



- Midas Deployment.
- Known Midas implementations.
- Utilities and usage.
- Features & Hidden Features.
- DEMO – part II



Europe	Canada
Bari - INFN, Italy Fribourg University, Switzerland Kascade-Grande, Karlsruhe Trieste - INFN, Italy Uppsala University, Uppsala, Finland ...	Carlton University, Ottawa Montreal University, Quebec, Canada Northern British Columbia University, BC, Canada Regina University, Regina, Saskatchewan, Canada Queen's University / NRCC, Ottawa, ON, Canada Victoria University, Victoria, BC, Canada Fuel Cell Technologies, Ontario, Canada ...
USA	Other
Argonne National Lab, Chicago Brookhaven National Lab, NY Boulder, Colorado University Colorado School of Mines, Colorado CalTech, California Kentucky University LANL Los Alamos Michigan University Notre-Dame University, Indiana Virginia Tech, Virginia, VA ...	JINR, Dubna Russia Peking University, China ...



The Midas software package wouldn't have been that good without the contribution of the following people and ... potential users like you!

• Suzannah Daviel	DAQ, Triumf	μ Sr, β nmr.
• Peter Green	DAQ, Uni. of Alberta	NOVA analyzer.
• Greg Hackman	Triumf	8 π , J73a SCSI driver.
• Gertjan Hofman	Triumf	CHAOS, stripchart.tcl.
• Paul Knowles	Uni. of Fribourg	rpm packaging, documentation.
• Rudi Meier	Uni. of Tuebingen	CHAOS, monitoring.
• Glenn Moloney	Uni. of Melbourne	CHAOS, Linux Camac drivers.
• Dave Morris	Triumf	SlowControl, Java.
• Konstantin Olchanski	DAQ, Triumf	Twist, SlowControl, ROOT.
• Renee Poutissou	DAQ, Triumf	Twist, web interface, mevb, lazylogger.
• Andreas Suter	PSI	Hvedit Qt interface.
• Piotr Adam Zolnierczuk	Uni. of Kentucky	rpm packaging.

Known Midas implementations I.

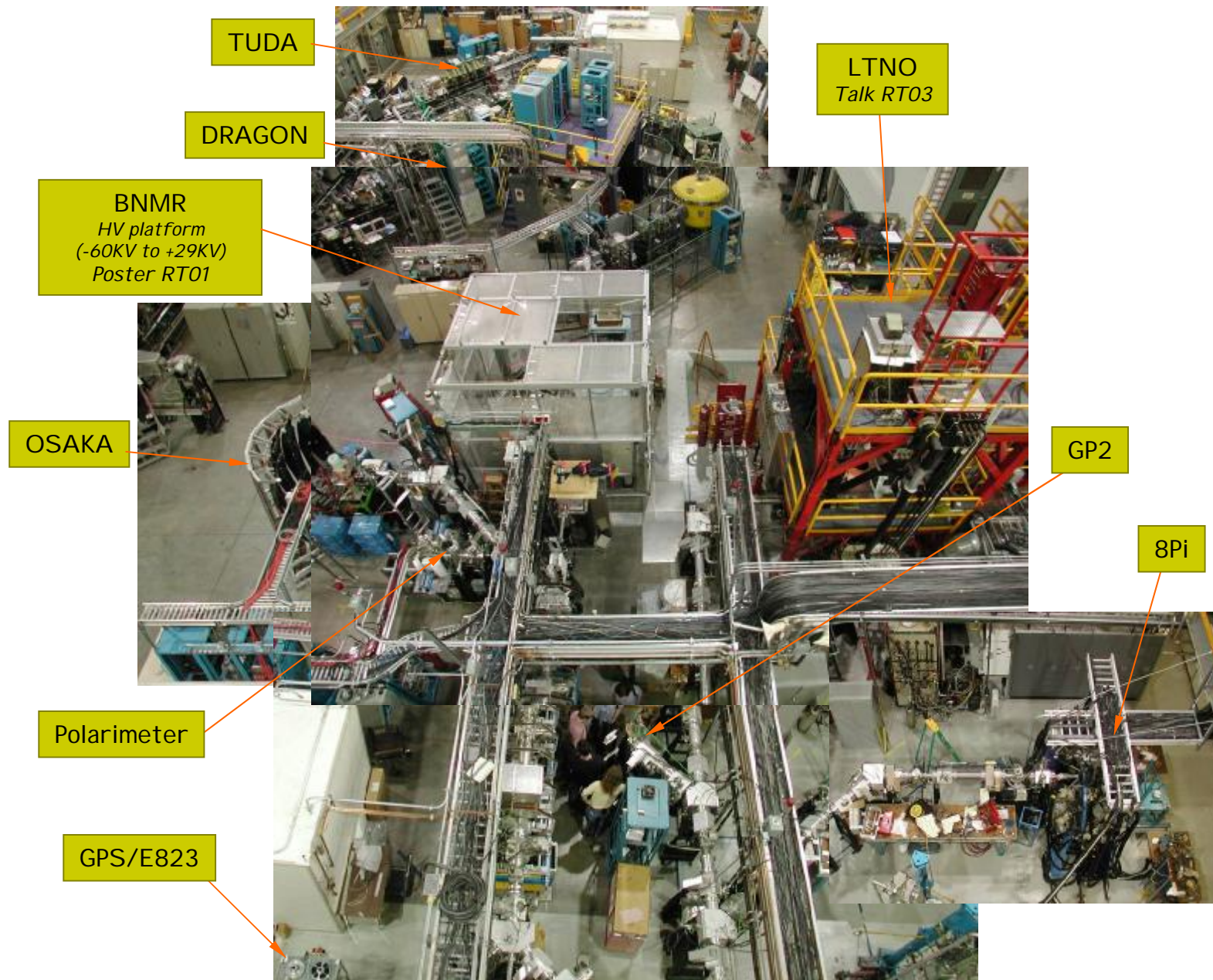


Use	Location	#Nodes	#FE	#EQ	#Poll	#SC	#Client	Data Rate	Hardware	OS	Comments
TWIST	TRIUMF	4	R3	12	2	8	15	6MB/s	VME/FB/CAMAC, Network/GPIB	VxWorks, Linux	Dual Logger, LazyLogger mevb, multiple nodes.
CHAOS (retired)	TRIUMF	4	R3	8	1	1	11	4MB/s	FB/CAMAC/VME	VxWorks, Linux, W2K	Dual logger, Lazylogger.
LTNO	TRIUMF	2	R1	18	1	11	9	< 50KB/s	CAMAC(DSP004), Network, GPIB, RS232	W2K, Linux	Hardware Histograms Readout, Software Histograms Readout, Large #SC, Qt run control.
Dragon	TRIUMF	2	R1	5	1	0	8	< 50KB/s	CAMAC(HYTEC)	Linux	Buffered events, PAW, Lazylogger.
TUDA	TRIUMF	3	R1	2	1	0	4	< 100KB/s	VME/ CAMAC(CBD8210)	VxWorks, Linux/Solaris	MIDAS-UK Solaris.
TRINAT	TRIUMF	2	R1	4	1	0	4	< 100KB/s	VME/ CAMAC(CBD8210)	VxWorks, Linux	User code for PM gain control in FE, NOVA.
BetaNMR	TRIUMF	3	R1	9	1	2	6	< 50KB/s	VME(MVME162), SIS3801	VxWorks, Linux	Software Histogram Readout, Epics, Cycle Ctl within FE.
Polarimeter	TRIUMF	1	R1	3	1	0	2	< 50Kb/s	VME(MVME162)	VxWorks, Linux	SC(Epics).
μSRs (3)	TRIUMF	2	R1	5	1	0	3	< 50KB/s	VME/ CAMAC(CBD8210)	VxWorks, Linux	Software Histogram Readout, Large Event, Manual trigger.
Multi	TRIUMF	2	R1	3	1	0	5	2MB/s	VME/FastBus	VxWorks, Linux	FB data, filter in FE.
8Pi	TRIUMF	2	R1	2	1	0	3	100KB/s	VME(MVME162), CAMAC(CBD8210), SIS3801	VxWorks, Linux	FERA/VME, CAMAC

Known Midas implementations I I .



Use	Location	#Nodes	#FE	#EQ	#Poll	#SC	#Client	Data Rate	Hardware	OS	Comments
GPS (2)	TRIUMF	1	1	3	2	0	4	50KB/s	CAMAC(KCS2927)	Linux	Deferred Transition, Tiny events NOVA, 2Polls eqp.
Kopio (2)	TRIUMF	1	1	2	1	0	3	< 100KB/s	CAMAC(HYTEC)	Linux	PAW.
Dragon I	TRIUMF	1	1	2	1	0	3	< 100KB/s	CAMAC(HYTEC)	Linux	PAW.
Tigress I	TRIUMF	2	R1	2	1	0	4	< 100KB/s	CAMAC(HYTEC)	VxWorks, Linux	Java control (JACQ).
DANCE (planned)	LANL	15	14					1MB/s	500MHz cPCI Kinetics 2913 (CAMAC)	Linux	mevb, ROOT.
MULAN	PSI	12	10				20	5-10MB/s	PCI/ CAMAC(HYTEC)	Linux	mevb, ROOT.
Teaching	Uni. of Northern BC	1	1	2	1	0	3	< 50KB/s	CAMAC(SCSI)	Linux	PAW, simple.
Carleton	Ottawa	1	1	2	1	0	3	< 50KB/s	VME(SIS3100)	Linux	Multiple Flash ADCs, Hardware Histogram Readout, PAW.
PIBETA	PSI	4	2	6	1	4	5	< 100KB/s	VME(SBS617) FB(STR340) CAMAC(HYTEC)	W2K, Linux	PAW, Dual Lazylogger(FTP+Tape)
LEM	PSI	3	1	6	2	4	8	3kb/s	CAMAC(HYTEC)	NT4, Linux	PAW
Det. Group	PSI	1	1	2	1	0	1	1MB/s	CAMAC(HYTEC)	WXP	Fal, PAW
MEG (planned)	PSI	20	5	7	1	5	10	120MB/s	VME(SIS3100)	Linux	mevb, ROOT





- 56 chambers (~4000 channels).
- 4 gas systems.
- "high data rate" 2KEvs/s, 10MB/s.
- Multiple FB crate -> Event Builder.
- Large number of Slow control (TCP/IP, CAMAC, RS232, USB)
 - Gas flow monitoring (~65 flows).
 - Differential/Absolute pressure monitoring (10P)
 - Temperature monitoring (~150T)
 - Low V/I monitoring (300).
 - Detector position monitoring (4 readout laser)
 - Beamline magnet monitoring (B, T)
 - Solenoid monitoring (B, T, strain gauge)
 - Electronic racks (T,V)
 - HV supplies (56V, 56I)

See RT03 - Poster
The TWIST Data Acquisition System at TRIUMF







Provide user access to the Midas system for data storing and retrieval, experiment configuration and monitoring as well as debugging tools.

Reviewed in the following slides & documented on: midas.psi.ch

oddbedit	Online DataBase Editor.
dio	Program launcher for Direct I O access.
mstat	Status display.
mdump	Event display utility.
mlogger	Multi channel Data logger and history data collector.
mhists	History data utility.
mchart	ODB data for stripchart utility.
stripchart.tcl	Tcl/Tk history/ODB data stripchart display.
mspeaker, mlxspeaker	Message speech synthesizer.
mcnaf	CAMAC utility.
lazylogger	Multi channel background data copier.
mevb	Event Builder.

Documented on: midas.psi.ch

<i>analyzer</i>	<i>Online / offline analyzer.</i>
<i>mhttpd</i>	<i>Web server.</i>
<i>melog</i>	<i>Electronic LogBook utility.</i>
<i>mtape</i>	<i>Tape utility.</i>
<i>hvedit task</i>	<i>HV or Slow control Windows/Qt application.</i>



Main application for interaction with the Online Database.

- Implements most of the midas functions.
- Run control (start/stop)
- Shell (recall, tab completion)
- Command line (odbedit -c ...)

```
C: \>odbedit
[local:midas:S]/>help
Database commands ([ ] are options, <> are placeholders):

alarm                - reset all alarms
cd <dir>              - change current directory
chat                 - enter chat mode
chmod <mode> <key>   - change access mode of a key
                     1=read | 2=write | 4=delete
cleanup [clientname] - delete hanging clients
copy <src> <dest>     - copy a subtree to a new location
create <type> <key>   - create a key of a certain type
create <type> <key>[n] - create an array of size [n]
del/rm [-l] [-f] <key> - delete a key and its subkeys
  -l                follow links
  -f                force deletion without asking
exec <key>/<cmd>      - execute shell command (stored in key) on server
exp <key> <filename> - import key into ASCII file
find <pattern>        - find a key with wildcard pattern
help/? [command]     - print this help [for a specific command]
hi [analyzer] [id]    - tell analyzer to clear histos
imp <filename> [key]  - import ASCII file into string key
ln <source> <linkname> - create a link to <source> key
load <file>          - load database from .ODB file at current position
  - hit return for more --
ls/dir [-lhvrp] [<pat>] - show database entries which match pattern
  -l, -h, -v, -r, -p - See online help
make [analyzer name] - create experim.h
mem [-v]              - show memory usage [verbose]
mkdir <subdir>        - make new <subdir>
move <key> [top/bottom/[n]] - move key to position in keylist
msg [type] [user] <msg> - compose user message
old [n]               - display old n messages
passwd               - change MIDAS password
pause                - pause current run
scl [-w]              - show all active clients [with watchdog info]
shutdown <client>/all - shutdown individual or all clients
sor                  - show open records in current subtree
start [number][now][-v] - start a run [with a specific number],
                        [now] w/o asking parameters, [-v] debug output
stop [-v]             - stop current run, [-v] debug output
trunc <key> <index>   - truncate key to [index] values
ver                  - show MIDAS library version
webpasswd            - change WWW password for mhttpd
wait <key>            - wait for key to get modified
quit/exit            - exit
```



Application launcher meant to give to the program privileges for I/O port access. Overcome the necessity to have specific OS driver for each interface.

