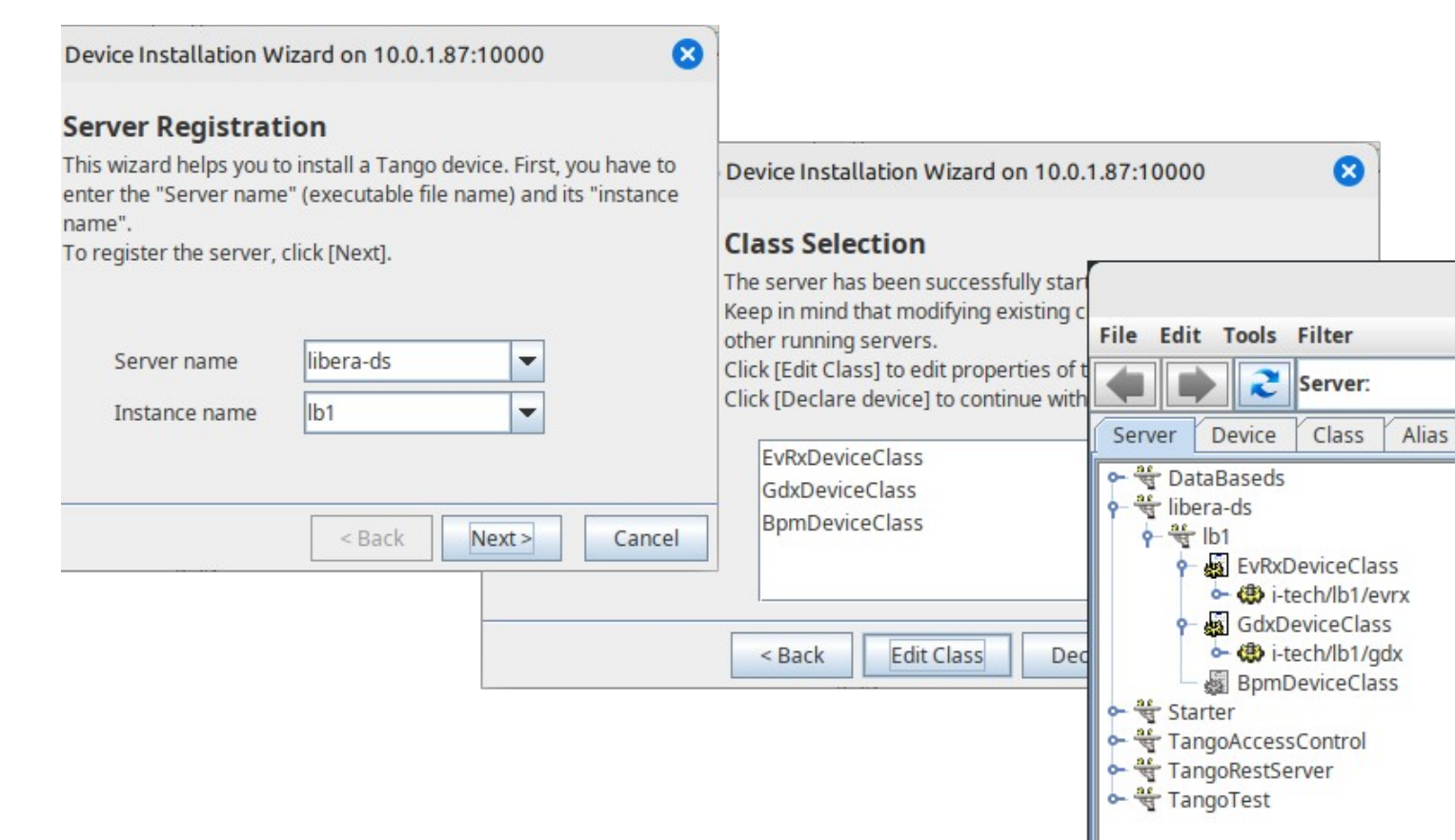
The TANGO interface has been upgraded to version 9.5. It supports flexible configuration where device classes can be configured for each board type individually. The interface has also been extended with TANGO alarm and logging functionalities. Both interfaces, EPICS and TANGO, can run on the Libera instrument or they can now be compiled and run from an external server station. This network architecture enables easier maintenance and upgrades. This paper details all recent updates and improvements to the Libera control system interfaces and presents possible use cases.



