
Subject: [PATCH 07/11] fuse: add per-page descriptor <offset, length> to fuse_req

Posted by [Maxim Patlasov](#) on Wed, 19 Sep 2012 16:32:55 GMT

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The ability to save page pointers along with lengths and offsets in fuse_req will be useful to cover several iovec-s with a single fuse_req.

Per-request page_offset is removed because anybody who need it can use req->page_descs[0].offset instead.

Signed-off-by: Maxim Patlasov <mpatlasov@parallels.com>

fs/fuse/dev.c | 27 ++++++++-----

fs/fuse/file.c | 10 +++++-----

fs/fuse/fuse_i.h | 15 ++++++++-----

3 files changed, 36 insertions(+), 16 deletions(-)

diff --git a/fs/fuse/dev.c b/fs/fuse/dev.c

index b241a7d..ea63d39 100644

--- a/fs/fuse/dev.c

+++ b/fs/fuse/dev.c

@@ -35,14 +35,16 @@ static struct fuse_conn *fuse_get_conn(struct file *file)
{

static void fuse_request_init(struct fuse_req *req, struct page **pages,
- unsigned npages)

+ struct page_desc *page_descs, unsigned npages)

{
 memset(req, 0, sizeof(*req));
+ memset(page_descs, 0, sizeof(*page_descs) * npages);
 INIT_LIST_HEAD(&req->list);
 INIT_LIST_HEAD(&req->intr_entry);
 init_waitqueue_head(&req->waitq);
 atomic_set(&req->count, 1);
 req->pages = pages;
+ req->page_descs = page_descs;
 req->max_pages = npages;
}

@@ -51,18 +53,25 @@ static struct fuse_req *__fuse_request_alloc(int npages, gfp_t flags)
 struct fuse_req *req = kmem_cache_alloc(fuse_req_cachep, flags);

if (req) {
 struct page **pages;
+ struct page_desc *page_descs;

- if (npages <= FUSE_REQ_INLINE_PAGES)

+ if (npages <= FUSE_REQ_INLINE_PAGES) {

```

    pages = req->inline_pages;
- else
+ page_descs = req->inline_page_descs;
+ } else {
    pages = kmalloc(sizeof(struct page *) * npages, flags);
+ page_descs = kmalloc(sizeof(struct page_desc) * npages,
+     flags);
+ }

- if (!pages) {
+ if (!pages || !page_descs) {
+     kfree(pages);
+     kfree(page_descs);
    kmem_cache_free(fuse_req_cachep, req);
    return NULL;
}

- fuse_request_init(req, pages, npages);
+ fuse_request_init(req, pages, page_descs, npages);
}
return req;
}
@@ -82,6 +91,8 @@ void fuse_request_free(struct fuse_req *req)
{
    if (req->pages != req->inline_pages)
        kfree(req->pages);
+ if (req->page_descs != req->inline_page_descs)
+     kfree(req->page_descs);
    kmem_cache_free(fuse_req_cachep, req);
}

@@ -186,7 +197,7 @@ static void put_reserved_req(struct fuse_conn *fc, struct fuse_req *req)
    struct fuse_file *ff = file->private_data;

    spin_lock(&fc->lock);
- fuse_request_init(req, req->pages, req->max_pages);
+ fuse_request_init(req, req->pages, req->page_descs, req->max_pages);
    BUG_ON(ff->reserved_req);
    ff->reserved_req = req;
    wake_up_all(&fc->reserved_req_waitq);
@@ -877,7 +888,7 @@ static int fuse_copy_pages(struct fuse_copy_state *cs, unsigned nbytes,
{
    unsigned i;
    struct fuse_req *req = cs->req;
- unsigned offset = req->page_offset;
+ unsigned offset = req->page_descs[0].offset;
    unsigned count = min(nbytes, (unsigned) PAGE_SIZE - offset);

```

```

    for (i = 0; i < req->num_pages && (nbytes || zeroing); i++) {
@@ -1585,7 +1596,7 @@ static int fuse_retrieve(struct fuse_conn *fc, struct inode *inode,
    req->in.h.nodeid = outarg->nodeid;
    req->in.numargs = 2;
    req->in.argpages = 1;
- req->page_offset = offset;
+ req->page_descs[0].offset = offset;
    req->end = fuse_retrieve_end;

    index = outarg->offset >> PAGE_CACHE_SHIFT;
diff --git a/fs/fuse/file.c b/fs/fuse/file.c
index 08899a6..b68cf3b 100644
--- a/fs/fuse/file.c
+++ b/fs/fuse/file.c
@@ -798,7 +798,7 @@ static size_t fuse_send_write_pages(struct fuse_req *req, struct file *file,

    res = fuse_send_write(req, file, pos, count, NULL);

- offset = req->page_offset;
+ offset = req->page_descs[0].offset;
    count = res;
    for (i = 0; i < req->num_pages; i++) {
        struct page *page = req->pages[i];
@@ -829,7 +829,7 @@ static ssize_t fuse_fill_write_pages(struct fuse_req *req,
    int err;

    req->in.argpages = 1;
- req->page_offset = offset;
+ req->page_descs[0].offset = offset;

    do {
        size_t tmp;
@@ -1070,14 +1070,14 @@ static int fuse_get_user_pages(struct fuse_req *req, const char
__user *buf,
    return npages;

    req->num_pages = npages;
- req->page_offset = offset;
+ req->page_descs[0].offset = offset;

    if (write)
        req->in.argpages = 1;
    else
        req->out.argpages = 1;

- nbytes = (req->num_pages << PAGE_SHIFT) - req->page_offset;
+ nbytes = (req->num_pages << PAGE_SHIFT) - req->page_descs[0].offset;
    *nbytesp = min(*nbytesp, nbytes);

```

```

return 0;
@@ -1314,7 +1314,7 @@ static int fuse_writepage_locked(struct page *page)
    req->in_argpages = 1;
    req->num_pages = 1;
    req->pages[0] = tmp_page;
- req->page_offset = 0;
+ req->page_descs[0].offset = 0;
    req->end = fuse_writepage_end;
    req->inode = inode;

```

```

diff --git a/fs/fuse/fuse_i.h b/fs/fuse/fuse_i.h
index fd69d62..fbf9379 100644

```

```

--- a/fs/fuse/fuse_i.h
+++ b/fs/fuse/fuse_i.h
@@ -203,6 +203,12 @@ struct fuse_out {
    struct fuse_arg args[3];
};

```

```

+/** FUSE page descriptor */
+struct page_desc {
+ unsigned int length;
+ unsigned int offset;
+};
+
+/** The request state */
+enum fuse_req_state {
+ FUSE_REQ_INIT = 0,
@@ -296,18 +302,21 @@ struct fuse_req {
    /** page vector */
    struct page **pages;

```

```

+ /** page-descriptor vector */
+ struct page_desc *page_descs;
+
+ /** size of the 'pages' array */
+ unsigned max_pages;

```

```

    /** inline page vector */
    struct page *inline_pages[FUSE_REQ_INLINE_PAGES];

```

```

+ /** inline page-descriptor vector */
+ struct page_desc inline_page_descs[FUSE_REQ_INLINE_PAGES];
+
+ /** number of pages in vector */
+ unsigned num_pages;

```

```

- /** offset of data on first page */

```

```
- unsigned page_offset;  
-  
/** File used in the request (or NULL) */  
struct fuse_file *ff;
```
