Retrieving Archived FLASH Data

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Outline

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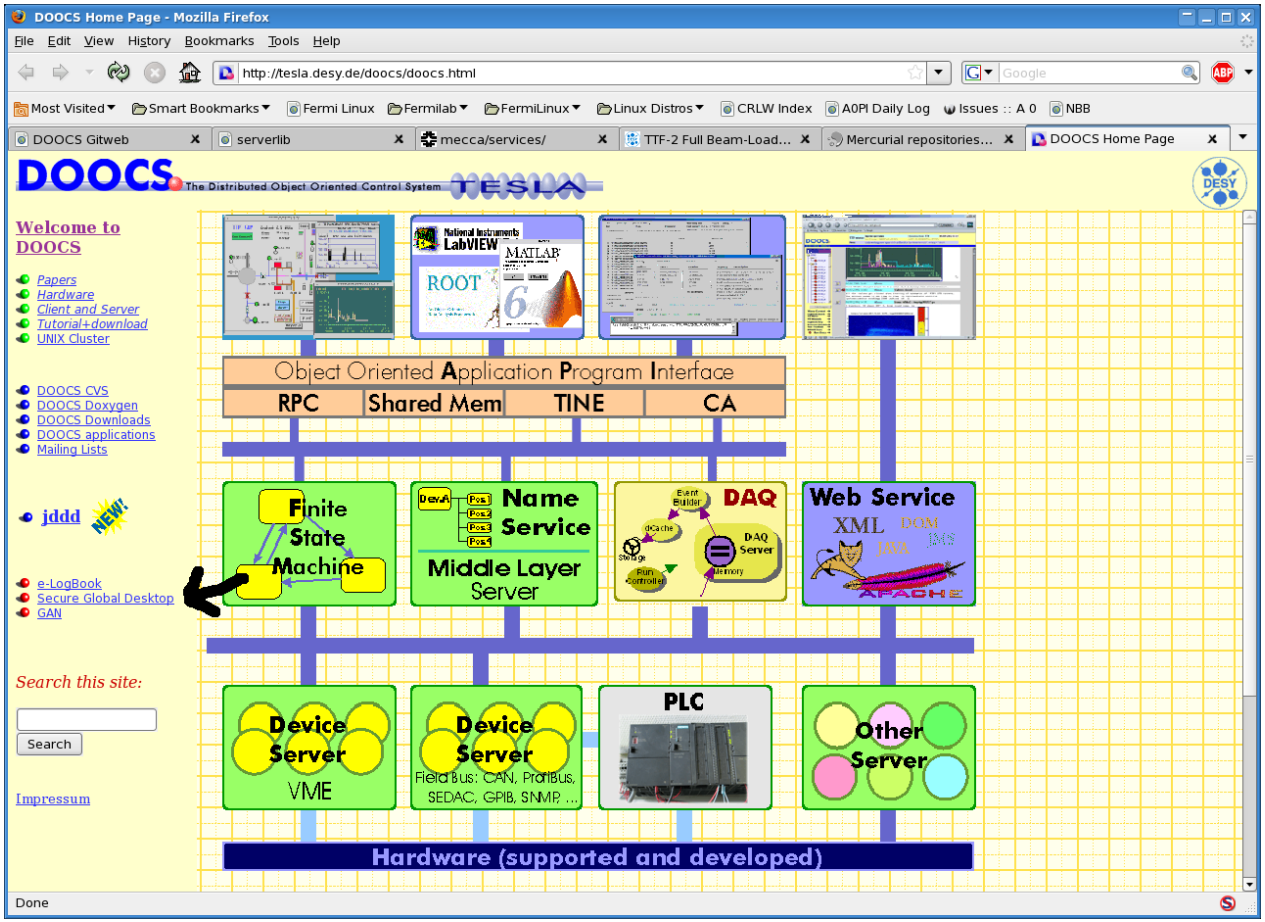
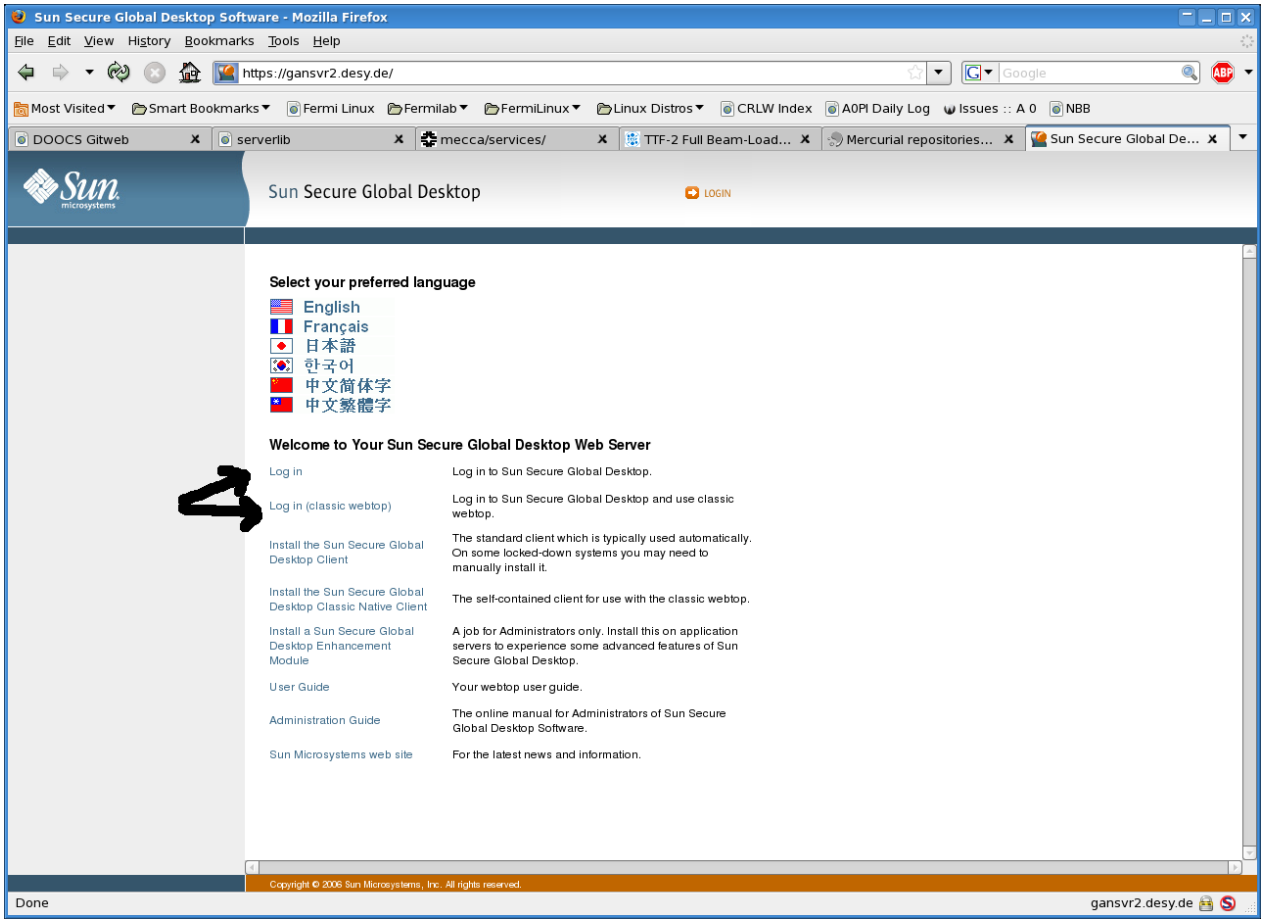
Secure Global Desktop

