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Metrology at a Light Source

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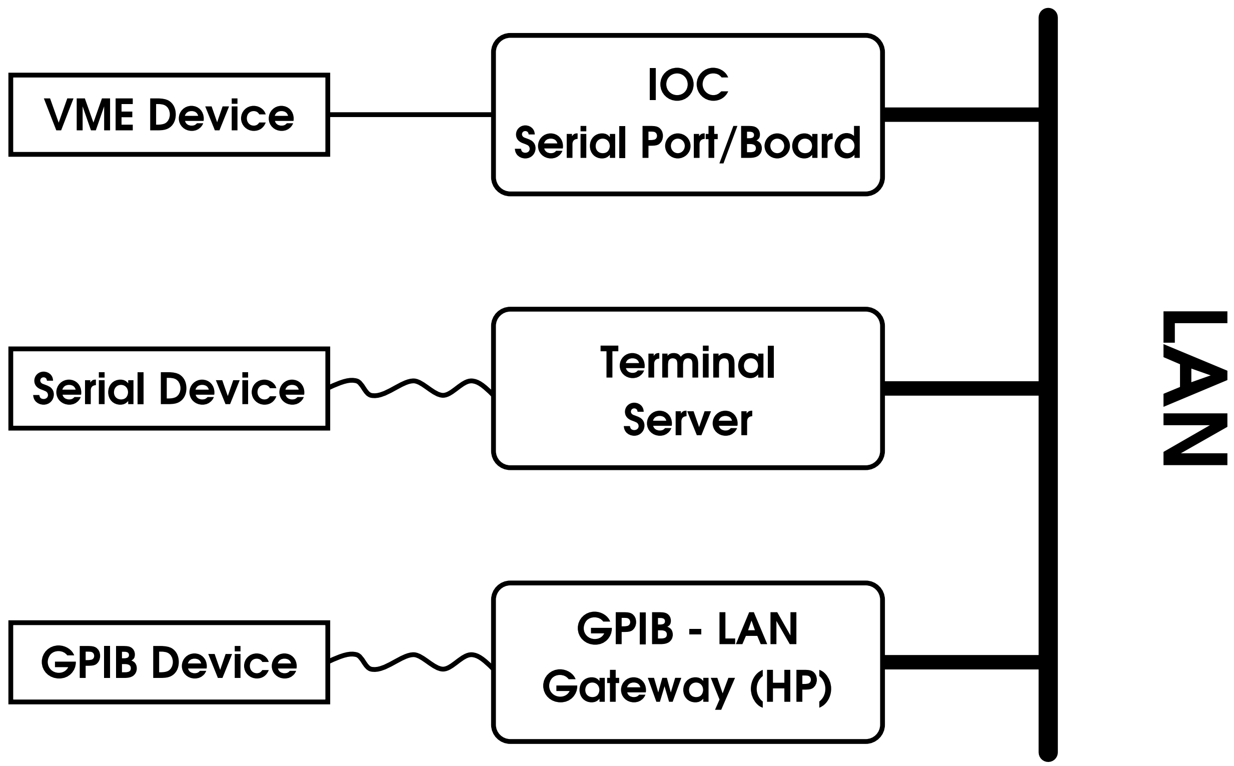
Overview

- Site map
- Hardware setup
- Software system design
- Experience
- Conclusion

Hardware configuration



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Devices Controlled by EPICS at PTB

VME:	MVME162-532	(10)	esdAio16 ADC/DAC	(2)
	OMS58	(10)	EuKontroll digital I/O	(5)
	Haidenhain IK320	(4)		
GPIB:	PP SMC motor controller	(6)	Keithley 617	(5)
	Keithley 6517	(3)	Keithley 196	(2)
	HP 3458	(3)	PREMA 5017	(3)
Serial:	McLennan motor controller	(3)	Haidenhain ND281	(3)
	Berthold Umo 123 Counter	(1)		
	Elcomat 2000 Autocollimator	(2)		

Software System Design

- Use EPICS / CDEV to implement generic motor / detector semantics. (Simple `get data´, `goto position´ commands.)
- The scanning / data recording program (OPI layer) only uses this reduced command set and `knows´ nothing about device peculiarities.
- A separate program is used by skilled users for parameter setting, maintenance etc.
- Simple devices are represented by independent records.
- More complex subsystems (e.g. Monochromators, Undulator) are controlled at EPICS level to provide the `simple device´ abstraction.

Software Architecture

Maintenance/ Setup	Scanning/ Data Recording	
Extended Attribute Set	Generic Attribute Set	DDL-File
CDEV		Unix/VMS
Channel Access		TCP/IP
EPICS (iocCore, Apps)		VxWorks

Experience

+ distributed, scalable, multiple database access.
+ versatile.
+ big / nice user community.
+ documentation available.
+ *open source.*

- static design. (e.g. fixed string length, device addressing scheme...)
- no possibility to change database configuration at runtime. (E.g. add/remove records or at least `register' / `unregister' devices.)
- *not object oriented.* (E.g. existing records not easily extensible.)
- CA protocol not documented.

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Other EPICS Related Activities

- Fast BOOTROM programming (2sec vs. 6min); getting boot parameters by BOOTP.
- Debugging with gdb / EPICS development under Linux.
- CDEV.
- Playing with a JAVA implementation of CA client.

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Conclusion

- EPICS is a very powerful system, which meets our needs.
- There is no rose without a thorn.