By accessing directly the I/O ports, the launched program has full R/W access to I/O port. Device access through that port is faster, but multiple instance of such task running simultaneously may generate I/O collision resulting in wrong data transfer to bus timeout.

```
/* Grant access to the device's ioports */  
iopl ()          // change I/O privilege level  
  
File: start_dragon04_fe  
#!/bin/csh  
/usr/local/bin/dio fedragon -e dragon -h dragon04.triumf.ca  
Dragon
```



Midas ASCII status display (VT100 display). Precursor of the Web interface.

The data are retrieved from the different ODB locations.

Odb>ls /Runinfo Odb>ls /Experiment	Run Info	<pre> *-v1.8.0- MIDAS status page -----Mon Apr 3 11:52:52 2000-* Experiment: chaos Run#: 8699 State: Running Run time :00:11:34 Start time: Mon Apr 3 11:41:18 2000 </pre>				
Odb>ls /Equipment	Equipment listing	<pre> FE Equip. Node Event Taken Event Rate[/s] Data Rate[Kb/s] B12Y pcch02 67 0.0 0.0 CUM_Scaler vwchaos 23 0.2 0.2 CHV pcch02 68 0.0 0.0 KOS_Scalers vwchaos 330 0.4 0.6 KOS_Trigger vwchaos 434226 652.4 408.3 KOS_File vwchaos 0 0.0 0.0 Target pcch02 66 0.0 0.0 </pre>				
Odb>ls /Logger	Logger channel	<pre> Logger Data dir: /scr0/spring2000 Message File: midas.log Chan. Active Type Filename Events Taken KBytes Taken 0 Yes Disk run08699.ybs 434206 4.24e+06 </pre>				
Odb>ls /Lazy	Lazy logger	<pre> Lazy Label Progress File name #files Total cni - 53 100[%] run08696.ybs 15 44.3[%] </pre>				
Odb>ls /System Odb>ls /Programs	Client listing	<pre> Clients: MStatus/kosl x0 Logger/kosl x0 Lazy_Tape/kosl x0 CHV/pcch02 Mchart1/umel ba ODBEdit /kosl x0 CHAOS/vwchaos ecl /kosl x0 Speaker /kosl x0 Mchart/umel ba targetFE/pcch02 HV_MONI TOR/umel ba SUSI YBOS/kosl x0 Hi story/kosal 2 MStat us1/dasdevpc </pre>				
		<pre> *-----* CHAOS </pre>				



Debugging application: allow to display the events (banks) during acquisition or from a save-set file (file.mid)

Meant for debugging and data consistency check. mdump displays the "bank" data.

```
Mon> mdump -e tigress -h midtig01 -f d | more
-1.9.1 -- Enter <!> to Exit ----- Midas Dump ---
----- Event# 1 -----
Evid: 0001- Mask: 0000- Serial: 7439022- Time: 0x3eb695af- Dsize: 19840/0x4d80
#banks: 18 - Bank list: - POSI DGF1 SI A0SI A1SI A2SI A3SI A4SI A5SI A6SI A7SI B0SI B1SI B2SI B3SI
IB4SI B5SI B6SI B7-

Bank: POSI Length: 8(I*1)/2(I*4)/2(Type) Type: Real *4 (FMT machine dependent)
1-> 0.000e+00 0.000e+00

Bank: DGF1 Length: 3290(I*1)/822(I*4)/1645(Type) Type: Unsigned Integer*2
1-> 1645 1 4352 1299 33320 34813 15 33320
9-> 37430 409 44557 7297 18692 0 0 0
17-> 0 1299 6100 6100 6060 6008 6072 6104
25-> 6076 6048 6040 6068 6088 6048 6032 6068
33-> 6084 6072 5988 5956 5948 5936 6048 6136
41-> 6120 6120 6152 6176 6116 6024 6012 6032
49-> 6064 6088 6228 6204 6136 6180 6176 6172
57-> 6156 6056 6004 6012 5988 6000 6088 6172
65-> 6180 6140 6160 6156
73-> 6096 6104 6148 6084
81-> 6072 6020 6064 6136
```

```
Sun> mdump -e tigress -h midtig01 -s
...
Level: 98.468 %, Rate: 0.000 MB/sec
Level: 98.468 %, Rate: 1.043 MB/sec
Level: 98.468 %, Rate: 1.099 MB/sec
Level: 98.472 %, Rate: 1.112 MB/sec
Level: 98.155 %, Rate: 1.101 MB/sec
...
Sun> mdump -e tigress -h midtig01 -y
Last - Evid: 0000- Mask: 0000- Serial: 0- Time: 0x0- Dsize: 0/0x0
Now - Evid: 0001- Mask: 0000- Serial: 3358866- Time: 0x3eb58317- Dsize: 19840/0x4d80
Consistency check: \ - 3358882
Last - Evid: 0001- Mask: 0000- Serial: 3358882- Time: 0x3eb58317- Dsize: 19840/0x4d80
Now - Evid: 0002- Mask: 0001- Serial: 10811- Time: 0x3eb58318- Dsize: 24/0x18
```

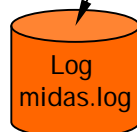



mlogger provides 3 main services to the Midas experiment.

1. Centralize system message logging (log file).
2. Multiple Data logging channel (logger/channels/<0>, <1>, ...).
3. History data logging (Frontend defined, /History/links).

Application Level

Append entries



History definition Scan

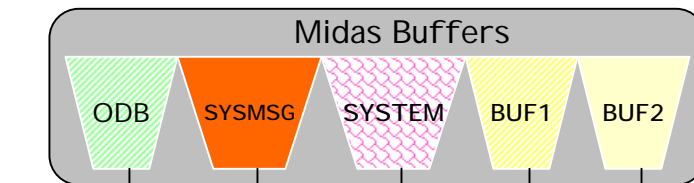


Run Level

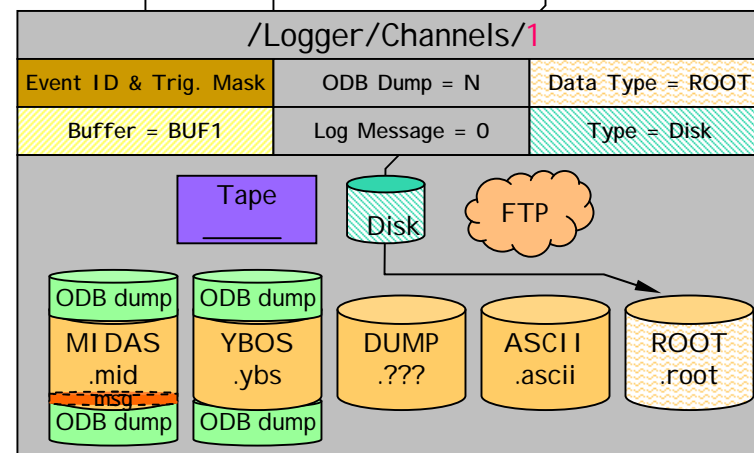
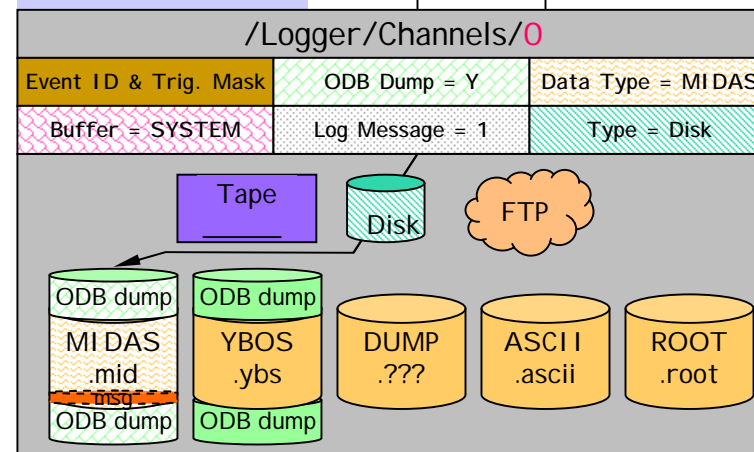
ODB Dump
ODB Dump file



History definition re-scanned



Channels Level



- History available as soon as Logger running.
- History definition re-scanned @ BOR.
- Channel Setting re-scanned @ BOR.
- History works on Event ID only.



```
[ltno01:ltno:Running]/>ls -lr /Logger/
```

Key name	Type	#Val	Size	Last	Opn	Mode	Value	LTNO

Logger	DIR							
Data dir	STRING	1	256	87h	0	RWD	/data1/ltno	
Message file	STRING	1	256	87h	0	RWD	mi das. log	
Auto restart	BOOL	1	4	87h	0	RWD	n	
Write data	BOOL	1	4	87h	0	RWD	y	
ODB Dump	BOOL	1	4	87h	0	RWD	n	
Tape message	BOOL	1	4	87h	0	RWD	y	
ODB Dump File	STRING	1	256	87h	0	RWD	run%05d. odb	
channels	DIR							
0	DIR							
Settings	DIR							
Active	BOOL	1	4	7m	0	RWD	y	
Type	STRING	1	8	7m	0	RWD	Di sk	
Filename	STRING	1	256	7m	0	RWD	run%05d. mi d	
Format	STRING	1	8	7m	0	RWD	MI DAS	
ODB dump	BOOL	1	4	7m	0	RWD	y	
Log messages	DWORD	1	4	7m	0	RWD	0	
Buffer	STRING	1	32	7m	0	RWD	SYSTEM	
Event ID	INT	1	4	7m	0	RWD	- 1	
Trigger mask	INT	1	4	7m	0	RWD	1	
Event limit	DWORD	1	4	7m	0	RWD	0	
Byte limit	DOUBLE	1	8	7m	0	RWD	0	
Tape capacity	DOUBLE	1	8	7m	0	RWD	0	
Subdir format	STRING	1	32	7m	0	RWD	%Y%m%d	
Current filename	STRING	1	256	7m	0	RWD	20030504/run82104. mi d	
Statistics	DIR							
Events written	DOUBLE	1	8	4s	0	RWDE	210	
Bytes written	DOUBLE	1	8	4s	0	RWDE	67795	
Bytes written to	DOUBLE	1	8	4s	0	RWDE	1. 21489e+10	
Files written	INT	1	4	4s	0	RWDE	42616	

Default destination directory

Default system log file name

Global Logger flags

ODB ASCII dump file

Destination type: Disk, Tape, FTP

Data file template:
 Run####.mid
 Run####.ybs
 Run####.root

Data file Format: MIDAS, YBOS, ASCII, DUMP, ROOT

Default Source buffer name

Event ID Request : -1 => ALL

Trigger Mask Request : -1 => ALL

Run control condition based on limits

Subdirectory destination using
 Coordinated Universal Time.
 (man date)



Tool for extracting history data from the save-set files.

