IPv6 implementation in LTSI

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- **Yuki Machida, Fujitsu Computer Technologies Ltd.**
- **Embedded Linux Developer**

- **In-House Embedded Linux Distributor of Fujitsu**
- **Our Distribution includes LTSI Kernel and is built with Yocto Project**
- **Our Distribution is used for**
  - Server System Controller, Storage System, Network Equipment, Printer etc.
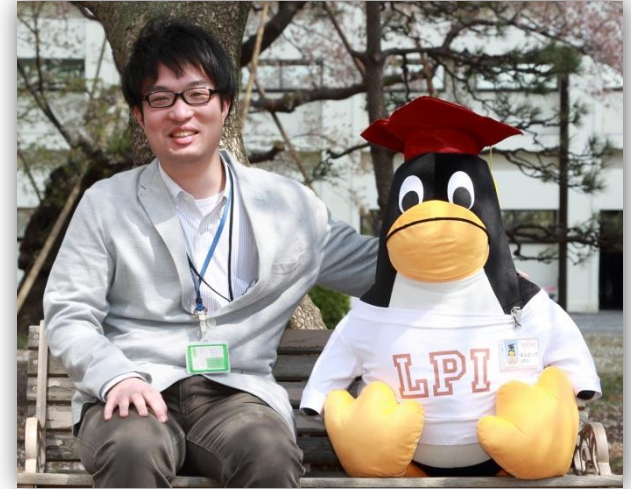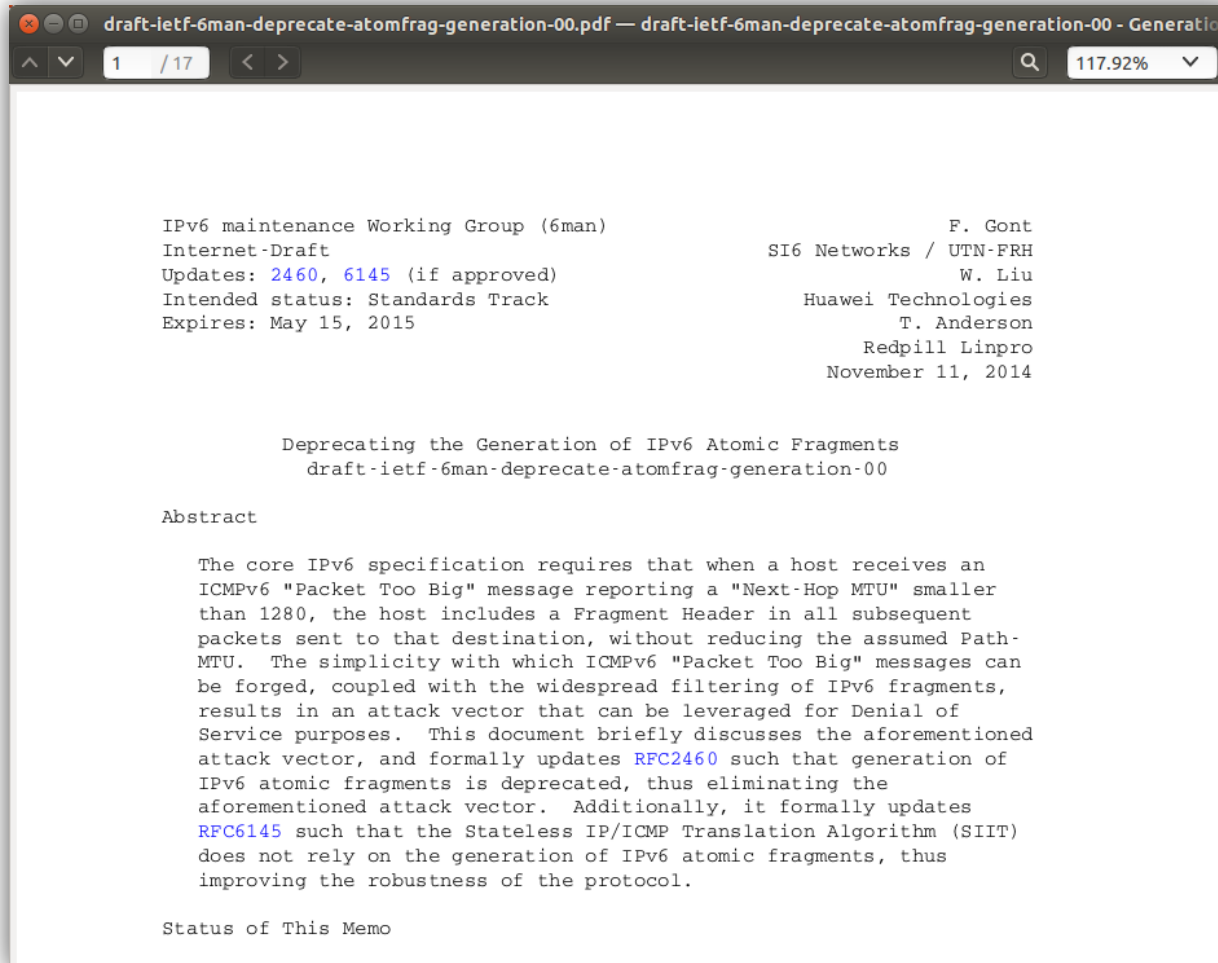
IPv6 stack has a lot of Changes

■ Number of Changes of IPv6 Stack (-- net/ipv6)

range	commit
3. 14 -> 3. 15	65
3. 15 -> 3. 16	44
3. 16 -> 3. 17	81
3. 17 -> 3. 18	107
3. 18 -> 3. 19	76
3. 19 -> 4. 0	58
4. 0 -> 4. 1	108
4. 1 -> 4. 2	71
4. 2 -> 4. 3	115
4. 3 -> 4. 4	134
4. 4 -> 4. 5	60
4. 5 -> 4. 6	67

Updated specification of IPv6 was proposed

- RFC 2460 and RFC 6145 are updated for Security Issue.

https://tools.ietf.org/id/draft-ietf-6man-deprecate-atomfrag-generation-00.txt

- This Specification was further updated to version 6 (confirmed at Jun 3rd).

Supported updated spec, but Interoperability is lost

■ **A patch that support updated specification added at 3.19.**

```
commit 9d289715eb5c252ae15bd547cb252ca547a3c4f2
Author: Hagen Paul Pfeifer <hagen@jauu.net>
Date:   Thu Jan 15 22:34:25 2015 +0100

    ipv6: stop sending PTB packets for MTU < 1280

    Reduce the attack vector and stop generating IPv6 Fragment Header for
    paths with an MTU smaller than the minimum required IPv6 MTU
    size (1280 byte) - called atomic fragments.

    See IETF I-D "Deprecating the Generation of IPv6 Atomic Fragments" [1]
    for more information and how this "feature" can be misused.

    [1] https://tools.ietf.org/html/draft-ietf-6man-deprecate-atomfrag-generation-00
```

■ **LTS-4.1 hasn't complied RFC1981** (Path MTU Discovery for IPv6)

How to implement IPv6 Stack in LTSI

- **Best choice of LTSI is user can select one.**
  - To backported Implementation from Mainline.
  - To rollback to implementation of 3.18.
- **Second choice is**
  - To rollback to implementation of 3.18.

    or
  - To continue to use implementation of 4.1.