

1. What is tcsd?

The TCS D is short for TCS Daemon. The current IRTF TCS has a single serial port that provides TCS communication to all user and software systems at the IRTF. The tcsd provides network access to this serial port, and multiplex access to the serial port.

The tcsd is hosted on the computer named tcsd_host.
The tcsd supports 2 socket interfaces:

1.1 Primary socket interface

This primary socket interface is the original tcsd socket protocol. The protocol is simple:

1. Open a socket to the tcsd on port 30010.
2. Write a fixed sized text string to the socket. This should be a valid forth TCS command.
3. Read a fixed sized text string from the socket. This is the reply from the TCS.
4. Close the socket.

1.2. Aux socket

The tcsd also has an auxiliary socket. This is a special purpose interface and shouldn't be part of the normal operational uses. You can telnet to the aux socket by:

1. Telnet tcsd_host 30011
2. Type 'help' to see internal commands supported by the tcsd.
3. Any lines enter that are not internal command are pass to the forth TCS.
4. Type 'exit' to close the telnet session.

2. Starting and Stopping the TCS D

TCS D is automatically started when the tcsd_host is booted.

2.1 Killing tcsd.

Become root
Use the 'ps' command to find the process ID of tcsd.
Kill tcsd
Use the 'ps' command to make sure tcsd is not running

See example below:

```
% ps -ef | grep tcsd
  root 17094      1   0   Apr 08 ?          2:39 /usr/local/tcsd.v2/tcsd
denault 11273 11255  0 13:41:54 pts/21    0:00 grep tcsd
% kill -9 17094
% ps -ef | grep tcsd
denault 11374 11255  0 13:46:54 pts/21    0:00 grep tcsd
```

2.2 Starting tcscd

1. Login to tcscd_host and become root.

2. Start the tcscd

```
% /etc/init.d/tcscd start
```

2.3 command line start up option:

usage: tcscd [OPTIONS]

options: -h help – displays usage
-v n n is the verbose level. Between 0 (least) and 2(most)
-s Turns on simulation (serial port simulation).
-t n n is the value for VTIME – serial port timeout variable.

3. How do I use the tcsd?

The primary purpose of the tcsd is to provide a network access to the TCS for the IRTF Facility software. Normally observers or the staff wouldn't necessary access the tcsd directly. But there are occasion when this is necessary. Two method are presented here:

3.2 tcsIO

A simple tcsio program does a single command/reply sequence. Tcsio is useful utility for 3rd party applications and scripts. Refer to the tcsio documentation.

3.3. Telnet

It is also possible to telnet to the tcs3 aux port. The tcsd support a single connect to its aux socket port. All user should use the primary socket interface, the aux socket is present mostly for debugging purposes.

Here is an example telnet session to the aux socket port. The bold letters indicated what the user typed:

```
> telnet max 30011
Trying 128.171.165.2...
Connected to max.
Escape character is '^]'.
TCSD> 0 TPD
03:42:39.89 19:49:34.0 00:00:00.00 1.000 0.0 -OK
TCSD> show.gv
program_name ./tcsd
init_filename ./tcsd.conf
log_filename /var/adm/tcsd.log
vtime 7
verbose 1
log on
sim off
ao_notify off
ao_notify_cmd sm.tracker.go
command_cnt 1
worker_last_ms 101
worker_msg_cnt 1
ao_notify_cnt 0
send_total 0
send_ok 1 0 0
send_fail 0 0 0
TCSD> exit
Connection closed by foreign host.
```

After connecting with telnet, you can type TCS Forth or built in tcsd commands. Type 'exit' to close the session.

4. Source code information and installing the TCS3.

4.1. Source code information

The source code is located in the tcs3 account. The link `/home/tcs3/src/tcs1/tcsd` reference the current version of the tcsd.

See `/home/tcs3/src/tcs1/README.txt`, this tells you what the various version are.

4.2 How to install the TCS3.

The binary is installed on stefan (or the tcsd_host). You also need to install them on duke, as duke sync `/usr/local/` to all computers. This way all computers have a copy of the daemon.

The `init.d` script need to be install on the computer running the daemon. Refer to the instructions in `/home/tcs3/src/tcs1/tcsd/init.d`

4.1 If I have a question about tcsd, who should I contact?

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5. What are the TCSD built-in commands?

Normally the tcsd is used to just pass commands to the ForthTCS. There are a few internal tcsd commands. These commands are described here:

Ao.notify – Set the ao.notify flag. When enable the AO system is notify that a tcs displacement has changed.

Syntax `ao.notify { off | on }`
 Range `off` – do not notify AO.
`on` – Notify AO of displacement changes.

Ao.notify.cmd – The tcsd uses this command to notify the AO.

Syntax `ao.notify.cmd command`
 Range `command` – The command to notify AO.

Ao.query – Displays the values of internal tcsd AO related variable. A space delimited string is returned indicating the values for ao_notify (off/on), ao_notify_cnt (integer). ie: " on 2 ".

Syntax `ao.query`

die – Kills tcsd.

Syntax `die`

exit – closes the telnet session used by the current client.

Syntax `exit`

help – prints a summary of all the internal tcsd commands.

Syntax `help`

log – Make the tcsd writes a string to stdout.

Syntax `log string`
 Range `string` – Any string.

show.GV – Prints out some tcsd application variables.

Syntax `Show.GV`

verbose – Set the level of debug output printed by the daemon.

Syntax `verbose v`
 Range `0 to 2` – The Lowest is 0 (default). Higher the value the move debug output.

version – Prints out the name and version number for tcsd.

Syntax `version`

sim – Set the simulation flag. In simulation mode, no data is set to the digiport. Any HEXAPOD string are just reversed and returned to the caller.

Syntax `sim { off | on }`
 Range `off` – disable simulation (default).
`on` – enables simulation..

tcs – passes a string to the tcs.

Syntax `tcs string`
 Range `string` – Any legal TCS Forth command.