- History save-set files produced by the logger.
- Can generate large quantity of data.
- Daily file (031123.hst)
- Easily exported (.xls)

MIDAS experiment "twist"

Fri May 9 22:51:28 2003 Refr:60

ODB

Alarms

Status

Please select panel:
[ALL](#)
[Trigger rate](#)
[Flow1](#)
[Flow2](#)
[Flow3](#)
[Flow4](#)
[Flow5](#)
[Flow6](#)
[Flow7](#)
[Flow8](#)
[Pres](#)
[MFC](#)
[GasShack](#)
[DAQ](#)
[ChTemp1](#)
[ChTemp2](#)
[ChTemp3](#)
[ChTemp4](#)
[ChTemp5](#)
[load cells](#)
[ChTempAll](#)
[FBvolt](#)
[PAtemp1](#)
[PAtemp2](#)
[Cital Compress \(Psi\)](#)
[m13Dipole](#)
[m13Quads](#)
[soltemp](#)
[PCSys](#)
[DCSys](#)
[magnetref](#)
[NMR](#)
[PreAmp V](#)
[PreAmp I Top](#)
[PreAmp I Bottom](#)
[HallProbe](#)
[SensLinTemp](#)
[lasgx](#)
[lasgy](#)
[lasbx](#)
[lasby](#)
[CMaxTemps](#)
[scalars](#)
[cryotemps](#)
[m13slits](#)
[IMon PC1-4](#)
[IMon PC5-8](#)
[IMon PC9-12](#)
[IMon DC1-8](#)
[IMon DC9-18](#)
[IMon DC19-28](#)
[IMon DC29-36](#)
[IMon DC37-44](#)
[VMon PC1-4](#)
[VMon PC5-8](#)
[VMon PC9-12](#)
[VMon DC1-8](#)
[VMon DC9-18](#)
[VMon DC19-28](#)
[VMon DC29-36](#)
[VMon DC37-44](#)
[pBeam](#)
[CryoLevels](#)
[B1 B2 NMR](#)
[B1 B2 regulator](#)
[B1 regulator](#)
[B2 regulator](#)

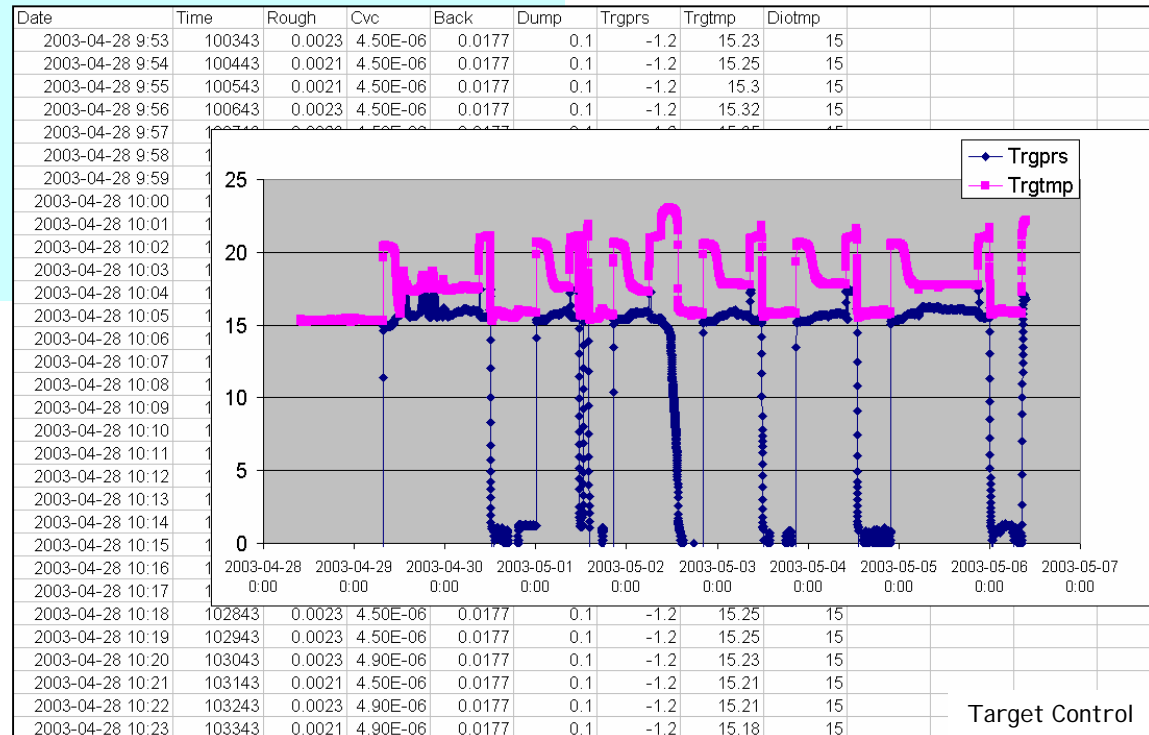
[temp](#)
[ps currents](#)
[SolNMR](#)
[ramp](#)
[temp renee](#)
[test](#)
[fe5hp temp](#)
[fe5hp Bx volt](#)
[fe5hp Qx volt](#)

New

TWIST

```
mhist -s 021118 -p 021228 -e 10 -t 7200 -v "Bell 5080 Gaussmeter Measured"
```

```
Nov 18 00:00:34 2002 -146.8
Nov 18 02:02:38 2002 -146.5
Nov 18 04:04:43 2002 -146.1
Nov 18 06:06:47 2002 -146.1
Nov 18 08:08:50 2002 -196
Nov 18 10:10:47 2002 -196
Nov 18 12:11:48 2002 -195.6
Nov 18 14:13:27 2002 -195.2
...
```



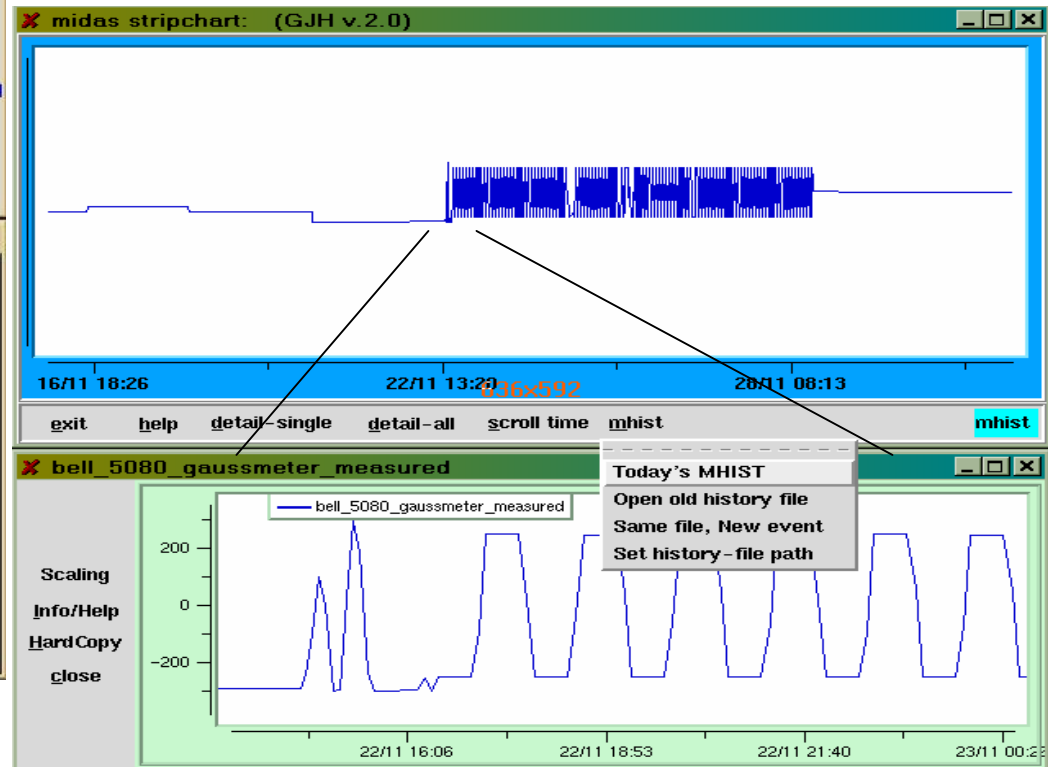
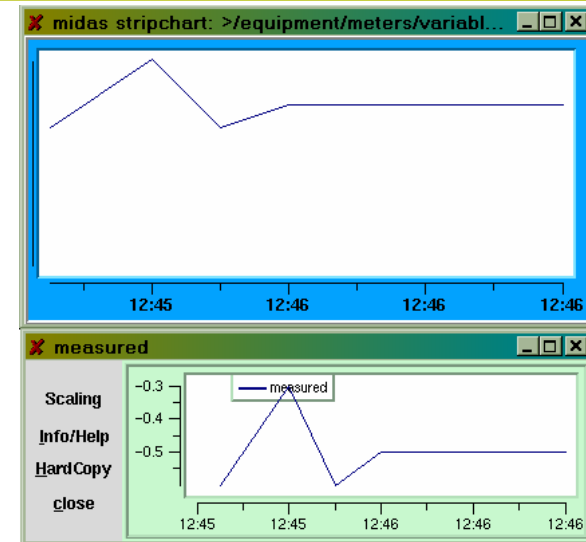
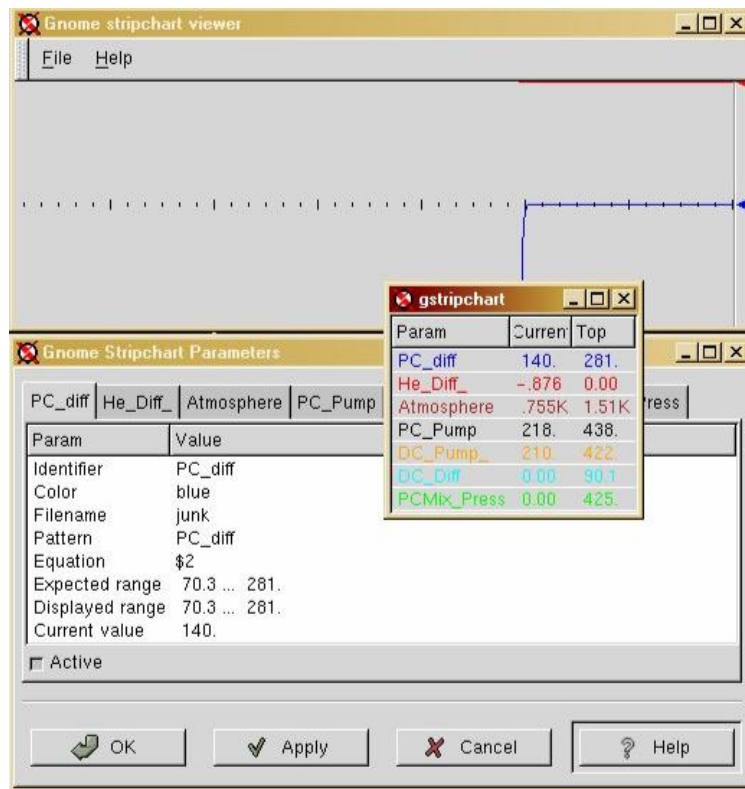
Target Control



ODB data formatter for stripchart utility. Alternative history display based on the Gnome stripchart. Customized version stripchart.tcl for online history data and history files.

```
mchart -e ltno -c -f Gauss -q /equipment/meters/variables LTNO
Ú Files: Gauss.conf (configuration) , Gauss (data)
```

```
mchart -e ltno -f Gauss -gh
Ú Update file Gauss Ú stripchart can read the update Gauss file
```





Client interface to speech synthesizer program. Initially fun application to have, lately very useful tool when counting room gets too crowded .

Used for:

- Triggered Odbedit msg or chat command.
- Triggered by function call cm_msg(MUSER/MTALK,...).

```
Sun> odb -e chaos -h koslx0
[kosl x0: chaos: Stopped]/>chat
Your name> Pierre
Exit chat mode with empty line.
> Is the chamber fixed yet?
09:27:55 [Pierre] Is the chamber fixed yet?
09:28:42 [Greg] Well, we're waiting for you!
```

DEMO

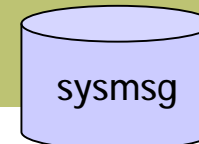
```
Sun> odb -e chaos -h koslx0
[kosl x0: chaos: Stopped]/>msg "It's too late, I'm going home"
```

```
cm_msg(MTALK, "my_prg", "Spoken message");
Example: mlogger.c
...
if (status != SS_SUCCESS && !stop_requested) {
    if (status == SS_IO_ERROR)
        cm_msg(MTALK, "log_write", "Physical IO error on %s, stopping run", log_chn->path);
    else
        cm_msg(MTALK, "log_write", "Error writing to %s, stopping run", log_chn->path);
    stop_requested = TRUE;
    cm_transition(TR_STOP, 0, NULL, 0, ASYNC, FALSE);
    stop_requested = FALSE;
}
```

Logger code

```
#!/bin/tcsh
# Script to restart all DAQ processes running on machine TWIST ...
# The Midas text to audio processor
odb -c scl -e $expt | grep --silent -i speaker
if ( "$?" != "0" ) then
    echo "Starting mlxspeaker as daemon"
    mlxspeaker -e $expt -D \
        -u 'play --volume=0.3 /home/twistonl/bin/wav/bleep8.wav' \
        -t 'play --volume=0.4 /usr/share/sounds/KDE_Dialog_Appear.wav' -s 5&
endif
```

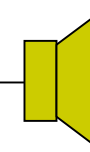
TWIST



mspeaker W2k
mlxspeaker Linux

FirstByte/ProVoice

Festival



Is the chamber
fixed yet?

Sat> mlxspeaker -D



Interactive program for access to CAMAC system, essential for debugging.