Libera IOC and Libera DS can run either locally on the instrument or remotely (on workstation, ...)

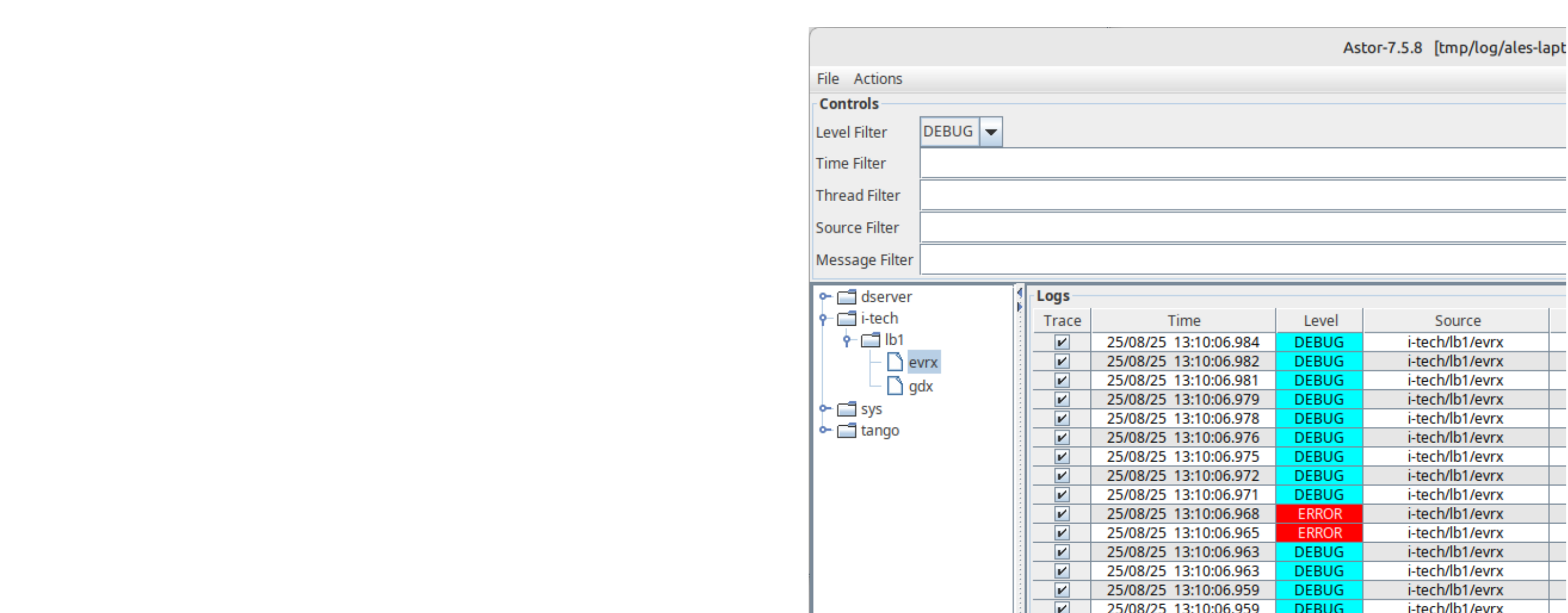
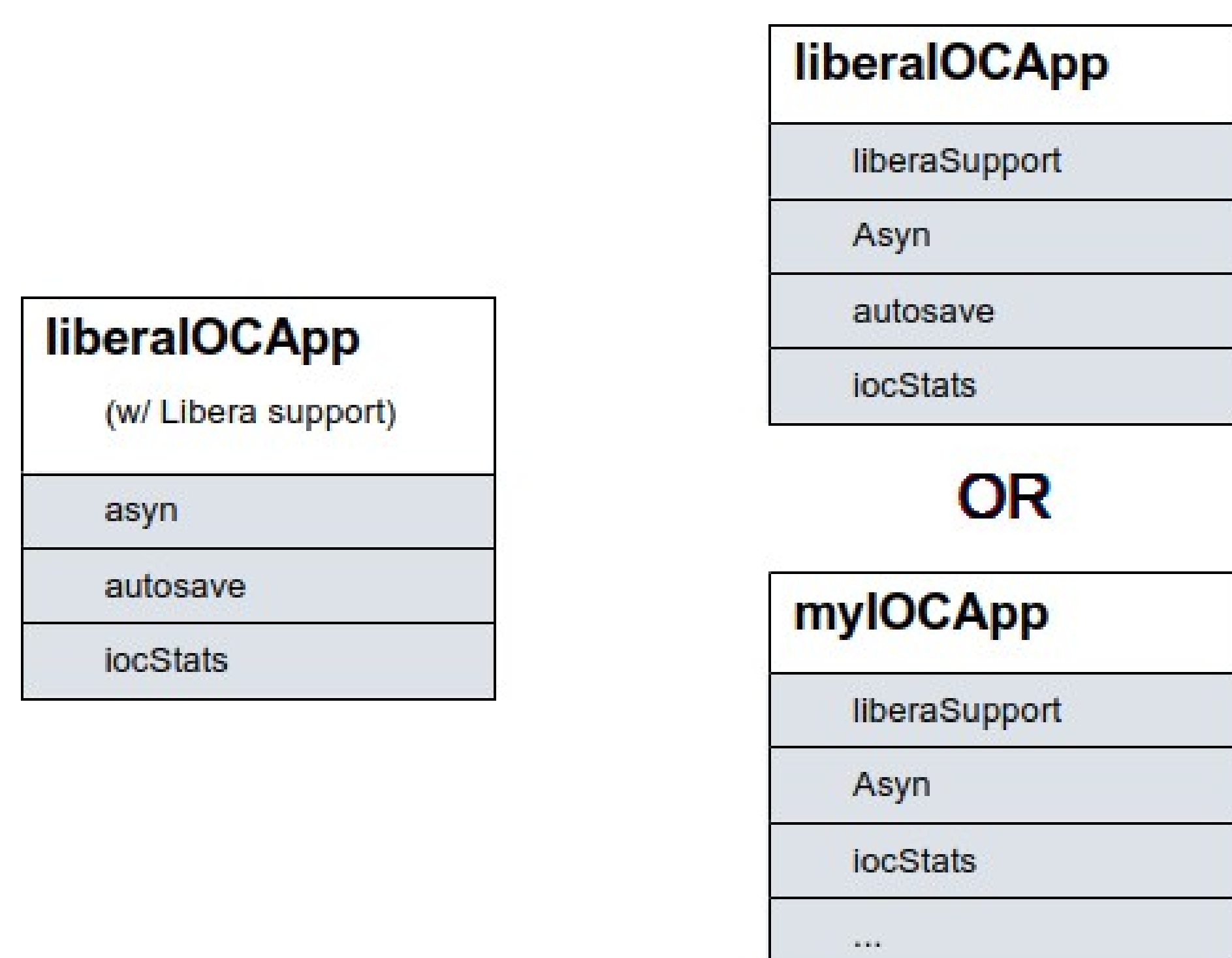