- Allows access to applications from anywhere.
- Applications run on DESY Sun machine with controls access.
- Functions like ssh, remote desktop, and VNC.
- Start from http://doocs.desy.de
- Select 'Secure Global Desktop' from left column.
- Accounts can be granted by controls group (Kay Rehlich).

http://doocs.desy.de

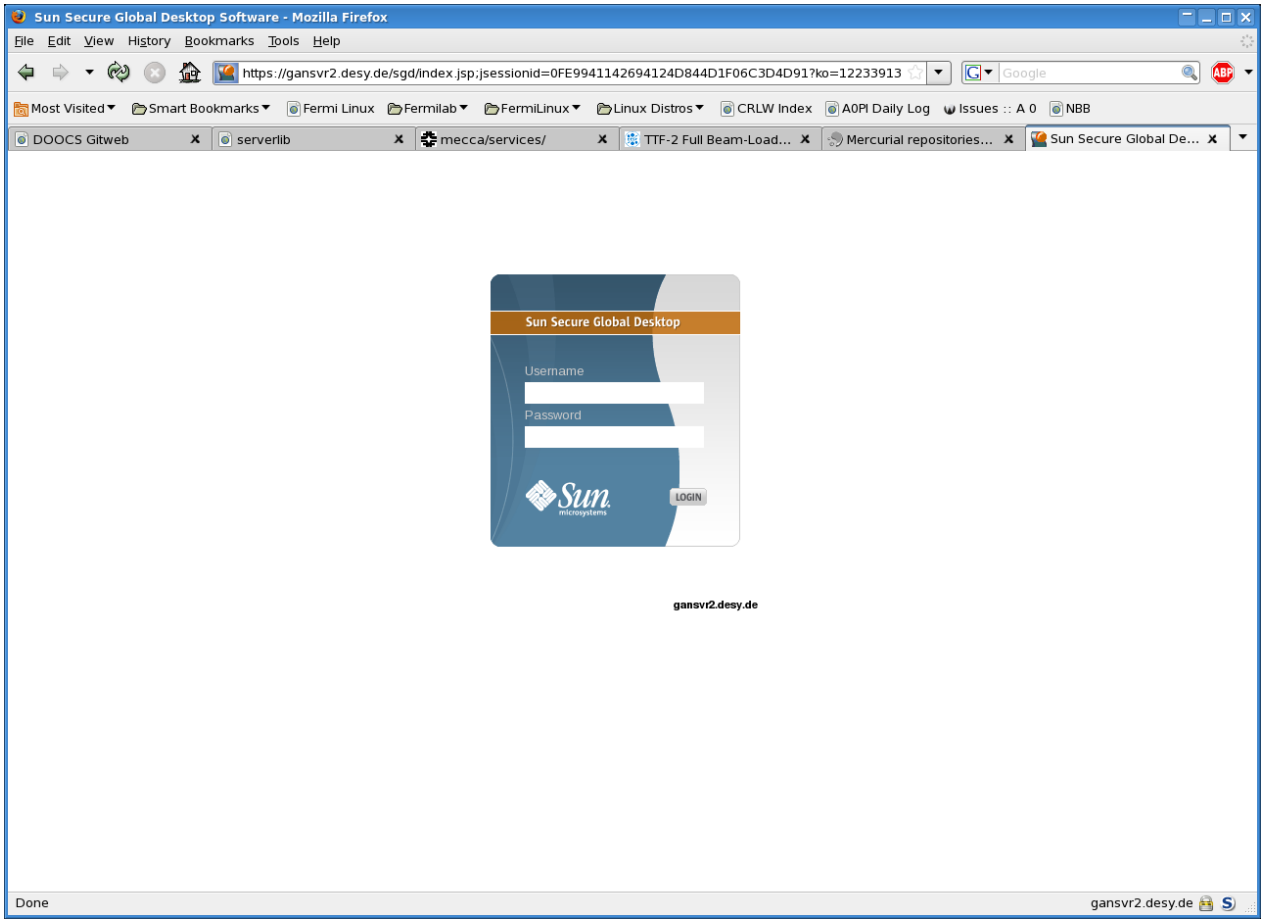


https://gansvr2.desy.de

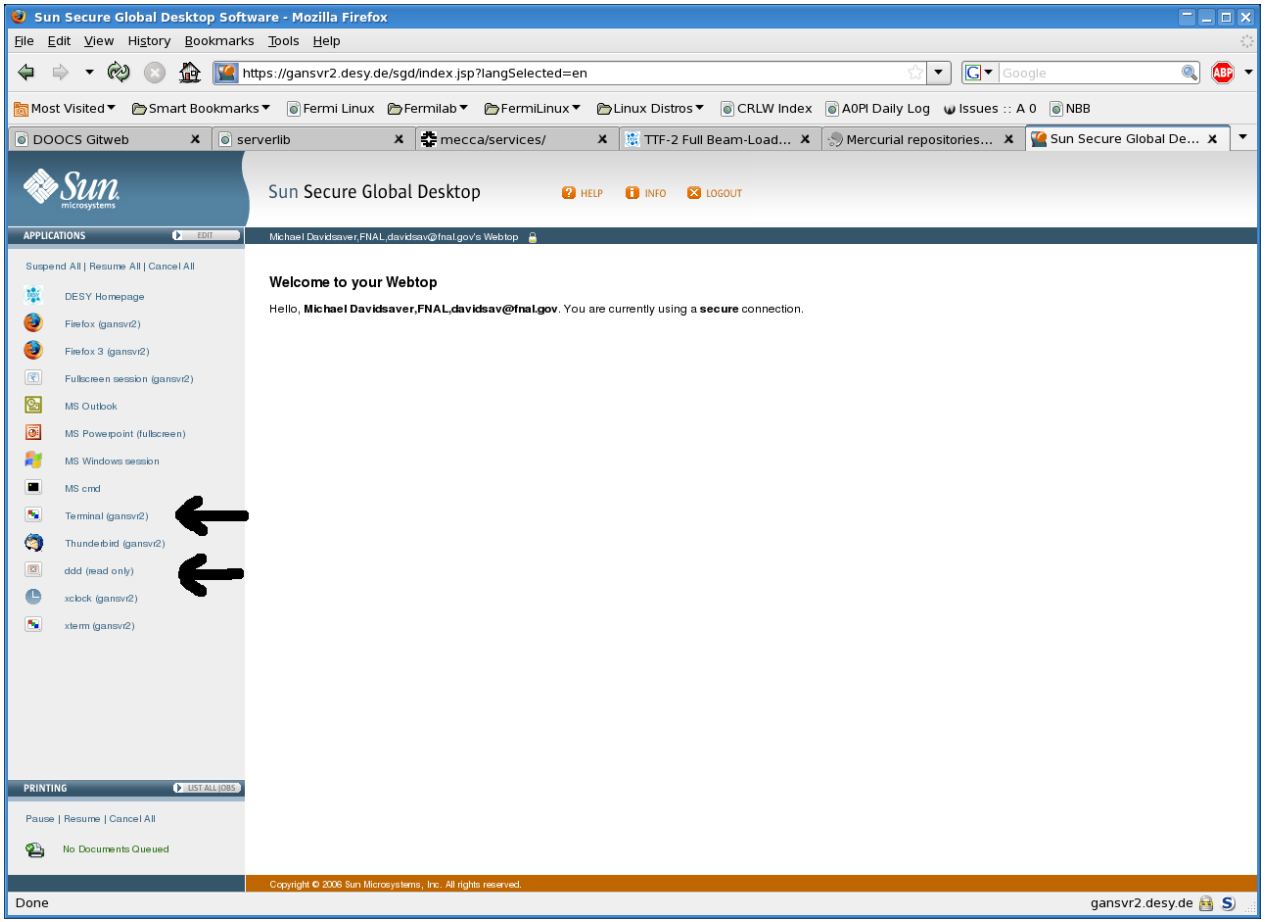


After clicking through several nuisance screens...

Login


Sun Secure Global Desktop Software - Mozilla Firefox
File Edit View History Bookmarks Tools Help
https://gansvr2.desy.de/sgd/index.jsp;jsessionid=0FE9941142694124D844D1F06C3D4D91?ko=12233913
Most Visited Smart Bookmarks Fermi Linux Fermilab FermiLinux Linux Distros CRLW Index A0PI Daily Log Issues :: A 0 NBB
DOOCS Gitweb serverlib mecca/services/ TTF-2 Full Beam-Load... Mercurial repositories... Sun Secure Global De...
Sun Secure Global Desktop
Username
Password
LOGIN
gansvr2.desy.de
Done
gansvr2.desy.de

Success


Sun Secure Global Desktop Software - Mozilla Firefox
File Edit View History Bookmarks Tools Help