- Repeat, Delay, 16/24bit.
- Submit Job.
- CNAF calls
- Midas CAMAC Standard (mcstd.h)

Hardware supported:

- KCS2926, KCS2927 (dio/lx)
- DSP004(dio)
- HYT1331(dio)/w2k/lx
- WIENER-CC32(w2k/lx)
- JORWAY73A(lx)
- CES8210(vxWorks)

```
E823 [/home/e823/online]>mcnaf
mCNAF> [BOC0N01A02F00 [0/0x000000 Q0X0] R1W0M24] :c1n13a0f0
mCNAF> [BOC1N13A00F00 [1/0x000001 Q1X1] R1W0M24] :n19
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R1W0M24] :
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R1W0M24] :r3      ← Repeat
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W0M24] :g      ← Go
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W0M24] <- 001
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W0M24] <- 002
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W0M24] <- 003
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W0M24] :w100   ← Wait
mCNAF> [BOC1N19A00F00 [252/0x0000fc Q1X1] R3W100M24] :j     ← Job

mCNAF> Job file name [cnaf.cnf]:rewind

mCNAF> [BOC1N30A09F24 [252/0x0000fc Q1X1] R3W100M24]
mCNAF> [BOC1N13A00F09 [0/0x000000 Q1X1] R3W100M24]
mCNAF> [BOC1N13A00F16 [6/0x000006 Q1X1] R3W100M24]
```

Address

Data Dec/Hex

QX

Wait

Repeat

Mode

```
E823 [/home/e823/online]>more rewind
c1n30a9f24
n13f9a0
f16x006
f16x806
f16x006
f16x000
x0
x0
f9a0
f16a1d0
d10000
d10000000
d10110000
d10210000
xxxxfff
f9a0
f26a1
a2
```

E823

/midas/utills/makefile.mcnaf: Build mcnaf, miocnaf, (mdrvcnaf)

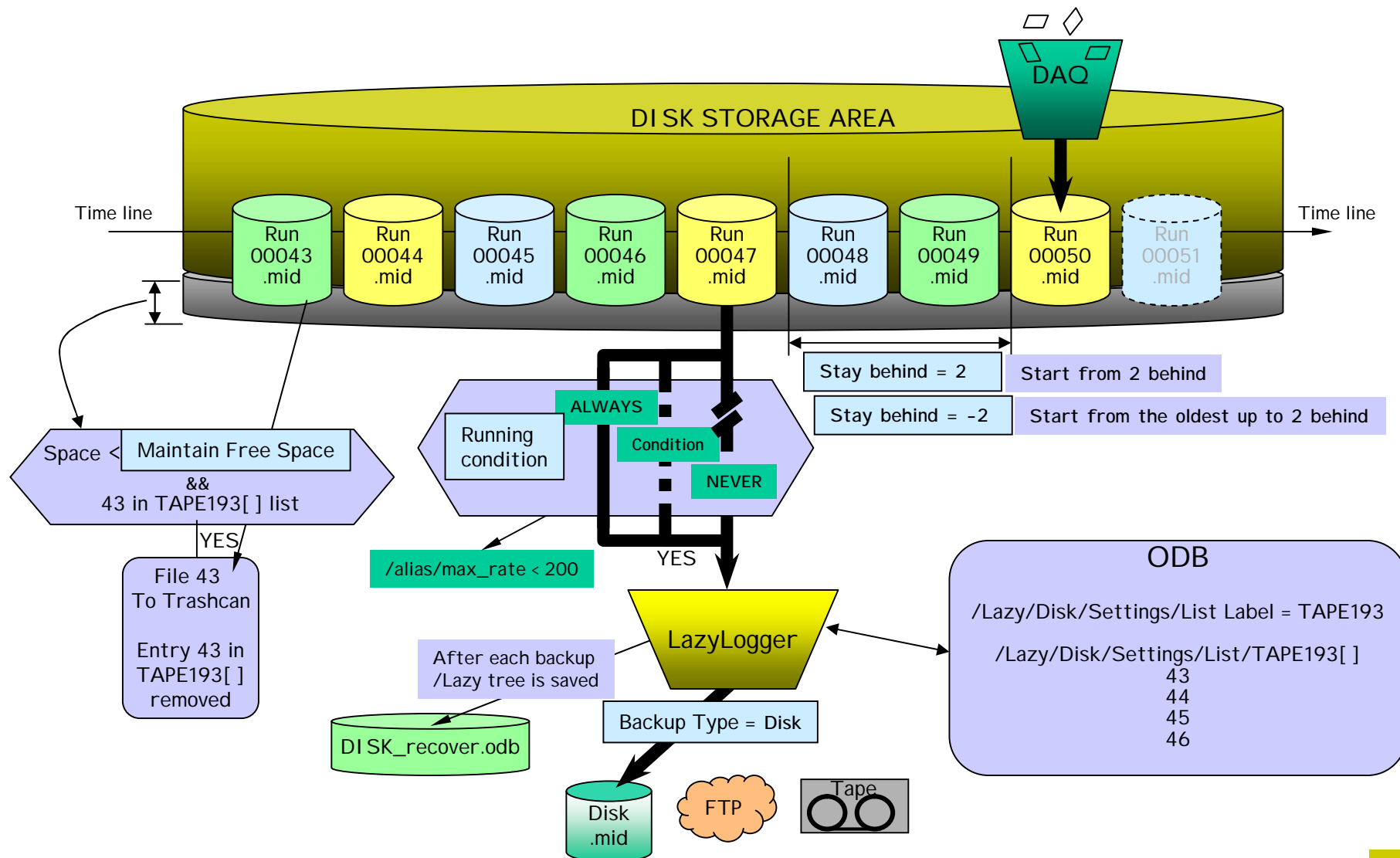
Sun> dio miocnaf Û mcnaf with Direct IO access without Frontend

Sun> mdrvcnaf Û mcnaf with proper driver without Frontend (lxcamac)

Sun> mcnaf Û mcnaf through frontend (RPC)



Application meant to decouple the acquisition from the actual streamer data storing task.
Fed up with 8mm tapes.
The tape handling of the streamer device requires(ed) lengthy initialization operation [8mm Tape] which impacts on the experimenter patience and acquisition live time in particular for short run time.





```
[ /Lazy/Tape/Settings]
Maintain free space(%) = INT : 15
Stay behind = INT : -1
Alarm Class = STRING : [32] Warning
Running condition = STRING : [128] ALWAYS
Data dir = STRING : [256] /data_onl/current
Data format = STRING : [8] YBOS
Filename format = STRING : [128] run%05d.ybs
Backup type = STRING : [8] Tape
Execute after rewind = STRING : [64] /home/twistonl/online/bin/ask_for_tape.sh
Path = STRING : [128] /dev/nst0
Capacity (Bytes) = FLOAT : 5e+10
List label = STRING : [128] tw0166
Execute before writing file = STRING : [64] /home/twistonl/online/bin/lazy_prewrite.csh
Execute after writing file = STRING : [64] /home/twistonl/online/bin/rundb_addrun.pl
Modulo Position = STRING : [8] 1.0
Tape Data Append = BOOL : y

[ /Lazy/Tape/Statistics]
Backup file = STRING : [128] run06746.ybs
File size [Bytes] = FLOAT : 2.00347e+09
KBytes copied = FLOAT : 2.00347e+09
Total Bytes copied = FLOAT : 2.98002e+10
Copy progress [%] = FLOAT : 100
Copy Rate [bytes per s] = FLOAT : 1.73682e+06
Backup status [%] = FLOAT : 99.334
Number of Files = INT : 21
Current Lazy run = INT : 6746

[ /Lazy/Tape/List]
tw0153 = INT : 9108
tw0154 = INT[71] :
[0] 9109
[1] 9110
[2] 9111
[3] 9112
[4] 9113
[5] 9114
```

TWIST

Keep the drive with a minimum of %GB

Stay behind... leave always 1 full run on the disk between the lazy run and the current run.

Data Format: MIDAS, YBOS

Data source directory

Destination type : Tape, Disk, FTP

Label of the backup tape

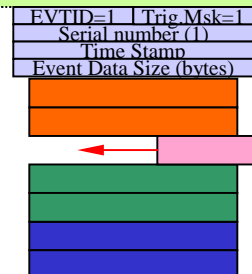
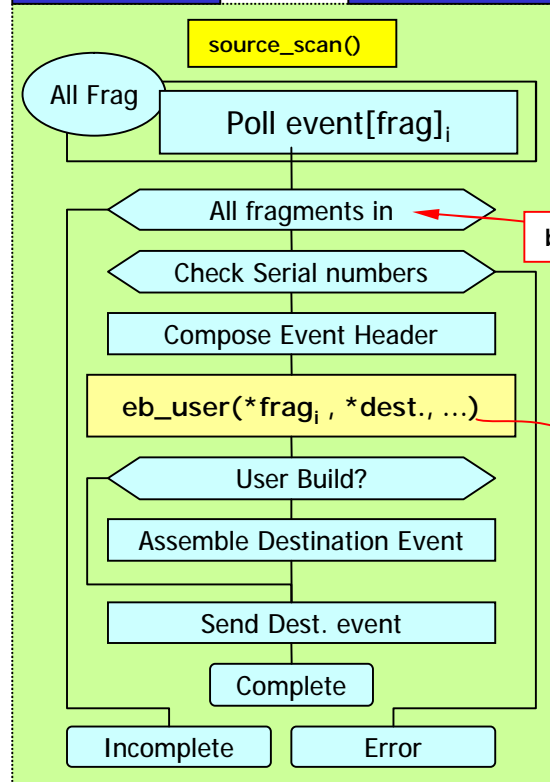
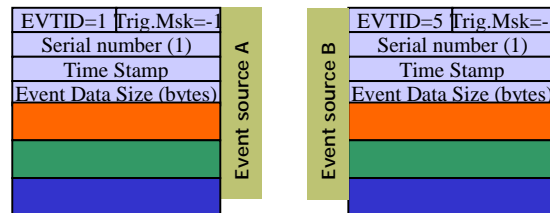
For multiple lazylogger channel on the same data source (3.1, 3.2, 3.3)

Once a run has been backed up, the run number appear in the List tree. It will remain in the list until the physical source file is removed from the source directory (Space maintenance).

Midas.log

```
Mon May 20 15:09:13 2002 [Lazy_Tape] tw0058[1] (cp:125.5s) /dev/nst0/run04390.ybs 530.156MB file NEW (total 16966 blocks)
Mon May 20 15:09:24 2002 [Lazy_Tape] Starting lazy job on run04391.ybs
Mon May 20 15:16:02 2002 [Lazy_Tape] tw0058[2] (cp:397.8s) /dev/nst0/run04391.ybs 1908.438MB file NEW (total 78037 blocks)
Mon May 20 15:16:12 2002 [Lazy_Tape] Starting lazy job on run04392.ybs
```

TWIST



```
eb_begin_of_run(int run, char *UserField, char *error )
```

```
eb_end_of_run(int run, char *error )
```

```
eb_user(INT nfrag
, EBUILDER_CHANNEL * ebch
, EVENT_HEADER *pheader
, void *pevent
, INT *dest_size)
```

TWIST (poster RT-122)
On 2xPII I-1.2GHz/1GB - 2xIDE100
ETH0 - FE-source1 12% 3.5MB/s
ETH1 - FE-source2 12% 3.5MB/s
Mevb 15%
Mlogger 20% 7.0MB/s

ODB structure

[mi dtwist: twist: Stopped] /EBuild er>ls -lr TWIST

Key name	Type	#Val	Size	Last	Opn	Mode	Value
EBuild er							
Settings	DIR						
Event ID	WORD	1	2	>99d 0	RWD	1	
Trigger mask	WORD	1	2	>99d 0	RWD	1	
Buffer	STRING	1	32	>99d 0	RWD	SYSTEM	
Format	STRING	1	32	>99d 0	RWD	YBOS	
User Field	STRING	1	64	>99d 0	RWD	100	
Event mask	WORD	1	4	>99d 0	RWD	3	
User_build	BOOL	1	4	>99d 0	RWD	n	
hostname	STRING	1	64	14h 0	RWD	mi dtwist	
Statistics							
Events sent	DOUBLE	1	8	9h 0	RWD	0	
Events per sec.	DOUBLE	1	8	9h 0	RWD	0	
kBytes per sec.	DOUBLE	1	8	9h 0	RWD	0	
Channels							
Frag1							
Settings	DIR						
Event ID	WORD	1	2	>99d 0	RWD	1	
Trigger mask	WORD	1	2	>99d 0	RWD	65 535	
Buffer	STRING	1	32	>99d 0	RWD	YBUF1	
Format	STRING	1	32	>99d 0	RWD	YBOS	
Event mask	DWORD	1	4	>99d 0	RWD	1	
Statistics	DIR						
Events sent	DOUBLE	1	8	87h 0	RWD	2 27392	
Events per sec.	DOUBLE	1	8	87h 0	RWD	2 24696	
kBytes per sec.	DOUBLE	1	8	87h 0	RWD	0	
Frag2							
Settings	DIR						
Event ID	WORD	1	2	>99d 0	RWD	5	
Trigger mask	WORD	1	2	>99d 0	RWD	6 5535	
Buffer	STRING	1	32	>99d 0	RWD	YBUF2	
Format	STRING	1	32	>99d 0	RWD	YBOS	
Event mask	DWORD	1	4	>99d 0	RWD	2	
Statistics	DIR						
Events sent	DOUBLE	1	8	87h 0	RWD	2 27393	
Events per sec.	DOUBLE	1	8	87h 0	RWD	2 24697	
kBytes per sec.	DOUBLE	1	8	87h 0	RWD	0	

Features & Hidden Features



Most of the Midas features become available once the particular application implementing this feature is started.
Ex: "mlogger" task will create a default structure in the ODB to match its requirements.
The user has the possibility to modify the values and have "immediate reasoned effect".

Some features are not directly related to an application but address more a behavior of the system. In these cases the user has to activate such a "hidden feature" by a particular action (I.e: creation of an entry in ODB).

In the Frontend

Manual Trigger	Enable manual trigger of the equipment.
Large Event	Allow large event collection.
Tiny Event	Allow small event packing.
Deferred transition	Allow transition operation based on condition.
Multiple Equipment/ frontend_loop()	Code examples

In the ODB

Edit on Start	Allow specific run parameters entries at BOR.
Parameter Comments	Specify comment for Run start with Web browser
Lock when running	Allow ODB variables write protect during run.
Security	Control Midas experiment access (ODB, tasks).
History dir	Specify History dir.
Elog dir	Specify Elog dir.

