Kernel-Resident SCST

bio
vfs_readv
vfs_writev

blockio   fileio

other vtypes

scst_user   VDISK

pass thru

SCST CORE

other fabrics   SCST iSCSI

SCST running in kernel

kernel socket API

TCP IP

iSCSI Initiator

Kernel Mode	API	User Mode
Recent Code		

Usermode iSCSI-SCST

aio(7)
preadv(2) pwritev(2)

blockio   fileio

VDISK

scstadmin

sysfs   fuse

~700 LOC
pseudo sysfs

SCST CORE

~10,000 LOC
Kernel Env. Simulation

SCST iSCSI

SCST running in usermode

socket(7) API

TCP IP

iSCSI Initiator

iSCSI Server Datapath to tcmu-runner Backstorage API

Common Backstorage Support

libgfapi
libz
librados librbd

glfs   qcow   ram   rbd

tcmu-runner Backstorage API

tcmu-runner   scstu-tcmur

libtcmu

ring+uio

fileio   blockio   tcm-user

LIO CORE

LIO iSCSI

kernel socket API

TCP IP

iSCSI Initiator

aio(7)   preadv(2) pwritev(2)

blockio   fileio

VDISK

Usermode SCST

SCST CORE

SCST iSCSI

socket(7) API

TCP IP

iSCSI Initiator

User Mode	
API	
Kernel Mode	

ABOVE: *The adaptation of SCST to run as an iSCSI server in usermode reuses a very mature and efficient implementation of the SCSI SPC/SBC command set and the iSCSI protocol, with virtually no change to the existing source code.*

The ability to build the iSCSI server for usermode opens the possibility of running the same code base on other systems such as FreeBSD.

RIGHT: *The scstu-tcmur module can drive Usermode-SCST storage I/O operations through the tcmu-runner backstorage API, enabling use of a common set of backstorage handlers for either an in-kernel or a usermode iSCSI server.*