https://gansvr2.desy.de/sgd/index.jsp?langSelected=en
Most Visited Smart Bookmarks Fermi Linux Fermilab FermiLinux Linux Distros CRLW Index A0PI Daily Log Issues :: A 0 NBB
DOOCS Gitweb serverlib mecca/services/ TTF-2 Full Beam-Load... Mercurial repositories... Sun Secure Global De...
Sun microsystems
Sun Secure Global Desktop
HELP INFO LOGOUT
APPLICATIONS EDIT
Michael Davidsaver,FNAL,davidsav@fnal.gov's Webtop
Suspend All | Resume All | Cancel All
DESY Homepage
Firefox (gansvr2)
Firefox 3 (gansvr2)
Fullscreen session (gansvr2)
MS Outlook
MS Powerpoint (fullscreen)
MS Windows session
MS cmd
Terminal (gansvr2)
Thunderbird (gansvr2)
ddd (read only)
xclock (gansvr2)
xterm (gansvr2)
PRINTING LIST ALL JOBS
Pause | Resume | Cancel All
No Documents Queued
Welcome to your Webtop
Hello, Michael Davidsaver,FNAL,davidsav@fnal.gov. You are currently using a secure connection.
Copyright © 2006 Sun Microsystems, Inc. All rights reserved.
Done
gansvr2.desy.de

- Launch applications by clicking on entries in the left column.
- 'ddd (read only)' Allows access to operator displays.
- 'Terminal' Opens a unix shell window.