In the Web Browser

Alias	Shortcut hyperlink.
Script	Script hyperlink.
Custom	Custom Midas web page.

Midas features driven by the experiment requirements I



μSR experiment

- Uses special VME TDC (V680) hardware.
- Build large size internal histograms in the Frontend.
- Requires flexible re-configuration between runs.
- Simple interface to the μSR standard data format.
- Event request on demand (mdarc).

```

----- Event# 14 -----
Evi d: 0003- Mask: 0000- Serial : 1327- Time: 0x3ebbdd33- Dsi ze: 80/0x50
#banks: 1 Bank list: - SCLR-
----- Event# 15 -----
Evi d: 0003- Mask: 0000- Serial : 1328- Time: 0x3ebbdd38- Dsi ze: 80/0x50
#banks: 1 Bank list: - SCLR-
----- Event# 16 -----
Evi d: 0002- Mask: 0000- Serial : 43- Time: 0x3ebbdd39- Dsi ze: 4096068/0x3e8044
#banks: 5 Bank list: - HI 00HI 01HI 02HI 03HI 04-
----- Event# 17 -----
Evi d: 0003- Mask: 0000- Serial : 1329- Time: 0x3ebbdd41- Dsi ze: 80/0x50
#banks: 1 Bank list: - SCLR-
----- Event# 18 -----
Evi d: 0003- Mask: 0000- Serial : 1330- Time: 0x3ebbdd47- Dsi ze: 80/0x50
#banks: 1 Bank list: - SCLR-
    
```

μSR

MIDAS experiment "musr" Fri May 9 09:57:01 2003 Refr:60

Stop Pause ODB CNAF Messages ELog Alarms Programs History Config

Help

Real Test Toggle Kill Display Save

Trigger Histo event

[mdarc flags fig mode v680 output](#)

Run #5144 Running Alarms On Restart No Logger not running

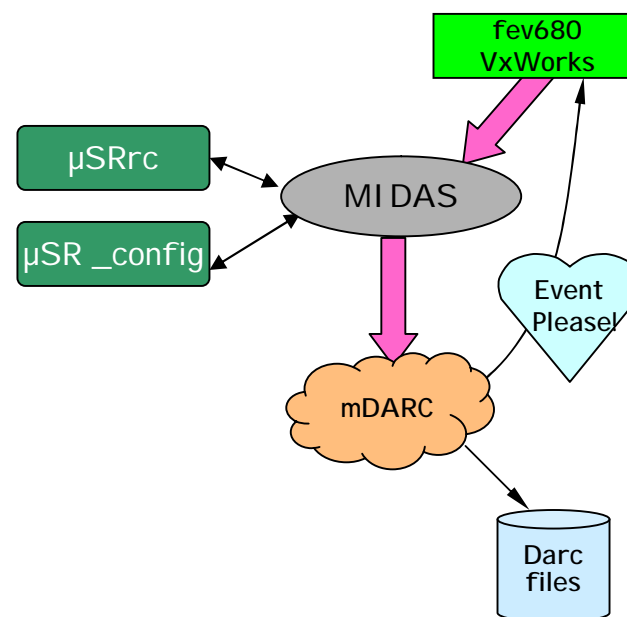
Start: Fri May 9 07:50:55 2003 Running time: 2h06m06s

Equipment	FE Node	Events	Event rate[/s]	Data rate[kB/s]	Analyzed
MUSR TD acq	fev680@m15hmvw	0	0.0	0.0	0.0%
Scaler	fev680@m15hmvw	1358	0.0	0.0	0.0%
Histo	fev680@m15hmvw	43	0.0	0.0	0.0%
Diag	fev680@m15hmvw	1357	0.0	0.0	0.0%
Rscal	fev680@m15hmvw	1372	0.0	0.0	0.0%

Channel	Active	Events	MB written	GB total
0	No Logger	0	0.000	0.000

09:54:18 [Mdar] *** data saved in file /data/m15/2003/005144.msar_v40 at Fri May 9 09:54:18 2003 ***

fev680 [m15hmvw]	musr_config [midm15.triumf.ca]	Mdar [midm15.triumf.ca]
musrrc [midm15.triumf.ca]	mhttpd [midm15.triumf.ca]	mdump [isdaq01]



Frontend: Huge Event



Transmit event larger than default frontend buffer size.

File : hugefe.c

Comment: Event sent individually. No buffering.

Booked 5MB used 4MB

Result

```
C:\>mdump -f x
-1.9.1 -- Enter <!> to Exit ----- Midas Dump ---
----- Event# 1 -----
Evid: 0003- Mask: 0000- Serial: 17- Time: 0x3e9b89c1- Dsize: 40
#banks: 1 - Bank list: -BIGG-

Bank: BIGG Length: 4000000(I*1)/1000000(I*4)/1000000(Type)
 1-> 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
 9-> 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
17-> 0x00000000 0x00000000 0x00000000 0x00000000 0x00000000
25-> 0x00000000 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
33-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd

...
999937-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
999945-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
999953-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
999961-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
999969-> 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd 0xcdcdcdcd
999977-> 0xffffffff 0xffffffff 0xffffffff 0xffffffff 0xffffffff
999985-> 0xffffffff 0xffffffff 0xffffffff 0xffffffff 0xffffffff
999993-> 0xffffffff 0xffffffff 0xffffffff 0xffffffff 0xffffffff
```

```
/* maximum event size for fragmented events (EQ_FRAGMENTED) */
INT max_event_size_frag = 5*1024*1024;

{ "Huge", /* equipment name */
  2, 0, /* event ID, trigger mask */
  "SYSTEM", /* event buffer */
  EQ_PERIODIC | EQ_FRAGMENTED, /* equipment type */
  0, /* event source */
  "MIDAS", /* format */
  TRUE, /* enabled */
  RO_RUNNING | /* read when running */
  RO_TRANSITIONS | /* and on transitions */
  RO_ODB, /* and update ODB */
  10000, /* read every 10 sec */
  0, /* stop run after this #evts */
  0, /* number of sub events */
  0, /* log history */
  "", "", "",
  read_huge_event, /* readout routine */
},
```

Equipment structure

```
INT read_huge_event(char *pevent, INT off)
{
  DWORD *pddata;

  /* init bank structure */
  bk_init32(pevent);

  bk_create(pevent, "BIGG", TID_DWORD, &pddata);
  ...
  pddata += 1000000;
  bk_close(pevent, pddata);

  return bk_size(pevent);
}
```

readout function

DEMO /µSR

Frontend: Manual Trigger



Enable "Manual Trigger" button in the Web browser Midas page. Requested by user to force special computation/statistics done in an equipment.

File : mantrigfe.c

```
{ "mantrig",          /*equipment name */
  2, 0,              /* event ID, trigger mask */
  "SYSTEM",          /* event buffer */
  EQ_PERIODIC |
  EQ_MANUAL_TRIGGER, /* equipment type */
  0,                 /* event source */
  "MIDAS",           /* format */
  TRUE,              /* enabled */
  RO_RUNNING |
  RO_TRANSITIONS |  /* read when running and on transitions */
  RO_ODB,            /* and update ODB */
  10000,             /* read every 10 sec */
  0,                 /* stop run after this ev */
  0,                 /* number of sub events */
  0,                 /* log history */
  "", "", "",
  read_mantrig_event, /* readout routine */
},
```

Equipment structure

DEMO/μSR

```
...
status = cm_connect_client(fe_name, &hconn);
if (status != RPC_SUCCESS) {
    ...
}
else {
    status = rpc_client_call(hconn, RPC_MANUAL_TRIGGER, event_id);
    if (status != CM_SUCCESS) {
        ...
        cm_disconnect_client(hconn, FALSE);
    }
}
...
mhttpd /μSR
```

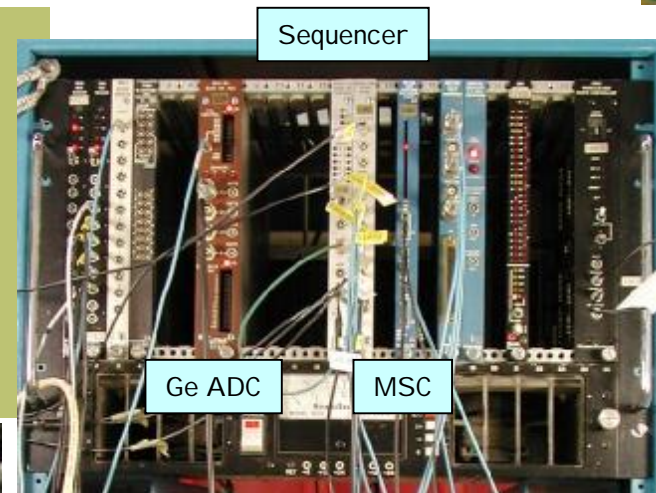
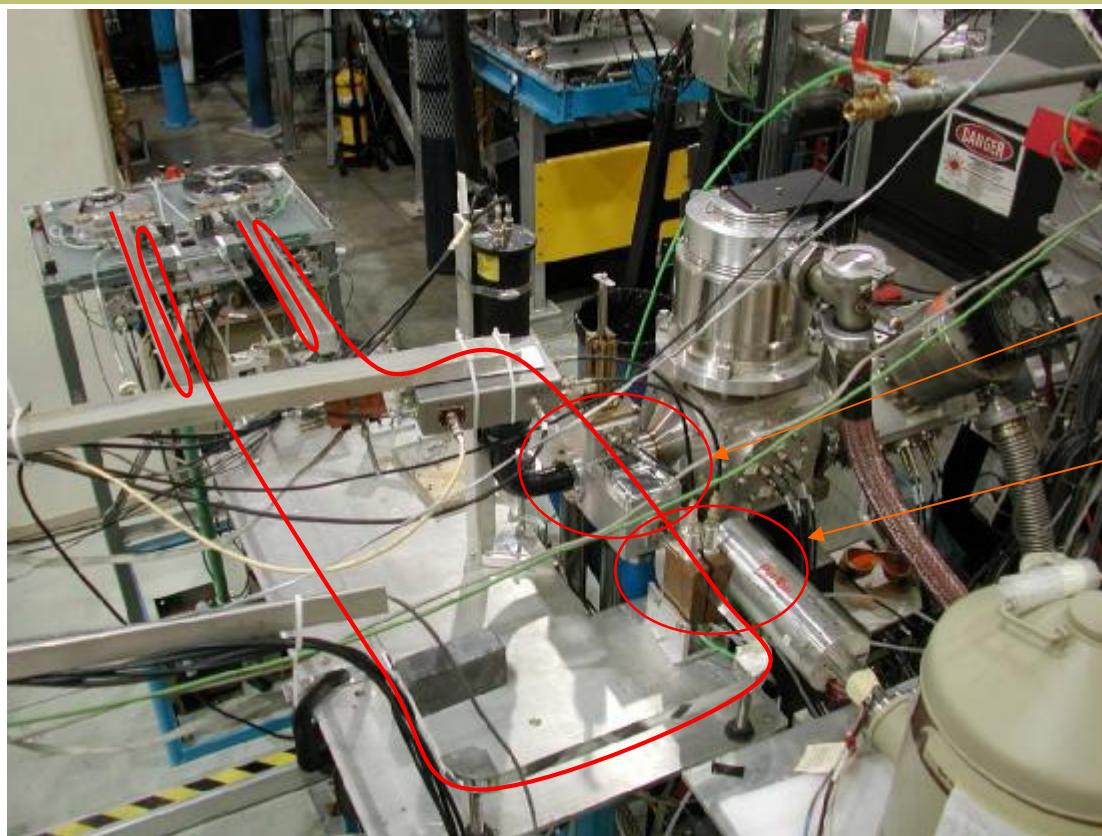
MIDAS experiment "midas"				Mon Apr 14 21:43:40 2003 Refr:60					
Start	ODB	CNAF	Messages	ELog	Alarms	Programs	History	Config	Help
Trigger mantrig event									Result
Run #17	Stopped	Alarms: Off	Restart: No	Logger not running					
Start: Mon Apr 14 21:42:06 2003				Stop: Mon Apr 14 21:43:18 2003					
Equipment	FE Node	Events	Event rate[/s]	Data rate[kB/s]	Analyzed				
mantrig	mantrigfe@pierre2	5	0.0	0.0	0.0%				
Channel	Active	Events	MB written	GB total					
21:43:19 [ODBEEdit] Run #17 stopped									
ODBEEdit [pierre2]		mantrigfe [pierre2]			mhttpd [pierre2]				

Midas features driven by the experiment requirements II



GPS experiments (Precise Half-Life Measurements).

- Uses dedicated radioactive ions tape transport.
- Needs tape mechanism control synchronized with the DAQ.
- Measurement cycle can be long, ensure data validity over the full run.
- Tape movement constrain (keep it moving!).
- Secondary equipment for Ge LAM data collection.
- Synchronize LifeTime cycle with primary beam (EPICS).



