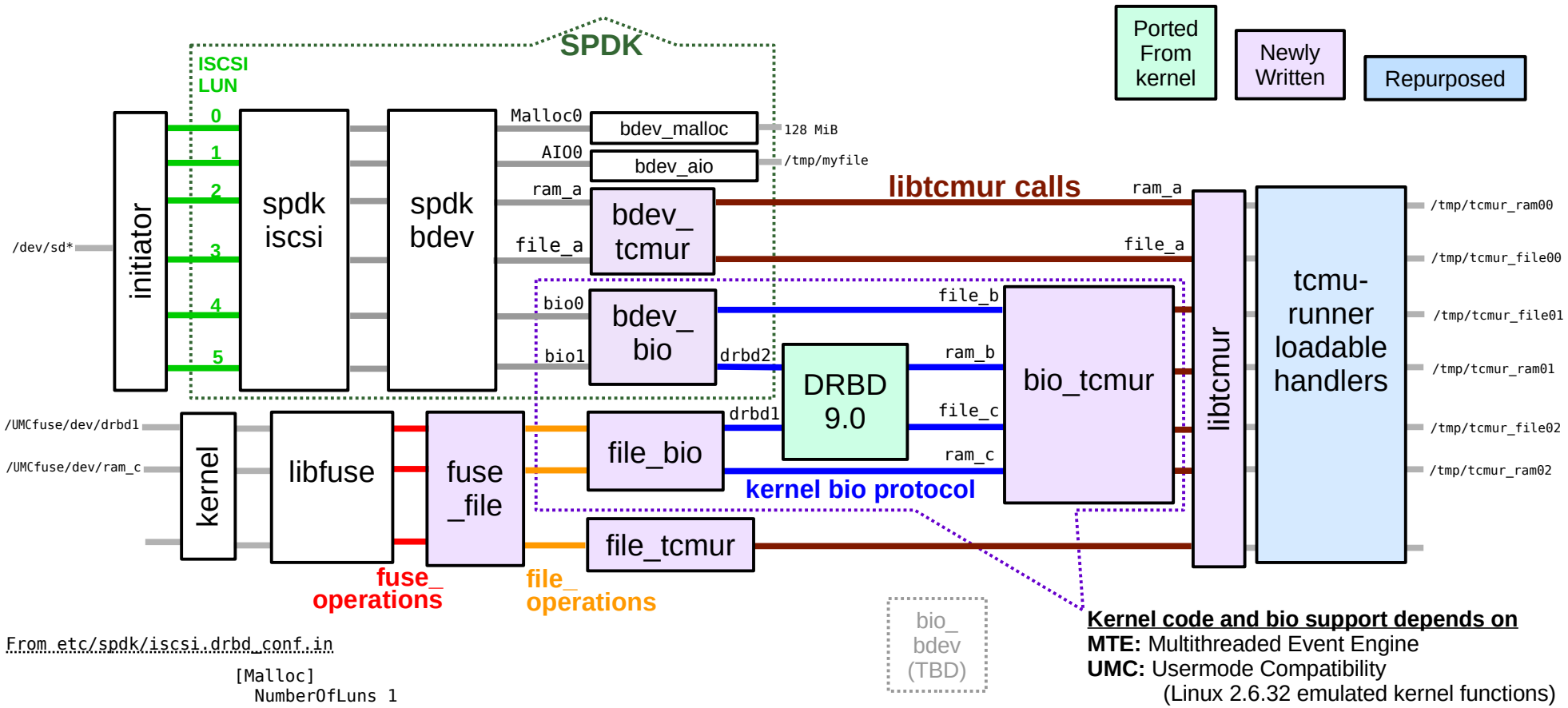
SPDK+DRBD example config in `iscsi.drbd_conf.in`



Kernel code and bio support depends on
MTE: Multithreaded Event Engine
UMC: Usermode Compatibility
(Linux 2.6.32 emulated kernel functions)

From `etc/spdk/iscsi.drbd_conf.in`

```
[TargetNode1]
  LUN0 Malloc0
  LUN1 AIO0
  LUN2 ram_a
  LUN3 file_a
  LUN4 bio0
  LUN5 bio1
```

```
[Malloc]
  NumberOfLuns 1
  LunSizeInMB 128
  BlockSize 4096

[AIO]
  AIO /tmp/myfile AIO0 4096

[BIO]
  BIO bio0 /UMCfuse/dev/file_b
  BIO bio1 /UMCfuse/dev/drbd2
```

DRBD native configuration

```
volume 0 {
    device      drbd2 minor 2;
    disk        "/UMCfuse/dev/ram_b";
}

volume 0 {
    device      drbd1 minor 1;
    disk        "/UMCfuse/dev/file_c";
}
```

```
[TCMUR]
  TCMUR 0 ram_a /ram/tmp/tcmur_ram00
  TCMUR 1 file_a /file//tmp/tcmur_file00
  TCMUR 2 file_b /file//tmp/tcmur_file01
  TCMUR 3 ram_b /ram/tmp/tcmur_ram01
  TCMUR 4 file_c /file//tmp/tcmur_file02
  TCMUR 5 ram_c /ram/tmp/tcmur_ram02
```

bio protocol names are prefixed with `/UMCfuse/dev/`
bio devices appear as mountable nodes under `/UMCfuse/dev`

Scripts to download repositories and build the server in an empty directory

SPDK + TCMUR only (LUNs 0-3): **wget** https://raw.githubusercontent.com/DavidButterfield/spdk/tcmu-runner/BUILD_spdk_tcmur.sh *(relatively straightforward SPDK virtual bdev module)*

SPDK + DRBD + TCMUR (LUNs 0-5): **wget** https://raw.githubusercontent.com/DavidButterfield/spdk/tcmu-runner/BUILD_spdk_drbd.sh *(order of magnitude more complex to add DRBD)*

David Butterfield 09-Sep-2019

SPDK iSCSI + DRBD

(refer to diagram)

Time to copy and unpack large tar image *(mounted on remote initiator)*

		LUN	Time (sec)
bdev_malloc		0	13.5
bdev_aio		1	30.7
bdev_tcmur		2 – 3	26.7
bdev_bio		4	27.5
bdev_bio with DRBD	Standalone	5	33.2
bdev_bio with DRBD	Protocol C	5	38.3
bdev_bio with DRBD	Protocol A	5	36.7 + 20 resync

NOTES: bdev_malloc and bdev_aio are drivers from the SPDK

All bdevs (except malloc) are backed by large files in /tmp

tcmu-runner handler_file was used for backend storage for LUNs 2-5

handler_file does synchronous readv/writev to backing file using a single I/O thread

DRBD Protocol C is synchronous

DRBD Protocol A is asynchronous, with resync continuing after completion of test program