Terminal

- Need to make a copy of several files.
- Open a 'Terminal' (left column).

```
$ wget http://ttfinfo2.desy.de/common/applications/DAQdataGUI.jnlp
$ mkdir 9madaq
$ cd 9madaq
$ cp /home/davidsav/9madaq-092008/*_fetch.m .
$ cp /home/davidsav/9madaq-092008/takedata.m .
```

- Also `http://home.fnal.gov/~davidsav/files/9madaq.zip`

Terminology

- In DOOCS the property is the primary unit of data.
- Type (Int, Float, String, Spectrum)
- Address (TTF2.RF/ADC/C1.ACC1.PROBE/AMPL.TD)
- Always four parts.
- The DAQ engine has channels
- Shorter address (LLRF/C1.ACC1.PROBE)
- Not always the same data!

Start the Data Browser

- Utility to find all valid channels.
- From a 'Terminal'
- javaws ~/DAQdataGUI.jnlp
- Select a start and end time
  - Try 2008/09/26 12:00 - 12:01
- click 'Get Channels\Files'

DAQ Data Browser

DAQ Data Browser

Using the Browser

- Expand sections by double-clicking
- Interesting sections
  - LLRF
  - LLRF.ML
  - BPM
  - BLM
  - KLY.ADC
  - TOROID
  - ENERGY.BYPASS

Starting MATLAB

- Open a 'Terminal'

```
$ cd 9madaq
$ matlab2006
```

Select Times and Channels

- A place to specify time range and channel list.
- An example for using daq_fetch.
- Edit takedata.m

takedata.m

```
function [dlbl,daq,hlbl,hist]=takedata()
t0=datenum('09-26 12:00');
t1=datenum('09-26 12:05');
dchan={...
    'TOROID/1TCOL',...
    'LLRF.ML/ACC1_AMPL',...
    'LLRF.ML/ACC1_PHASE',...
    'ENERGY.BYPASS/E_SPECT'};
[dlbl,daq]=daq_fetch(t0,t1,dchan);
(...truncated...)
```

Fetch the Data

- Run in the main MATLAB window

```
[dlbl,daq,hlbl,hist]=takedata;
```

- If it completes then ‘daq’ contains the requested data.

Cell array

- 'daq' is a (N+1) x 1 cell array.
- N is the number of channels requested
- the last element is a time stamp
- A cell array is indexed with {}.

Toroid data

- The first element contains data for 'TOROID/1TCOL'
- 'daq{1}' is an N x S x 2 matrix.
  - N - Number of events
  - S - Number of samples in wave form
  - (:,:,1) is time series
  - (:,:,2) is data
- Plot the first event: `plot(daq{1}(1,:,1),daq{1}(1,:,2))`
- Find time 700us (first beam): `find(daq{1}(1,:,1)==700)`
- Plot first bunch charge for all events: `plot({1}(:,11,2))`

Vector sum data

- The 2nd and 3rd elements contain ACC1 amplitude and phase.
- 'daq{2}' and 'daq{3}' are N x S x 2 matrices.
- Differs from displayed version. 2-sample vs. 4-sample IQ conversion.

Energy data

- The 4th element contains bunch energy data.
- 'daq{4}' is a N x B x 2
  - N - Number of events
  - S - Maximum number of bunches
  - (:,:,1) is time series
  - (:,:,2) is data
- If a event has less then S bunches then unused elements are set to NaN.
- Plot energy profile for first event:

```
plot(daq{1}(1,:,1),daq{1}(1,:,2))
```

Energy data cont.

- Deviation for 20th bunch averaged over all events.
- Must select only those events which had >=20 bunches.

```
EN=daq{4};
valid=~isnan(EN);
spread=std( EN(valid(:,20),20) );
```

- Number of bunches for each event:

  `plot( sum( ~isnan(daq{4}(:,:,2)), 2) )`

Copying with SCP

- Your 'Secure Global Desktop' account can also be used to copy files.
- On Unix(like) systems.

```
$ scp ttfremote2.desy.de:~/9madaq/myfile.mat .
```

- Windows users see:
- `http://www.chiark.greenend.org.uk/~sgtatham/putty/`
- `http://winscp.net/eng/index.php`

End