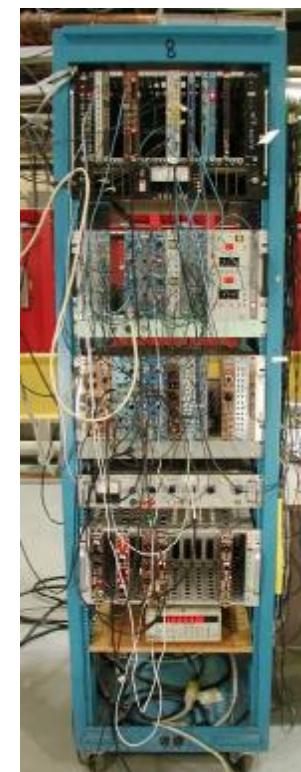
Sequencer

Ge ADC

MSC

Ion implantation

4pi Detector



Frontend: Deferred transition I



Postpone transition until user condition satisfied.

- TR_STOP : Wait for final cycle, start Bg tape move.
- TR_START: Initialize sequencer, stop Bg tape move.

MIDAS experiment "e823"				Fri May 9 12:06:32 2003 Refr:60					
Stop	Pause	ODB	CNAF	Messages	ELog	Alarms	Programs	History	Config
Help									
Run #3089	Running Stop requested		Alarms: Off	Restart: No	Data dir: /data/e823/spring2003				
Start: Fri May 9 12:06:25 2003				Running time: 0h00m07s					
Equipment	FE Node	Events	Event rate[/s]	Data rate[kB/s]	Analyzed				
MCS	lifetime@midis04	1	0.3	0.3	100.0%				
GE	lifetime@midis04	132	40.0	1.6	100.0%				
Scaler	lifetime@midis04	0	0.0	0.0	0.0%				
Trigger	(inactive)	0	0.0	0.0	0.0%				
Channel		Active	Events	MB written	GB total				
0 run03089.mid		Yes	223	0.034	9.872				
12:06:26 [mhttpd] Run #3089 started									
Logger [midis04]		lifetime [midis04]			MStatus [midis04]				
ODBEdit [midis04]		nova_online [midis04]			mcnaf [midis04]				
mhttpd [midis04]									



BOR:

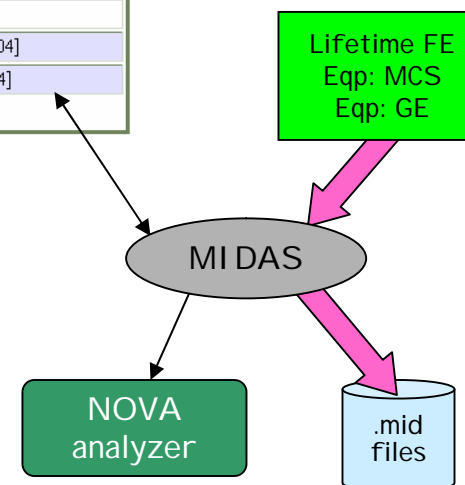
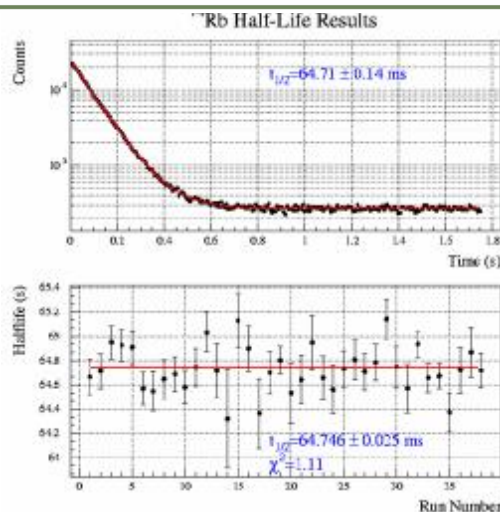
- Move Tape.
- Initialize sequence.

Acquisition:

- Wait for implantation
- Move Tape to 4pi counter
- Start decay measurement
- Collect decay data (MSC)
- Move Tape
- ...

Frontend_loop()

- Keep Tape moving



Frontend: Deferred transition II



File : deferredfe.c

Comments:

- Only for Polled Equipment.
- Register for specific Transition (START, PAUSE, RESUME, STOP)

```
INT frontend_init()
{
    // register for deferred transition
    cm_register_deferred_transition(TR_STOP, wait_end_cycle);
    cm_register_deferred_transition(TR_PAUSE, wait_end_cycle);
    ...
}
```

Initialization function

```
Event buffer size : 100000
Buffer allocation : 2 x 100000
System max event size : 524288
User max event size : 10000
User max frag. size : 5242880
# of events per buffer : 10
```

Result

```
Event ID:2 - Event#: 1
Event ID:2 - Event#: 2
Event ID:2 - Event#: 3
Transition requested...
Transition ignored, Event ID:2 - Event#: 4
Transition ignored, Event ID:2 - Event#: 5
Transition ignored, Event ID:2 - Event#: 6
End of cycle... perform transition
Event ID:2 - Event#: 7
Run #21 stopped
```

Stop or pause requested

```
BOOL transition_PS_requested = FALSE;
BOOL end_of_cycle = FALSE;
```

Declaration section

```
//-- Deferred transition callback
BOOL wait_end_cycle(int transition, BOOL first)
{
    if (first) {
        // Get there as soon as transition is requested
        transition_PS_requested = TRUE;
        printf("Transition requested...\n");
        // Defer the transition now
        return FALSE;
    }
}
```

Callback function

```
// Check user flag
if (end_of_cycle) {
    // User flag set, ready to perform deferred transition now
    transition_PS_requested = FALSE;
    end_of_cycle = FALSE;
    return TRUE;
}
else {
    return FALSE; // User not ready for transition, defers it...
}
}
```

```
INT read_deferred_event(char *pevent, INT off)
```

readout function

```
{
    DWORD *pdata;
    bk_init(pevent);
    bk_create(pevent, "DEFR", TID_DWORD, &pdata);
    ...
    bk_close(pevent, pdata);

    if (transition_PS_requested) {
        // transition acknowledged, but...
        // carry on until hardware condition satisfied
        // ...
        if (pseudo_delay++ < 3) {
            // Ignore transition
            printf("Transition ignored, ");
        } else {
            // Time to do transition
            printf("End of cycle... perform transition\n");
            end_of_mcs_cycle = TRUE;
        }
    }
    printf("Event ID:%d - Event#: %d\n", EVENT_ID(pevent), SERIAL_NUMBER(pevent));
    return bk_size(pevent);
}
```

DEMO/E823

Frontend: Tiny Event



Transmit packed event under one bank. When the event data size is comparable to the header, packing multiple frontend events under a single bank improves CPU and disk usage. Requires proper sub-event handling at the analyzer level.

File : tinyfe.c

Comments: Only for Polled event

```
#define NWORDS 3
INT read_tiny_event(char *pevent, INT offset)
{
    static WORD *pdata=NULL;
    static WORD sub_counter=0;
    // Super event structure
    if (offset == 0) { // FIRST event of the Super event
        bk_init(pevent);
        bk_create(pevent, "SUPR", TID_WORD, &pdata);
        sub_counter = 1;
    }
    else if (offset == -1) { // CLOSE Super event
        bk_close(pevent, pdata);
        return bk_size(pevent);
    }
    // READ event
    *pdata++ = 0xB0E;
    *pdata++ = sub_counter++;
    *pdata++ = 0xE0E;

    if (offset == 0) {
        // Compute the proper event length on the FIRST pass
        // sizeof(WORD) is defined by the TID_WORD in bk_create()
        return NWORDS * sizeof(WORD)
            + sizeof(BANK_HEADER)
            + sizeof(BANK);
    }
    else {
        // Return the data section size only
        // sizeof(WORD) is defined by the TID_WORD in bk_create()
        return NWORDS * sizeof(WORD);
    }
}
...
```

readout function

$NWORDS * \text{sizeof}(\text{WORD}) * 10$

Equipment structure

```
{ "Tiny", // equipment name */
  3, 0, // event ID, trigger mask */
  "SYSTEM", // event buffer */
  EQ_POLLED, // equipment type */
  1, // event source */
  "MIDAS", // format */
  TRUE, // enabled */
  RO_RUNNING | // read when running */
  RO_TRANSITIONS, // and on transitions */
  500, // polling 500ms */
  0, // stop run after x events */
  10, // number of sub events */
  0, // log history */
  "", "", "", //
  read_tiny_event, // readout routine */
},
```

```
C:\>mdump
-1.9.1--- Enter <!> to Exit ----- Mi das Dump ---
----- Event# 1 -----
Evid: 0003- Mask: 0000- Serial: 12652821- Time: 0x3e9b8207- Dsi ze: 80/0x50
#banks: 1 - Bank list:- SUPR-

Bank: SUPR Length: 60(1*1)/15(1*4)/30(Type) Type: Unsigned Integer *2
1-> 0x0b0e 0x0001 0x0e0e 0x0b0e 0x0002 0x0e0e 0x0b0e 0x0003
9-> 0x0e0e 0x0b0e 0x0004 0x0e0e 0x0b0e 0x0005 0x0e0e 0x0b0e
17-> 0x0006 0x0e0e 0x0b0e 0x0007 0x0e0e 0x0b0e 0x0008 0x0e0e
25-> 0x0b0e 0x0009 0x0e0e 0x0b0e 0x000a 0x0e0e
DEMO/E823
```

Result

Frontend: multiple polling equipment, frontend_loop()



```

/*-- Equipment list ----- */
EQUIPMENT equipment[] = {

    { "MCS",                /* equipment name */
      1, 0x0001,            /* event ID, trigger mask */
      "SYSTEM",            /* event buffer */
      EQ_POLLED,           /* equipment type */
      LAM_SOURCE(CRATE, LAM_STATION(JW_N)), /* event source */
      "MI DAS",            /* format */
      TRUE,                /* enabled */
      RO_RUNNING,          /* read only when running */
      5,                   /* poll for 5ms */
      0,                   /* stop run after this event limit */
      0,                   /* number of sub event */
      0,                   /* don't log history */
      "", "", "",
      read_mcs_event,       /* readout routine */
    },

    { "GE",                /* equipment name */
      2, 0x0002,            /* event ID, trigger mask */
      "SYSTEM",            /* event buffer */
      EQ_POLLED,           /* equipment type */
      LAM_SOURCE(CRATE, LAM_STATION(AD_N)), /* event source */
      "MI DAS",            /* format */
      TRUE,                /* enabled */
      RO_RUNNING,          /* read only when running */
      100,                 /* poll for 100ms */
      0,                   /* stop run after this event limit */
      0,                   /* number of sub event */
      0,                   /* don't log history */
      "", "", "",
      read_ge_event,       /* readout routine */
    },

    { "Scaler",            /* equipment name */
      4, 0x4,              /* event ID, trigger mask */
      "SYSTEM",            /* event buffer */
      EQ_PERIODIC,         /* equipment type */
      0,                   /* event source */
      "MI DAS",            /* format */
      FALSE,               /* disabled */
      RO_RUNNING |         /* read when running and on transitions */
      RO_TRANSITIONS |    /* and update ODB */
      RO_ODB,              /* read every 10 sec */
      10000,               /* stop run after this event limit */
      0,                   /* number of sub event */
      0,                   /* log history */
      "", "", "",
      read_scaler_event,   /* readout routine */
    },
    { "" }
};

```

E823

```

char *frontend_name = "lifetime";
char *frontend_file_name = __FILE__;

/* frontend_loop is called periodically if this var. is TRUE */
BOOL frontend_call_loop = TRUE;
/* a frontend status page is displayed with this freq. in ms */
INT display_period = 3000;

/* globals */
BOOL end_of_mcs_cycle = FALSE;
BOOL transition_PS_requested = FALSE;

/*-- Function declarations ----- */
INT read_mcs_event(char *pevent, INT off);
INT read_ge_event(char *pevent, INT off);
INT read_scaler_event(char *pevent, INT off);
INT channel_cycle_loop(void);
INT time_cycle_loop(void);
INT sequencer(INT action);
INT re_arm_ge(void);
INT re_arm_cycle(void);

```

E823

```

/*-- Frontend Loop ----- */
INT frontend_loop()
{
    DWORD cur_time;
    /* if frontend_call_loop is true, this routine gets called
    when the frontend is idle or once between every event */
    /* prepare sequencer */
    static char bars[] = "|/-\\";
    static int i_bar=0;

    if ((i_bar++ % 10) == 0) {
        printf("%c\r", bars[i_bar++ % 4]);
        fflush(stdout);
    }

    if ((run_state == STATE_PAUSED) && (pause_time != 0)) {
        cur_time = ss_time();
        if ((cur_time - pause_time) > (INT) seq.tape.delay) {
            /* ready for moving tape */
            if (sequencer(SEQ_MOVE_TAPE) == SUCCESS) {
                pause_time = cur_time;
                return SUCCESS;
            }
            return FE_ERR_HW;
        }
    }
}