Atomic acquisition is enabled via new group PVs which are automatically instantiated for each signal when IOC is built with PVAccess support - no changes to database files are required. Group PV uses standard epics:nt/NTTable:1.0



Device server configuration was improved and can now be done using TANGO device setup wizard.

Support for multiple device classes on the same device server was introduced allowing more flexible representation of Libera instruments in TANGO controlsystem.



Libera DS now uses the TANGO Logging Service (TLS). Logging is handled via the appender base class, with all settings (log level, file, console) managed through the device's logging property. Logs are accessible via TANGO "LogViewer" and the custom "log" attribute in libera-ds.

## Conclusion

The latest updates to Libera adapter software introduced improvements for various aspects of instruments' control system integration. Improvements include more flexible deployment (both EPICS and TANGO), improved data acquisition interfaces and simpler customization (EPICS), as well as improved status reporting and logging integration (TANGO). This makes integrating Libera instruments into control systems simpler and more user friendly.

## References

- [1] EPICS, <https://epics-controls.org/>
- [2] EPICS Normative Types Specification, <https://docs.epics-controls.org/en/latest/pv-access/Normative-Types-Specification.html>
- [3] QSRV Configuration, [https://epics-base.github.io/pva2pva/qsrv\\_page.html#qsrv\\_config](https://epics-base.github.io/pva2pva/qsrv_page.html#qsrv_config)
- [4] TANGO, <https://www.tango-controls.org/>