LTSI :
Long Term Support Initiative
Status update and discussion

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NEC
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Agenda

• Status of Linux kernel development and maintenance of long term kernel
• LTSI Introduction and status update
• Discussion about Issues
Latest kernel version

• Latest Linux kernel release is 3.6
• Latest -rc release is 3.7-rc4
• Stable release : 3.5.7, 3.6.6
• Long-term release:
  – 2.6.27.62
  – 2.6.32.60
  – 2.6.34.13
  – 2.6.35.14
  – 3.0.51
  – 3.2.33
  – 3.4.18
## Linux kernel: release date, # of files and lines

<table>
<thead>
<tr>
<th>Version</th>
<th>Release date</th>
<th># of Files</th>
<th># of Lines</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>2012-10-1</td>
<td>39,733</td>
<td>15,868,122</td>
<td>+1.7%</td>
</tr>
<tr>
<td>3.5</td>
<td>2012-7-21</td>
<td>39,096</td>
<td>15,596,464</td>
<td>+1.4%</td>
</tr>
<tr>
<td>3.4</td>
<td>2012-5-22</td>
<td>38,566</td>
<td>15,383,946</td>
<td>+1.4%</td>
</tr>
<tr>
<td>3.3</td>
<td>2012-3-19</td>
<td>38,082</td>
<td>15,166,160</td>
<td>+1.1%</td>
</tr>
<tr>
<td>3.2</td>
<td>2012-1-5</td>
<td>37,617</td>
<td>14,998,737</td>
<td>+1.5%</td>
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<tr>
<td>3.1</td>
<td>2011-10-28</td>
<td>37,085</td>
<td>14,770,555</td>
<td></td>
</tr>
</tbody>
</table>

Released 60-70 days

500 Files added, 200,000 Lines of code added for a version
Stable kernel release

• After release of a kernel(n), stable release branch will start to maintain until n+2 version released
• Stable release will only include bug/security fixes found in latest version and back ported
Maintaining long term stable kernel

- Take over maintenance of “stable release” and continue backporting to specific log term kernel version
- Maintainer should have trusted relationship among kernel development community

60-70 days
# List of long term kernel

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>Latest Ver.</th>
<th>Latest Date</th>
<th>How long days?</th>
<th>Maintainer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6.27</td>
<td>2008-10-09</td>
<td>2.6.27.62</td>
<td>2012-03-18</td>
<td>1256</td>
<td>Willy Tarreau</td>
</tr>
<tr>
<td>2.6.32</td>
<td>2009-10-03</td>
<td>2.6.32.59</td>
<td>2012-10-09</td>
<td>1102</td>
<td>Willy Tarreau</td>
</tr>
<tr>
<td>2.6.34</td>
<td>2010-05-16</td>
<td>2.6.34.13</td>
<td>2012-08-20</td>
<td>827</td>
<td>Paul Gortmaker</td>
</tr>
<tr>
<td>2.6.35</td>
<td>2010-08-01</td>
<td>2.6.35.14</td>
<td>2012-03-14</td>
<td>591</td>
<td>Andi Kleen</td>
</tr>
<tr>
<td>3.0</td>
<td>2011-07-21</td>
<td>3.0.51</td>
<td>2012-11-5</td>
<td>473</td>
<td>Greg KH</td>
</tr>
<tr>
<td>3.2</td>
<td>2012-01-04</td>
<td>3.2.33</td>
<td>2012-10-31</td>
<td>301</td>
<td>Ben Hutchings</td>
</tr>
<tr>
<td>3.4</td>
<td>2012-05-20</td>
<td>3.4.18</td>
<td>2012-11-5</td>
<td>169</td>
<td>Greg KH</td>
</tr>
</tbody>
</table>
Major purpose of long term kernels

- 2.6.27: SUSE11
- 2.6.32: SUSE11 RC2/RHEL 6/Ubuntu10.4 LTS
- 2.6.34: Wind River Linux
- 2.6.35: Embedded usage, Android Ginger Bread
- 3.0: **LTSI**, Android Ice Cream Sandwich
- 3.2: Debian7, Ubuntu 12.04 LTS
- 3.4: **LTSI**
Key activity of LTSI

• Provide a industry managed kernel and maintain Long term stably

• Provide a common place for embedded industry

• Provide place to support upstream activity
LTSI: Industry managed kernel

- LTSI defines common kernel every year and maintains for 2 years
- LTSI adopts community Long term kernel as a base. Therefore, bug/security fixes from upstream are automatically applied to LTSI.
- LTSI kernel = long term + additional patches
- After 2 years term finished, possible to take over maintenance for longer term
LTSI: Common place

• LTSI provides the place to share information and experience among industry
  – Mailing list to share problem and discuss how to solve. Discussion to include features into LTSI
  – Open Workshop to share status among the industry
  – Closed meeting: Industry Contact Meeting for more deep F2F discussion among the industry people

• Share the information will reduce the development cost
LTSI: Support upstream activity

• Developer in the embedded industry need to know how to work with community

• LTSI provides help upstream activities
  – Provide suggestion how their patches can be merged into upstream
  – Review and discussion for proposed patches to be merged
  – Many of discussion under way

• Merging patches to upstream is also reduce the cost of each companies
2011.10.26 LTSI project launched
2012.01.31 Greg Kroah-Hartman became LTSI maintainer
2012.02.16 LTSI 3.0 merge window opened
2012.05.31 LTSI 3.0 merge window closed
2012.06.08 1st Industry Contact Meeting ICM @Yokohama
2012.07.30 LTSI 3.0 code released
2012.08.28 Announced Joint roadmap with Yocto. Project
2012.08.29 LTSI Open Workshop @San Diego
2012.09.19 LTSI 3.4 merge window opened
LTSI 3.4 release plan

3.4

- **Staging tree open**: 2012-09-19
- **Freeze**: 2012-11-23
- **LTSI 3.4 target**: 2012-12

**New features can be proposed during merge window**

**Testing while Stabilize period**
Relationship with Yocto project

• Yocto and LTSI had announcement about joint roadmap (28 Aug. 2012)
  – YOCTO Project announced V1.3 release in Oct. 25 and it includes Linux 3.4 kernel support
  – Next V1.4 will support LTSI3.4 as well as most recently released mainline kernel. Tentatively scheduled for 1st half of 2013
  – Subsequent release of Yocto will maintain for both most recent mainline kernel and LTSI
Automotive Linux and LTSI

- Requirement for software maintenance in automotive industry is very high
- Especially, maintenance period of time for software will become more than 10 years
- People consider that LTSI is possibly useful for automotive industry
Discussion
Current situation -1-

• A large amount of patches are from a few party, not broad range of people
  – Some party sent patches and get a good result
  – Holding in-house patch will increase cost of maintenance for the future
  – Such patch merger will decrease development cost
  – Also, good chance to get feedback from out side of the company
Current situation -2-

• Share information among industry using LTSI is not so much
  – Still we can have a meeting for both open and close
  – Meetings and discussions individually are on going
  – There are number of issue to be shared but no questions raised
  – Sharing such question and answers in the industry is decrease development cost
Current situation -3-

• A few party is interested in participation to the community but others are same as before
  – Upstreaming to mainline is bit hard for newbies but LTSI support such people
  – Nothing is changed if stay same as before
How you can participate LTSI

• Follow on Twitter account: @LinuxLTSI
• Web: http://ltsi.linuxfoundation.org
• Mailing list: https://lists.linuxfoundation.org/mailman/listinfo/ltsi-dev
• Git tree: http://git.linuxfoundation.org/?p=ltsi-ernel.git;a=summary
THANK YOU