```

E823

Ease the experiment control ODB/Web



Midas Web Run Control

MIDAS experiment "Itao" Tue Apr 29 19:24:56 2003

Stop Pause ODB (NAV) Messages ELog Alarms Programs History Config Help

Reset Experiment

Start Tue Apr 29 19:24:56 2003

Equipment	FE Mode	Events	Event rate(1/s)	Data rate(1/s)	Analysed
HamChk1	6LTHO@Gdaul01	0	0.0	0.0	1.0%
EdacChk1	6LTHO@Gdaul01	32	0.0	7.4	1.0%
HamChk2	6LTHO@Gdaul01	0	0.0	0.0	1.0%
HamChk3	6LTHO@Gdaul01	0	0.0	0.0	1.0%
EdacChk2	6LTHO@Gdaul01	0	0.0	0.0	1.0%
Scale	6LTHO@Gdaul01	427	0.0	0.0	1.0%
TempBridge	6LTHO@Gdaul01	45	0.0	0.0	1.0%
Edac	6LTHO@Gdaul01	0	0.0	0.0	1.0%
Edac2	6LTHO@Gdaul01	46	0.0	0.0	1.0%
EdacChk4	6LTHO@Gdaul01	46	0.0	0.0	1.0%
EdacChk5	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk6	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk7	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk8	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk9	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk10	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk11	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk12	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk13	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk14	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk15	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk16	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk17	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk18	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk19	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk20	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk21	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk22	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk23	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk24	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk25	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk26	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk27	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk28	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk29	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk30	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk31	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk32	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk33	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk34	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk35	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk36	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk37	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk38	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk39	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk40	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk41	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk42	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk43	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk44	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk45	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk46	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk47	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk48	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk49	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk50	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk51	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk52	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk53	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk54	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk55	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk56	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk57	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk58	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk59	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk60	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk61	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk62	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk63	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk64	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk65	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk66	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk67	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk68	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk69	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk70	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk71	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk72	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk73	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk74	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk75	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk76	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk77	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk78	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk79	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk80	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk81	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk82	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk83	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk84	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk85	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk86	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk87	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk88	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk89	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk90	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk91	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk92	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk93	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk94	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk95	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk96	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk97	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk98	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk99	6LTHO@Gdaul01	45	0.0	0.0	1.0%
EdacChk100	6LTHO@Gdaul01	45	0.0	0.0	1.0%

Channel Active Events MB written GB total

TempBridge 100 1147 11.2%

Progress 5% 0.0%

32.0000 [Analysis] [Name: 1545 write, event_block] Received unknown block HTML

Log [html] [6LTHO@Gdaul01] [6LTHO@Gdaul01]

Monitor [html] [ODR@Gdaul01] [6LTHO@Gdaul01]

Monitor [html] [6LTHO@Gdaul01] [6LTHO@Gdaul01]

Equipment panels

If ODB is Write protected

Please enter password to obtain write access

Save

MIDAS experiment "e614" Tue Dec 19 10:00:19 2000

See new value type - INT

Equipment PA Settings Channels PA 35

Set Cancel

MIDAS experiment "e614" Tue Dec 19 09:59:40 2000

File Data Alarms Programs Status Help

Trace Log from this page

Equipment: PA Settings

Key	Value
Write protection (PA)	1
Monitor (PA)	1
Temp. sensor (PA)	...
Mod. sensitivity (PA)	...

Channel PA Settings Channels PA

MIDAS experiment "e614" Tue Dec 19 10:00:05 2000

File Data Alarms Programs Status Help

Trace Log from this page

Equipment: PA Settings Channels

Key	Value
PA	35 (OK)

Entire information is (can be) available in ODB.
Develop/extend single interface for control & monitoring.

Implement hidden features to no clutter the already busy display.

SC panels

MIDAS experiment "Itao" Tue Jan 11 22:33:22 2002

Save Cancel Refresh Delete Panel

Panel "Bridge"

Time scale: 1h

☒ Zero Flow

☐ Logarithmic Y axis

☐ Show run markers

Cell	Event	Variable	Factor	Offset
TempBridge	Bridge Ch 1 Measur	1	0	
TempBridge	Bridge Ch 2 Measur			
TempBridge	Bridge Ch 3 Measur			
TempBridge	Bridge Ch 4 Measur			
TempBridge	Bridge Ch 5 Measur			
TempBridge	Bridge Ch 6 Measur			
TempBridge	Bridge Ch 7 Measur			

History panel

MIDAS experiment "e614" Mon Dec 18 14:21:54 2000

ODB Status Help

Equipment: PA

Names D VTP M VTP D Thres M ThresA M ThresB D TP M TP Temp Voltage Voltage

SL	D	VTP	M	VTP	D	Thres	M	ThresA	M	ThresB	D	TP	M	TP	Temp	Voltage	Voltage
SL_0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	-0.018	-0.006
SL_1	1852	1852	1031	-1002	-998	n	n	31.3	5.061	-5.103							
SL_2	1793	1793	1047	-1002	-999	n	n	33.8	5.099	-5.112							
SL_3	1775	1774	1023	-1001	-1000	n	n	33.5	5.067	-5.093							
SL_4	1832	1832	1047	-1003	-999	n	n	34.9	5.076	-5.104							
SL_5	1800	1800	1044	-1004	-1000	n	n	36.5	5.055	-5.108							
SL_6	1736	1745	1011	-1001	-1000	n	n	40.4	5.066	-5.098							
SL_7	1798	1798	1011	-1004	-1000	n	n	37.3	5.083	-5.097							
SL_8	1795	1795	1018	-1002	-1000	n	n	38	5.073	-5.093							
SL_9	1801	1801	1016	-1001	-1002	n	n	35.1	5.09	-5.104							
SL_10	1797	1798	1013	-1001	-1000	n	n	34.7	5.065	-5.104							
SL_11	1795	1796	1028	-1000	-1002	n	n	31.3	5.057	-5.102							
SL_12	1797	0	1013	0	0	n	n	0	-0.022	-0.006							
SL_13	1798	1798	1016	-1002	-1000	n	n	34.3	5.067	-5.102							
SL_14	1795	1795	1016	-1000	-1000	n	n	32.4	5.07	-5.095							
SL_15	1799	1800	1016	-1000	-1001	n	n	28.9	5.068	-5.092							
SL_16	1732	1732	1017	-1002	-1001	n	n	37.7	5.058	-5.099							

MIDAS experiment "silicon" CAMAC server: feSilicon

Execute ODB Status Help

N	A	F	Data
1	0	0	0

Repeat 1 C cycle Z cycle

Repeat delay [ms] 0 Set inhibit Clear inhibit

Data increment 0 Branch 0

A increment 0 Crate 1

Camac panel

OdbEdit: /Experiment/Edit on Start (hidden)



Provides run parameters entries at "Begin of run" (BOR).

Comment: Will be available only in the "Run Start" page of the Web Browser Midas page.

```
[local:bnmr1:S]/>cd "Experiment/Edit on start/"
[local:bnmr1:S]Edit on start>ls -l
```

Key name	Type	#Val	Size	Last Opn	Mode	Value
run_title	STRING	1	88	5m 0	RWD	NbSe2 H=-112G 40K 55-85 KHz 300Hz
AFG=10mV						
experiment_number	DWORD	1	4	5m 0	RWD	815
experimenter	STRING	1	32	5m 0	RWD	wam
sample	STRING	1	11	5m 0	RWD	NbSe2
orientation	STRING	1	11	5m 0	RWD	c-axis
temperature	STRING	1	11	5m 0	RWD	40K
field	STRING	1	11	5m 0	RWD	-112G
Write Data	LINK	1	19	>99d 0	RWD	/Logger/Write data
Edit run number	BOOL	1	4	6h 0	RWD	n

Bnmr

Run started from ODB

Run started from the Web Browser

Not editable field

```
[local:bnmr1:S]Edit on start>start
run_title : NbSe2 H=-112G 40K 55-85 KHz 300Hz
AFG=10mV
experiment_number : 815
experimenter : wam
sample : NbSe2
orientation : c-axis
temperature : 40K
field : -112G
Write Data : y
Run number [40066]:
```

Result

MIDAS experiment "bnmr1"		Mon Apr 14 22:58:07 2003
Start new run		
Run number	40066	
run_title	NbSe2 H=-112G 40K 55-85 KHz 300Hz AFG=10mV	
experiment_number	815	
experimenter	wam	
sample	NbSe2	
orientation	c-axis	
temperature	40K	
field	-112G	
Write Data	y	
Start Cancel		Result

OdbEdit: /Experiment/Parameter Comments (hidden)



Provides additional run parameters comments for the Web browser form.
If parameters are not clear enough!

Comment: Will be only available in the "Run Start" page of the Web Browser Midas page.

```
[local:bnmr1:S]/Experiment>cd "Parameter Comments/"
```

ODB structure

```
[local:bnmr1:S]Parameter Comments>ls -l
```

Key name	Type	#Val	Size	Last	Opn	Mode	Value
experimenter	STRING	1	35	1m	0	RWD	<H2> Some useful name!</H2>
field	STRING	1	32	1m	0	RWD	<i>Not in Tesla!</i> DEMO / Bnmr

MIDAS experiment "bnmr1"		Mon Apr 14 23:05:32 2003
Start new run		
Run number	40066	
run_title	NbSe2 H=-112G 40K 55-85 KHz 300Hz AFG=10mV	
experiment_number	815	
experimenter		
Some useful name!	wam	
sample	NbSe2	
orientation	c-axis	
temperature	40K	
field <i>Not in Tesla!</i>	-112G	
Write Data	y	
<input type="button" value="Start"/> <input type="button" value="Cancel"/>		<input type="button" value="Result"/>

OdbEdit: /Experiment/Lock when running (hidden)



```
[local:bnmr1:S]/>cd "Experiment/Lock when running/"
[local:bnmr1:S]Lock when running>ls -l
```

Key name	Type	#Val	Size	Last	Opn	Mode	Value
----------	------	------	------	------	-----	------	-------

dis_rn_check	LINK	1	51	>99d 0	RWD	/Equipment/FIFO_acq/mdarc/disable run number check	
Input	LINK	1	35	88h 0	RWD	/Equipment/FIFO_acq/sis mcs/Input/	
SIS test mode	LINK	1	43	88h 0	RWD	/Equipment/FIFO_acq/sis mcs/sis test mode/	
SIS ref A	LINK	1	65	88h 0	RWD	/Equipment/FIFO_acq/sis mcs/Hardware/Enable SIS ref ch1 scaler A	
SIS ref B	LINK	1	65	88h 0	RWD	/Equipment/FIFO_acq/sis mcs/Hardware/Enable SIS ref ch1 scaler B	

```
[local:bnmr1:S]Lock when running>
```

ODB structure

Set Read Only access to declared ODB Variables when run in progress.

Useful to prevent user to change critical run parameters during data taking.

Run Stopped

Starting run

Run in Progress

```
[local:bnmr1:S]Hardware>ls -l
```

Key name	Type	#Val	Size	Last	Opn	Mode	Value
num cycles	DWORD	1	4	18h	0	RWD	0
Fluor monitor thr	DWORD	1	4	20h	0	RWD	0
Cycle thr (%)	FLOAT	1	4	6h	0	RWD	20
Diagnostic channel num	INT	1	4	20h	0	RWD	2
Re-reference	BOOL	1	4	6h	0	RWD	n
num polarization cycles	DWORD	1	4	20h	0	RWD	0
polarization switch delay	DWORD	1	4	20h	0	RWD	0
Enable SIS ref ch1 scaler A	BOOL	1	4	20h	0	<u>RWD</u>	n
Enable SIS ref ch1 scaler B	BOOL	1	4	20h	0	<u>RWD</u>	y
Enable helicity flipping	BOOL	1	4	8h	0	RWD	y
PPG acq cycle control	BOOL	1	4	20h	0	RWD	y

```
...
[local:bnmr1:S]Hardware>start now
Starting run #40066
```

Result

```
23:13:25 [ODBEdit] Run #40066 started
```

```
[local:bnmr1:R]Hardware>ls -l
```

Key name	Type	#Val	Size	Last	Opn	Mode	Value
num cycles	DWORD	1	4	18h	0	RWD	0
Fluor monitor thr	DWORD	1	4	20h	0	RWD	0
Cycle thr (%)	FLOAT	1	4	6h	0	RWD	20
Diagnostic channel num	INT	1	4	20h	0	RWD	2
Re-reference	BOOL	1	4	6h	0	RWD	n
num polarization cycles	DWORD	1	4	20h	0	RWD	0
polarization switch delay	DWORD	1	4	20h	0	RWD	0
Enable SIS ref ch1 scaler A	BOOL	1	4	20h	0	<u>R</u>	n
Enable SIS ref ch1 scaler B	BOOL	1	4	20h	0	<u>R</u>	y
Enable helicity flipping	BOOL	1	4	8h	0	RWD	y
PPG acq cycle control	BOOL	1	4	20h	0	RWD	y

```
[local:bnmr1:R]Hardware>
```

```
[local:bnmr1:R]Hardware>set "Enable SIS ref ch1 scaler A" y
```

```
Write access not allowed
```

Bnmr

OdbEdit: /Experiment/Security (hidden)



Provides access control to declared tasks and/or hosts as well as general user access to the experiment and R/W from the Web browser.

Comments:

- By default public Read/Write access to the database.
- "webpasswd" public Write protection
- "passwd" public Read/Write protection.

OdbEdit: /Logger/Elog dir & /Logger/History dir (hidden)



Provides dedicated path for the storage of the Elog files as well as the History files.

