



EPICS @ DESY



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EPICS @ DESY

- Since 9 years @ DESY
- Used in cryogenic controls (14 IOC)
- Supported for
 - Utility controls (23 IOC)
 - Diagnostics for several groups (10)

Hardware

- SUN Cluster (2* Enterprise 250)
 - Digital RAID
- SUN Workstations
(X-Server dedicated to different user groups)
 - 2* SPARC station 20 -> SUN Blade 100
 - 2* Ultra 1
 - 2* Ultra 5
 - 3* Ultra 10
- Linux PC
 - ~ 15 250MHz % 1.5GHz

Cluster



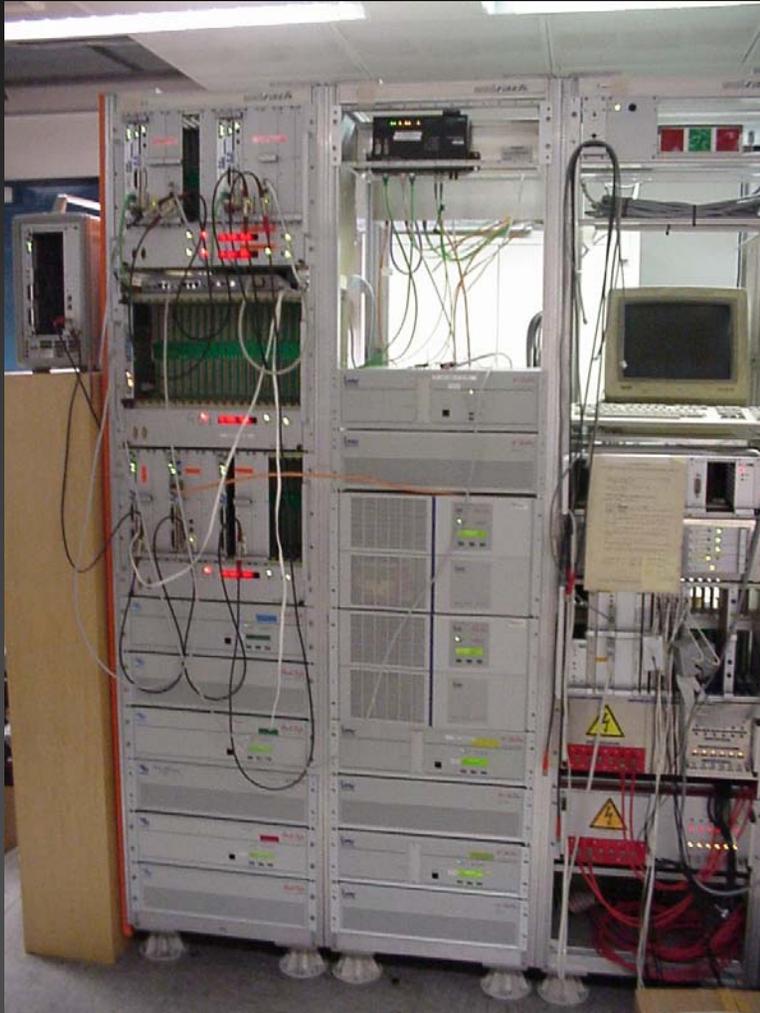
NT-Cluster (D/3 – not EPICS):

- WIN-2000 / Compaq
- 190GB Disk
- Full redundant

SUN Cluster

- RAID 1 System Disk 10GB
- RAID 1 SUN Disk 30GB
- RAID 4 Data (Digital) 140GB
- Full redundant

UPS



Connected to UPS:

- IOC
- Workstations
- Cluster
- Network

IOC's by:

- Type

- I/O

- Number

HW Type	CPU	I/O	Anzahl	Anwendung	Records
PC	I586	FEE-IP	7	Datalogger Senderstrom	1816
VME	162	CAN	1	CTA	904
		CAN	1	LumiTest	154
		CAN	1	HERA FEL-Box	169
		CAN	1	MagnetTestStand	64
		CAN	1	TTF FEL-Box	391
		CAN	1	HERA KoMag	154
		Profi	2	MKK Klima	1851
	177/162	H1	4	MKK Systems	6262
		IPPIO	1	D/3 Connect	52
		ICV914	1	Stepper Motor	4
		Sedac	2	HERA Kryo	7172
		Sedac	1	Cavities	1012
		Sedac	1	Referent Magnets	387
		Sedac	1	TTF Kryo	792
	PPC	STR7201	2	Radiation Measurement	274
		TCP/IP (S7)	1	Vacuum Compressor	173
DIN rail	Pentium	CAN	1	Test	
SEDAC CC	GPFC	Sedac	6	10KV Anlagen	1192
GPFC	GPFC	CAN	1	Weather Station	50
IRM/VME	162		1	Gasanalyze	78
		128D+128A	1	SL Cavities	634
			3	Vibration measurement	792
			3	Power Station	682
		Comet	1	Fast Transients	93
			1	TTF	463
Sum			47		25615

IOC: GPFC

General Purpose Field Bus Controller



IOC: GPFC-SEDAC



,Sort of CAMAC
Controller

- Backplane Interface
- Utility Interface
- Ethernet

(DESY adopted the serial
CAMAC, stripped it off and
called it SEDAC)

IOC: DIN-Rail PC



IOC controlling D/3 Hardware

Do you remember – Bob?



Network

- Currently FDDI Backbone (3Com)
 - Most IOC connected by 10B2
- Moving into Gbit Backbone with 10/100 switches (Cisco)
 - IOC's connected through 10BT/10B2 converter // later: change transceivers on IOC to 10BT
- General policy:
 - Two subnets / one broadcast domain
 - No routers in control network
 - All switches work 'out of the box' as is
 - Configure only IP address for remote management
 - Behind the DESY firewall
 - Transparent access on the DESY intranet

Applications I

MMI / Display

- dm2k
- JoiMint

Alarm handler

Using all features built in:

- Active / Passive
- Master / Slave
- Alarm printer

Applications II

Archiver

- Running on cluster
- Writing binary data
- Stop/start every midnight
- Seven archiver running for individual applications
 - -> Problem with slow data access due to long directory file for one month
- Converting binary into SDDS
 - Reducing files size by data reduction (increase ADEL until desired file size (~500kB) is reached)
- Use SDDS for long term archive

Applications III

Archive data retrieval

- AAPI-Server (archiver API)
- Provides data for:
 - strip(History)Tool
 - IDL
 - JoiMint

Applications IV

Save/ Restore

- Burt
- burtSave

Gateway

- In final test phase
- On Dual Pentium Linux PC

Cmlog

- Log startup of applications
- Important cron jobs
- IOC messages

Sending SMS messages from alh

```
CHANNEL running-Processes PROC:aapiServ3947_bi
$SEVRCOMMAND UP_MAJOR MASTER_ONLY echo " " | mailx -s "G:MKS2 AAPI
Server port 3947 ausgefallen" sms-melder@herant.desy.de
$COMMAND medm -x -scalable -macro "chan=PROC:aapiServ3947_bi" /common/set_alarms.adl
$GUIDANCE
http AAPI server
$END
```

```
$SEVRCOMMAND
UP_MAJOR
MASTER_ONLY
echo " " | mailx -s
"G:MKS2
```

```
AAPI Server port 3947 ausgefallen"
sms-melder@herant.desy.de
```

execute UNIX command on alarm
fire on UP_MAJOR alarm change
execute only if alh is in master state
UNIX command to execute
mail message (subject starts with the definition
of the group to send the SMS to (parsed by the
mail <->D-MAIL program (written by Zoltan)
the real SMS message
the NT-Mailer to send the mail to

Future

Stay with vxWorks on several platforms:

- 68k/ PPC / PC / Coldfire

Move applications (slowly) to Linux
(i.e. WWW-server)

Use DIN-Rail PC wherever possible

Integrate (Siemens) PLC's over TCP/IP

- Part of the driver is courtesy of PSI – cannot be distributed

New Developments:

- Profibus DP -> ,intelligent I/O'