LTSI Submission from Industry
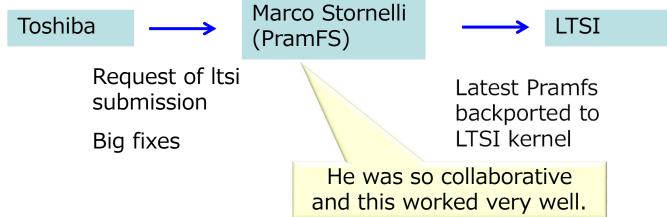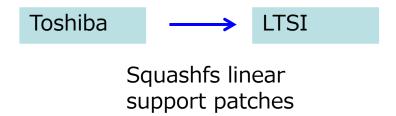
2012/6/21

UCHINO Satoshi

TOSHIBA Corporation

Toshiba's Contribution to LTSI
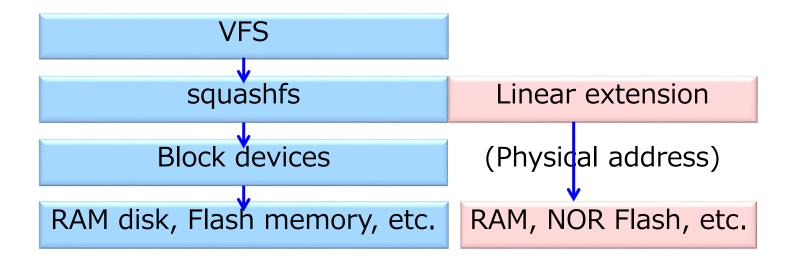
- PRAMFS + bug fixes

Toshiba	→	Marco Stornelli (PramFS)	→	LTSI

Request of ltsi submission

Big fixes

Latest Pramfs backported to LTSI kernel

He was so collaborative and this worked very well.

- SquashFS linear support

Toshiba	→	LTSI

Squashfs linear support patches

Squashfs linear support

- Enables mounting images directly by physical address range

VFS	
↓	
squashfs	Linear extension
↓	
Block devices	(Physical address)
↓	↓
RAM disk, Flash memory, etc.	RAM, NOR Flash, etc.

- References
  - Yano, K. : *Reduction of RAM consumption by SquashFS*, CELF Japan Jamboree #6 (2006)

    http://tree.celinuxforum.org/CelfPubWiki/JapanTechnicalJamboree6?action=AttachFile&do=view&target=squashfs_eng.pdf

Case study of submitting squashfs patches to LTSI

- What I was expected first …

| Toshiba | LTSI |

1) Decide to use v3.0
2) Clean up patches
3) Send to LTSI ⟶

4) LTSI will take care of everything

- What happened was …

| Toshiba | LTSI |

1) Decided to use v3.0
2) Cleaned up patches
3) Sent to LTSI
   (2012/4/24) ⟶

4) Requested to send them upstream
5) Reviewed patches

6) Reworked patches ⟵
7) Forward-ported to v3.4-rc7
8) Sent to squashfs-devel and linux-fsdevel (2012/5/15)
9) Resent to squashfs-devel and linux-fsdevel (2012/6/15), but not reviewed yet so far

This helped me a lot! Thanks!

Changes of the first submission and the second submission

- Version 1 (to LTSI)
  - squashfs: support linear addressing
  - squashfs: support linear rootflags
  - ARM: add ioremap_mem_{nocache,cached}
  - squashfs: SQUASHFS_USE_IOREMAP_MEM_CACHED option
  - ARM: does not warn ioremap_mem_{nocache,cached} on RAM

Gave up

Split to 2 parts as suggested

- Version 2 (to squashfs-devel and linux-fsdevel)
  - squashfs: add an extra argument to decompress callback
  - squashfs: support linear addressing

It was useful, but not mandatory.
I haven't come up with the idea to fix arch dependency without tricky way.

Review comments (1/2)

- For all this patch series
  - Greg KH: It (sending patches upstream) is a requirement to get patches accepted.

- squashfs: support linear addressing
  - Magnum Damm:
    - rely on the LINEAR() macro instead of #ifdefs
    - Having different callbacks depending on configure options seems a bit rough.
    - Perhaps it is possible to make a separate patch converting the callbacks to the new format regardless of the config options?

- squashfs: support linear rootflags
  - Greg KH:
    - Why can't this just be an option for the squashfs code, and have the filesystem parse the kernel command line?
    - This implies that this option is only available for ARM systems. You can't make a feature only work on one processor unless there is good reasons for it.

Review comments (2/2)

- ARM: add ioremap_mem_{nocache,cached}
  - Greg KH:
    - Are you sure it's ok to add new functions like this only to ARM? What about all other architectures?
    - I understand MT_MEMORY is only an ARM define, but why not just use a "raw" call to __arch_ioremap() with that flag?
- squashfs: SQUASHFS_USE_IOREMAP_MEM_CACHED option
- ARM: does not warn ioremap_mem_{nocache,cached} on RAM
  - Greg KH: Did you just break some systems?   If not, why is this patch not upstream for all ARM systems?
  - Uchino: There was a similar proposal as follows, but it seems it was not accepted.
  - Greg KH: Then why would you want this to be accepted here.
  - Uchino: After I read the thread again, it seems to me that changing the condition pfn_valid(pfn) of ioremap() will not be accepted by the community. I will change the patch set not to depend on this patch.

Expectation to LTSI (1)

- Documentation of necessary process
  - Just send patches and see what happens?
    - But this is hard to estimate schedule.
  - Is it mandatory to send them upstream beforehand?

- Documentation of acceptance criteria

- Be more relaxed place than upstream
  - Code reviews are quite helpful.
  - Support for reworking and testing (next page)

Expectation to LTSI (2)

- Patches of Industries
  - For their development kernels (not latest) — It would be easier if patches for this kernel is accepted.
    - Development boards do not always support the latest kernel
    - Depend on specific arch
  - Try to patch not to change original behavior as little as possible
    - Sometimes it causes dirty code duplications
  - Test on our development board

This gap is big.
Any support to fill this gap might be really helpful.

- Expected patches
  - Latest kernel
  - Arch independent or support all archs
  - Essential modifications
  - Test on all archs ?

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