[local:twist: Stopped] /Logger>ls -lr									ODB structure
Key name	Type	#Val	Size	Last	Opn	Mode	Value		
Logger	DIR								
Data dir	STRING	1	256	22s	0	RWD	/data_onl /current		
Message file	STRING	1	256	22s	0	RWD	mi das.log		
Auto restart	BOOL	1	4	22s	0	RWD	y		
Write data	BOOL	1	4	22s	0	RWD	y		
ODB Dump	BOOL	1	4	22s	0	RWD	y		
ODB Dump File	STRING	1	256	22s	0	RWD	run%05d. odb		
Tape message	BOOL	1	4	22s	0	RWD	y		
Channels	DIR								
0	DIR								
Settings	DIR								
Active	BOOL	1	4	22s	0	RWD	y		
Type	STRING	1	8	22s	0	RWD	Di sk		
Filename	STRING	1	256	22s	0	RWD	run%05d. ybs		
Format	STRING	1	8	22s	0	RWD	YBOS		
ODB dump	BOOL	1	4	22s	0	RWD	n		
Log messages	DWORD	1	4	22s	0	RWD	0		
Buffer	STRING	1	32	22s	0	RWD	SYSTEM		
Event ID	INT	1	4	22s	0	RWD	- 1		
Trigger mask	INT	1	4	22s	0	RWD	- 1		
Event limit	DWORD	1	4	22s	0	RWD	0		
Byte limit	DOUBLE	1	8	22s	0	RWD	2e+09		
Tape capacity	DOUBLE	1	8	22s	0	RWD	0		
Subdir format	STRING	1	32	22s	0	RWD			
Current filename	STRING	1	256	22s	0	RWD	run13597. ybs		
Statistics	DIR								
...	DIR								
1	DIR								
Settings	DIR								
Active	BOOL	1	4	22s	0	RWD	y		
Type	STRING	1	8	22s	0	RWD	Di sk		
Filename	STRING	1	256	22s	0	RWD	sr un%05d. ybs		
Format	STRING	1	8	22s	0	RWD	YBOS		
ODB dump	BOOL	1	4	22s	0	RWD	n		
Log messages	DWORD	1	4	22s	0	RWD	0		
Buffer	STRING	1	32	22s	0	RWD	SYSTEM		
Event ID	INT	1	4	22s	0	RWD	- 1		
Trigger mask	INT	1	4	22s	0	RWD	32768		
Event limit	DWORD	1	4	22s	0	RWD	0		
Byte limit	DOUBLE	1	8	22s	0	RWD	2e+09		
Tape capacity	DOUBLE	1	8	22s	0	RWD	0		
Subdir format	STRING	1	32	22s	0	RWD	current_spl it		
Current filename	STRING	1	256	22s	0	RWD	current_spl it/srun13597. ybs		
Statistics	DIR								
...	DIR								
History dir	STRING	1	256	22s	0	RWD	/data_onl /el og_hi story		
Elog Dir	STRING	1	23	22s	0	RWD	/data_onl /el og_hi story	TWIST	

Web Browser: /Alias (hidden)



Provides shortcut to ODB location. Will appear in the Web browser as hyperlink.

Comments:

- /Alias/<shortcut> spawn new frame with the shortcut destination
- /Alias/<shortcut&> replace current frame content with shortcut destination

Result	MIDAS experiment
Start	ODB
Myscalers FCup RunSummary	
Run #8372	Stopped
Start: Sat Apr 12 14:	
Equipment	FE Node
gTrigger	dragon@midm
Scaler	dragon@midm
hTrigger	dragon@midm
NewEpics	feepics@isdaq
ADC Peds	dragon@midm

Channel	Active	Events	MB written	GB total
run08371.mid	Disabled	0	0.000	38.217

Mon Apr 14 16:51:22 2003 [mhttpd] Program mhttpd on host isdaq04 started

Logger [isdaq04]	dragon [midmes01]	Analyzer [isdaq04]
Speaker [isdaq04]	feepics [isdaq04]	AllStatus [isdaq04]
mhttpd [isdaq04]		

[local: dragon: Stopped] /alias>ls -lr B HIT <Tab>

Myscalers&
FCup&

[local: dragon: Stopped] /alias>ls -lr B Hit <Ret>

Key name	Type	#Val	Size	Last Opn	Mode	Value
alias	DIR					
Sums	DIR					
Gammas_presented	DOUBLE	1	8	13h	1	RWD 2.75257e+07
Gammas_acquired	DOUBLE	1	8	13h	0	RWD 2.71811e+07
HI_presented	DOUBLE	1	8	13h	0	RWD 6410
HI_acquired	DOUBLE	1	8	13h	0	RWD 6073
Elastics_TSCA	DOUBLE	1	8	13h	0	RWD 12690
Prescaled_TSCA	DOUBLE	1	8	13h	0	RWD 1618
End-Det.-Triggers	DOUBLE	1	8	13h	0	RWD 4793
Gamma-Sum-LED	DOUBLE	1	8	13h	0	RWD 1.24667e+08
Pulsers	DOUBLE	1	8	13h	0	RWD 4319
Beta-monitor	DOUBLE	1	8	13h	0	RWD 0
Elastics-CFD	DOUBLE	1	8	13h	0	RWD 1.69766e+08
Beta-monitor-singles	DOUBLE	1	8	13h	0	RWD 938
FCup&	STRING	1	64	5h	0	RWD

http://midmes01.triumf.ca:8081/HS/Beam?exp=dragon

Dragon

ODB structure

Web Browser: /Script (hidden)



Provides Web browser shortcut for activation of script.
Will appear in the Web browser as hyperlink after any "alias" links.

Comments:

- /Script/<Button name>/
 <command> Key type (dir). Will appear on the Midas status page.
 <arg or link> Command string.
 <arg or link> Argument passed to the script.
 <arg or link> Argument passed to the script.
- No limits on the number of argument passed to the script.

```
[local:bnmr1:S]/>cd Script/
[local:bnmr1:S]/Script>ls -lr
```

ODB structure

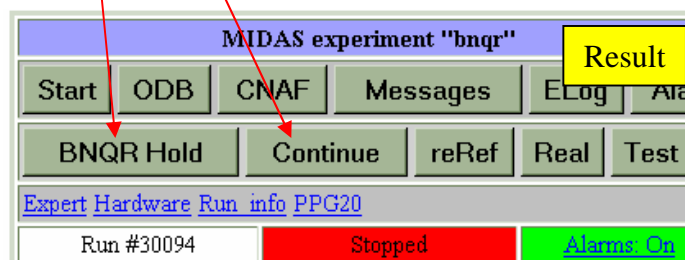
Key name	Type	#Val	Size	Last	Opn	Mode	Value

Script	DIR						
BNQR Hold	DIR						
cmd	STRING	1	128	>99d	0	RWD	/home/bnqr/online/mdarc/perl/hold.pl
include path	STRING	1	64	>99d	0	RWD	/home/bnqr/online/mdarc/perl
Name	STRING	1	32	31s	0	RWD	bnqr
hold	BOOL	1	4	6h	0	RWD	n
toggle	BOOL	1	4	>99d	0	RWD	n
beamline	STRING	1	5	>99d	0	RWD	bnqr
Continue	DIR						
cmd	STRING	1	128	>99d	0	RWD	/home/bnqr/online/mdarc/perl/continue.pl
include path	STRING	1	64	>99d	0	RWD	/home/bnqr/online/mdarc/perl
Name	STRING	1	32	31s	0	RWD	bnqr
hold	BOOL	1	4	6h	0	RWD	n
beamline	STRING	1	5	>99d	0	RWD	bnqr

Perl code

```
ate, trans=$transition\n"; }
```

Bnmr



```
# return
if ($ppg_mode =~ /^2/i) # match 2 at beginning of string (e.g. 2a)
{
    print FOUT "Run in progress. Use Toggle button to change run type \n";
    ($status)=odb_cmd ( "msg", "SMI NFO", "", "Sname", "WARNING - run is in progress.
                        Use toggle button to change run type" );

    unless ($status) { print FOUT "Sname: Failure status after odb_cmd (msg)\n"; }
    die " Run is in progress. Use Toggle button to change the run type\n";
}
else # Type 1
{
    print FOUT "Run in progress.
    Run type cannot be changed while run is in progress \n";
    ($status)=odb_cmd ( "msg", "SMI NFO", "", "Sname", "WARNING - Run type cannot be
                        changed while run is in progress" );

    unless ($status) { print FOUT "Sname: Failure status after odb_cmd (msg)\n"; }
    die " Run type cannot be changed while run is in progress\n";
}
```

Web Browser: /Custom (hidden)



Provides custom Web page with Midas specific HTML tags.

Comments:

- Standard HTML syntax.

```
[local: dragon: Stopped] />cd Custom/  
[local: dragon: Stopped] /Custom>ls RunSummary&  
RunSummary&
```

ODB structure

MIDAS experiment "dragon"					Tue Apr 15 14:11:15 2003 Refr:60		
Start	ODB	CNAF	Messages	ELog	Alarms	Programs	History
							Config
							Help
Myscalers FCup RunSummary							
Run #8373	Stopped	Alarms On	Restart Yes	Logging disabled			
Start: Tue Apr 15 10:20:49 2003				Stop: Tue Apr 15 13:03:07 2003			

```
[local: dragon: Stopped] />cd Custom/  
[local: dragon: Stopped] /Custom>ls RunSummary&  
RunSummary&
```

"Run Summary&
html content

```
...  
<font size=5 face="Arial, Helvetica"><b><center>Current DRAGON Status</center></b></font>  
<p> <center>  
<table align=center width=90%><tr><td>  
<form method="GET" action="http://isdaq04: 8081/CS/RunSummary&">  
<input type=hidden name=exp value="dragon">  
<center>  
<input type=submit name=cmd value=Status>  
<input type=submit name=cmd value=Start>  
<input type=submit name=cmd value=Stop>  
<input type=submit name=cmd value=ODB>  
<input type=submit name=cmd value=History>  
<input type=submit name=cmd value=ELog>  
</center> <p> <center>  
<table border=0>  
<tr><td>Last Run: </td> <td><odb src="/Runinfo/Run number"></td></tr>  
<tr><td>Start Time: </td> <td><odb src="/Runinfo/Start time"></td></tr>  
<tr><td>Stop Time: </td> <td><odb src="/Runinfo/Stop time"></td></tr>  
</table>  
<p> <table>  
<tr><td>Run Details: </td><td><odb src="/Experiment/Run Parameters/Comment"></td></tr>  
</table> </center>  
<p> <center>  
<table border=0 bgcolor=#000000 cellpadding=5 width=675>  
<tr>  
<td align=center colspan=2><b>  
<font color=#FFFFFF face="Arial, Helvetica">Gas Target</font></b></td> </tr> <tr>  
<td bgcolor=#ffffff width=150><font size=" - 1"><b>Cell pressure: </b></font></td>  
<td bgcolor=#ffffff width=525><font size=" - 1">  
<odb src="/Equipment/NewEpics/Variables/EpicsVars[0]"> torr</font></td>  
</tr>  
...
```

Dragon



- DRAGON Home
- Local Resources
- Forum
- Experiments
- Documentation
- Operator Information
- Contacts

DRAGON

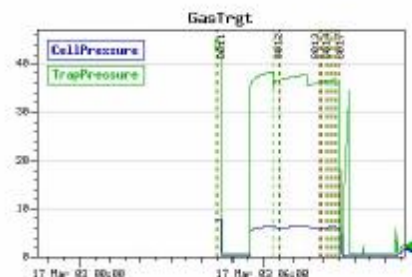
The TRIUMF Detector of Recoils And Gammas Of Nuclear Reactions

Current Run Summary

[Status](#)
[Start](#)
[Stop](#)
[ODB](#)
[History](#)
[ELog](#)

Run #: 3013
 Start Time: Mon Mar 17 08:24:18 2003
 Stop Time: Mon Mar 17 08:26:39 2003

Gas Target	
Cell pressure:	1.88767 torr
Trap pressure:	2.39316 torr

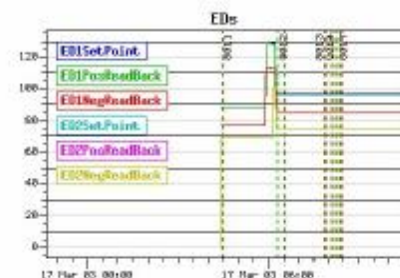


Beamline Slits								
	X-Width (mm)	X-Pos (mm)	Y-Width (mm)	Y-Pos (mm)	FCap	Slit-L	Slit-R	Slit-T
Charge	25.0002	0.000198448	25.0001	2.9974	0.00650282	0.00976362	906096-05	0.00403281
Mass	14.9996	0.002003287	24.9997	0.000000668	0.000929303	-0.0146464	0.00697346	0.00403281
Final	44.9999	0.00347325	44.9995	0.00297619	-0.00482281	0.0146464	0.00167731	0.00111384



Magnetic Dipoles		
	Set Current (A)	Magnetic Field (Gauss)
MD1	231.962	2300.44
MD2	205.341	3432.23

Electric Dipoles		
	Set Current (A)	+ Readback Current (A)
ED1	96.7548	96.2873
ED2	75.3637	75.0332



Beamline Quadrupoles		
	Set Current (A)	Readback Current (A)
Q1	133.456	144.936
Q2	119.636	119.472
Q3	103.534	103.711
Q4	136.222	137.338
Q5	70.538	70.2802
Q6	68.3568	76.533
Q7	95.4264	95.3216
Q8	71.4811	70.0687
Q9	31.0009	30.8158
Q10	34.5592	34.3736

Beamline Sextupoles		
	Set Current (A)	Readback Current (A)
SX1	12.4874	12.5071
SX2	2.63031	2.65415
SX3	2.36981	2.38499
SX4	23.0403	23.0809